Memorandum

MIAMI-DADE COUNTY

Date:	January 28, 2010
To:	Honorable Chairman Dennis C. Moss and Members, Board of County Commissioners
From:	Carlos Alvarez County Mayor George M. Burgess County Manager
Subject:	Resolution Waiving Formal Bid Procedures to Authorize the Execution of Agreements with Nextel South Corp, and Harris Corporation, Pursuant to a Federal Communication Commission Mandate

Agenda Item No. 2(A)(1)

Recommendation

It is recommended that the Board of County Commissioners (Board) waive formal bid procedures pursuant to Section 5.03(D) of the Home Rule Charter and Section 2-8.1(b) of the Code of Miami-Dade County, and approve the attached Frequency Reconfiguration and Settlement Agreement (FRSA) with Nextel South Corp. (Nextel) and the attached Radio Communication System Purchase Contract (RCSPC) with Harris Corporation (Harris). These actions will allow the County to vacate radio frequencies consistent with a Federal Communication Commission (FCC) mandate, and to acquire a new radio system that will operate under new frequencies.

Through this settlement, in addition to complying with FCC mandates, the County will receive a new system that meets its requirements for interoperability and reliability. The rebanding effort as required by FCC and the ensuing agreements provide the County with a system that has an estimated market value of $165,000,000 which also addresses public safety radio replacement needs. However, the County is only responsible to pay $25,000,000 under the agreement with Harris.

Scope

The 800 MHz radio system network supports public safety and general government functions that are Countywide and multi-jurisdictional in nature.

Miami-Dade County has one of the nation's largest 800 MHz radio telecommunication systems, supporting approximately 30,000 radios, and over 8 million monthly transmissions. The system is more than 15 years old and has become increasingly expensive to maintain. Additionally, the system does not support open standard interoperability features with other agencies. Multiple County departments and external entities depend on this system to perform their core functions, including Police, Corrections & Rehabilitation, Transit, Public Works, Water & Sewer, Airport, Seaport, the School Board and 27 participating municipalities, supporting both the public safety and general government operations. In addition to the local agencies, numerous other state and federal agencies depend on this system for day-to-day communication among first responders, joint immediate response to natural disasters, and special events requiring the formation of multi-jurisdictional task forces.

Fiscal Impact/Funding Source

As part of the settlement under the FRSA, Nextel will provide up to 24,000 new radios, to replace existing radios, with an estimated market value in excess of $90,000,000, The remaining radios in the inventory, approximately 6,000, do not need to be replaced.

The allocation requested under the RCSPA with Harris is $35,000,000, covering the following:

1) Acquisition of new radio system infrastructure at a cost of $25,000,000. This amount is payable over a period of five years, as milestones are met by Harris.

2) Two options to acquire adjunct radio systems under this contract, one to acquire a new microwave infrastructure to support the new P25 radio system at a cost not to exceed $3,000,000, and the other for a new OpenSky communication system for Miami-Dade Transit (MDT) at a cost not to exceed $4,000,000. While a new microwave system is a requirement to implement the new P25 radio system, the County would like to explore other alternatives in the market place prior to exercising the option under this contract.

3) The balance of the allocation under the RCSPA, $3,000,000, which will only be accessed subject to budget appropriations, will support the current system as necessary during the implementation and transition to the new system, including emergency services, through the five year term of the contract.

The purchase will utilize funds allocated to acquire replacement radios on a pay-as-you-go basis over the next five years. The initial funding is part of the capital outlay reserve allocation for replacement of public safety radios. Future funding will also be sought from proprietary departments and municipalities to replace radios assigned to those entities.

Track Record/Monitor

There are no contractual performance issues between the County and either Nextel or Harris. Felix Perez, Radio Services Division Director at the Enterprise Technology Services Department will be responsible for monitoring these agreements.

Background

Over the past decade, public safety and other radio systems occupying the 800 MHz band (including the current County system) have experienced radio frequency interference as a result of the growth in adjacent commercial bands. As utilization of the adjacent bands proliferated, radio frequency interference problems became more prevalent. In order to minimize the harmful interference to public safety radio communications systems operating in the band, on August 6, 2004, the Federal Communication Commission (FCC) issued a report and order to modify its rules governing the 800 MHz band. Users of this band, including Miami-Dade County, were ordered to reconfigure their operations by engaging in a frequency "swap," known as "rebanding," with Nextel, to eliminate the interference.

On July 24 2007, the Board authorized the execution of a Planning Funding Agreement (PFA) with Nextel, to establish the County's needs in connection with the reconfiguration of the County's 800 MHz radio communication system and begin negotiations.

Consistent with the public safety nature of radio communications, the County sought a resolution that made certain as a primary goal that the 800 MHz system would be maintained fully operational and at the highest available capacity during the re-banding process.

As negotiations proceeded, the parties could not come to an agreement on the methodology to be followed and the related costs to Nextel. Because agreement was not reached during voluntary negotiations, on October 2, 2008, the parties entered into negotiations under FCC processes supervised by the Transition Administrator (TA), an entitity assigned by the FCC, to mediate the negotiations. If the parties could not reach agreement during mediation, the next step would have been for the TA to make recommendations to the FCC regarding how to resolve the impasse, a process known as Proposed Resolution Memoranda (PRM). Thereafter, the FCC would impose their determination on the parties as to how to proceed.

Throughout the negotiations, the County's goal has been to ensure that capacity and performance are not adversely affected during the transition, and that the rebanding process would be completed with minimal operational disruption. By mid 2009, it became apparent that the parties would not be able to come to an agreement on the methodology, a situation that would have triggered FCC intervention to determine an outcome.

In order to prepare for this eventuality, on July 21, 2009, management requested and the Board approved a resolution to advertise and award a contract to acquire specialized professional services, to assist the County Attorney's Office with the FCC processes that would ensue if the parties failed to reach agreement. The professional services contract was awarded; however, because the parties reached agreement since then, these services are not presently needed.

As a decision on whether to enter into the PRM process approached, all the parties realized that there were advantages to reach agreement and avoid the PRM process, which would most likely have resulted in decisions that would not be in their best interests. Nextel was interested in quickly settling their obligations to the County under the FCC orders, and the County wanted to avoid the risks associated with potential FCC decisions that would not take into account its concerns regarding the desired reconfiguration methodology to minimize system interruptions. As a result, the parties began to discuss ways to meet their respective objectives towards reaching a potential settlement.

By the end of July 2009, an agreement in principle was reached. Nextel and the County jointly requested from the FCC that the mediated negotiations be suspended to allow for the completion of the agreements before the Board today. The FCC has agreed to the suspension of the mediation process on the condition that mediation would resume if the parties did not finalize and execute the agreements (including an agreement with Harris to implement the solution associated with the settlement), prior to January 29, 2010.

The parties have now reached final agreement as to the manner in which Nextel could satisfy its obligations, and the County could meet its goals to achieve rebanding without affecting public safety. Harris Corporation is the proprietary manufacturer of the County's existing 800 MHz radio system, and provides parts, components, maintenance and support services required to keep the system operational. This resolution covers both the settlement agreement with Nextel and a system purchase and implementation agreement with Harris.

Under the FCC Order, Nextel's obligation is simply to reband existing equipment to operate in the new frequencies. In the event that there is equipment that cannot be rebanded, then Nextel's obligation is to provide radio terminal equipment. The terminal equipment does not need to be new, but would need to meet the same material conditions as the equipment being replaced. Additionally, Nextel is not obligated to provide new infrastructure to replace the County's aging system. There are approximately 10,000 radios in the County that Nextel would have had to replace. Under this scenario it is estimated that this simple approach to rebanding would have represented no more than $35,000,000 in costs to Nextel.

Based on the agreed approach between the parties:

1. Under the settlement agreement, Nextel will provide the County with up to 24,000 radios, including portable, mobile and control station units. These units will meet the open standard radio communication protocol, known as Project 25 (P25), which the Department of Homeland Security supports as a standard to improve radio communication between first responders from diverse agencies. The radios will work on both the existing Harris proprietary infrastructure owned by the County, as well as the new infrastructure that will be deployed over the five year implementation period. These radios, which are being received at no charge to the County, have a market value that exceeds $90,000,000.

2. Harris will supply and install the matching P25 infrastructure equipment for a new radio system, over a period estimated to take 5 years, at a cost of $25,000,000. In the absence of this agreement, the County could be expected to pay approximately $75,000,000 for the same equipment and services to replace the 15 year old radio communications infrastructure.

   In addition to the P25 radio system, the County has also included options to buy a replacement microwave system to replace the existing 15 year old system, as well as an adjunct radio system (OpenSky) for MDTA. OpenSky will serve as a comprehensive single communication link for MDTA projected new CAD/AVL system.

The settlement with Nextel and the agreement with Harris present the County with a unique opportunity to meet the FCC mandate to vacate its existing frequencies, and as a result of the selected methodology, facilitate an upgrade to its legacy 800 MHz radio system to an interoperable system at substantially discounted prices. By acquiring the new system from Harris, the County will be able to maintain its existing system fully functional with all available capacity until such a time as the new system is operational and accepted by the County. As an open technology, there will be opportunities for competition in the acquisition of additional radio units after system implementation. It is therefore recommended that the attached contracts with Nextel South Corp. and Harris Corporation be approved.

Where necessary, in the interest of public safety, schedules A, B and C in the FRSA with Nextel, and Exhibit A in the RCSPC with Harris, have been redacted, pursuant to section 119.071 of the Florida Statutes.

Pertinent information regarding the Radio Communication System Purchase Contract is listed below.

CONTRACT NUMBER: BW9203-3/21

CONTRACT TITLE: Radio Communication System Purchase Contract

TERM: Initial five year term with three, two-year options-to-renew (OTRs)

CONTRACT AMOUNT: $35,000,000 for the initial five year term including maintenance and options. Should the County exercise all available options-to-renew the estimated total value of the contract is $38,600,000 based on a fixed amount of $1.2 million per OTR term.

USING AGENCY AND FUNDING SOURCES:

Department	Allocation Request	Funding Sources	Project Manager(s)
ETSD	$35,000,000	Capital Funds, Internal Service Funds	Felix Perez Martha Oliva

PREVIOUS CONTRACT AMOUNT: Not Applicable

METHOD OF AWARD: Bid Waiver

VENDOR RECOMMENDED FOR AWARD:

Vendor:	Address	Principal
Harris Corporation (Non-local Vendor)	1025 NASA Boulevard Melbourne, FL 32919	Eugene Cavallucci

PERFORMANCE DATA: There are no performance issues with the awarded firm.

COMPLIANCE DATA: There are no compliance issues with the awarded firm.

CONTRACT MEASURES: No measure – Bid Waiver

REVIEW COMMITTEE DATE: November 10, 2009; 2-03

LIVING WAGE: The Living Wage Ordinance does not apply.

USER ACCESS PROGRAM: The contract includes the User Access Program provision. The 2% program discount will be collected on all purchases.

LOCAL PREFERENCE: Not Applicable

CONTRACT MANAGER(S): Felix Perez, Enterprise Technology Services Department

ESTIMATED CONTRACT COMMENCEMENT DATE:	Upon approval by the Board and expiration of the mayoral veto period.

Assistant County Manager

MEMORANDUM
(Revised)

TO: Honorable Chairman Dennis C. Moss and Members, Board of County Commissioners

DATE: January 28, 2010

FROM: R. A. Cuevas, Jr. County Attorney

SUBJECT: Agenda Item No. 2(A)(1)

Please note any items checked.

_____ **"3-Day Rule" for committees applicable if raised**

_____ **6 weeks required between first reading and public hearing**

_____ **4 weeks notification to municipal officials required prior to public hearing**

_____ **Decreases revenues or increases expenditures without balancing budget**

_____ **Budget required**

_____ **Statement of fiscal impact required**

_____ **Ordinance creating a new board requires detailed County Manager's report for public hearing**

_____ **No committee review**

✓ **Applicable legislation requires more than a majority vote (i.e., 2/3's ✓, 3/5's ____, unanimous _____) to approve**

✓ **Current information regarding funding source, index code and available balance, and available capacity (if debt is contemplated) required**

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Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 2(A)(1)
1-28-10

RESOLUTION NO. _____

RESOLUTION WAIVING FORMAL BID PROCEDURES PURSUANT TO SECTION 5.03(D) OF THE HOME RULE CHARTER AND SECTION 2-8.1(B) OF THE CODE OF MIAMI-DADE COUNTY BY A TWO-THIRDS (2/3) VOTE OF THE BOARD MEMBERS PRESENT; AUTHORIZING THE EXECUTION OF AGREEMENTS WITH NEXTEL SOUTH CORP, AND HARRIS CORPORATION, IN AN AMOUNT NOT TO EXCEED $38,600,000, TO VACATE RADIO FREQUENCIES OPERATED BY THE COUNTY, PURSUANT TO FEDERAL COMMUNICATION COMMISSION (FCC) ORDERS, AND TO ACQUIRE A NEW RADIO SYSTEM THAT WILL OPERATE UNDER NEW FREQUENCIES; AND AUTHORIZING THE COUNTY MAYOR OR HIS DESIGNEE TO EXERCISE ANY AND ALL OTHER RIGHTS CONFERRED THEREIN

WHEREAS, this Board desires to accomplish the purposes outlined in the accompanying memorandum, a copy of which is incorporated herein by reference,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA, that this Board finds it is in the best interest of Miami-Dade County to waive formal bid procedures pursuant to Section 5.03(D) of the Home Rule Charter and Section 2-8.1(b) of the Code of Miami-Dade County by a two-thirds (2/3s) vote of the Board members present; authorizing the execution of a Frequency Reconfiguration and Settlement Agreement between Nextel South Corp (Nextel) and Miami-Dade County, providing for Nextel to acquire from Harris Corporation (Harris) and deliver at no cost to the County up to twenty four thousand terminal radio units and accessories in exchange for the parties settling certain obligations under FCC orders, as detailed in the agreement; and authorizing the execution of a Radio Communication System Purchase Contract between Harris and Miami-Dade County, to acquire a new radio system, optional adjunct systems, and

maintenance services and equipment, at an amount not to exceed $38,600,000 over the initial five year term of the contract and the three two year options-to-renew periods as further defined in the attached memorandum; and authorizing the County Mayor or his designee to execute the agreement on behalf of the County and exercise all provisions contained therein.

The foregoing resolution was offered by Commissioner , who moved its adoption. The motion was seconded by Commissioner and upon being put to a vote, the vote was as follows:

Dennis C. Moss, Chairman
Jose "Pepe" Diaz, Vice-Chairman

Bruno A. Barreiro	Audrey M. Edmonson
Carlos A. Gimenez	Sally A. Heyman
Barbara J. Jordan	Joe A. Martinez
Dorrin D. Rolle	Natacha Seijas
Katy Sorenson	Rebeca Sosa
Sen. Javier D. Souto	

The Chairperson thereupon declared the resolution duly passed and adopted this 28th day of January, 2010. This resolution shall become effective ten (10) days after the date of its adoption unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

MIAMI-DADE COUNTY, FLORIDA
BY ITS BOARD OF
COUNTY COMMISSIONERS

HARVEY RUVIN, CLERK

By:_____
Deputy Clerk

Approved by County Attorney as
to form and legal sufficiency. ON

Oren Rosenthal

800 MHz Transition Administrator

The Official Reconfiguration Manager

December 16, 2009

Mr. John Wehmann
Sprint Nextel
6260 S. Vinecrest Dr.
Salt Lake City, UT 84121

RE: FREQUENCY RECONFIGURATION AGREEMENT #DL8910428133
INCUMBENT: County of Miami-Dade, Florida
FILE:
DATE/TIMESTAMP:
AMOUNT: $0.00

Dear Mr. Wehmann:

The 800 MHz Transition Administrator, LLC ("TA") has completed its review of, and hereby grants its approval of, the attached Agreement.

The TA's approval of this agreement, and all TA approvals of agreements that are part of the 800 MHz reconfiguration program, are subject to the FCC's requirements as they may be imposed and amended from time to time, including the FCC's requirements included in any order taking action on the Incumbent waiver(s) of the June 26, 2008, 800 MHz Rebanding Program Completion Date. The TA's approval does not modify or eliminate any of the parties' obligations under the 800 MHz reconfiguration program

In addition, when available please forward a copy of the fully executed Agreement for our records. Note that any changes to the Agreement must be submitted to the TA for review and approval.

Should you have any questions in this matter, please do not hesitate to contact me at contracts@800TA.org.

Very truly yours,

Jon Strbak
800 MHz Transition Administrator, LLC

cc: William Jenkins, Sprint Nextel
Oren Rosenthal, Miami-Dade County

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FREQUENCY RECONFIGURATION AND SETTLEMENT AGREEMENT

THIS FREQUENCY RECONFIGURATION AND SETTLEMENT AGREEMENT (this "Agreement") is made as of this ____ day of _____, 2010 ("Effective Date"), by and between **Miami-Dade County,** a municipal subdivision incorporated under the laws of the State of Florida ("Incumbent"), and **Nextel South Corp.** ("Nextel"), a wholly owned indirect subsidiary of Sprint Nextel Corporation, a Kansas corporation (each is referred to in this Agreement as a "Party" and collectively as the "Parties").

RECITALS

A. On August 6, 2004, the Federal Communications Commission ("FCC") issued a report and order that modified its rules governing the 800 MHz band. The purpose of the order was to reconfigure the 800 MHz band to minimize harmful interference to public safety radio communications systems in the band ("Reconfiguration").

B. On December 22, 2004, the FCC issued a Supplemental Order and Order on Reconsideration. The August 6, 2004 and December 22, 2004 FCC orders, any binding actions issued by the Transition Administrator pursuant to its delegated authority under the orders ("Actions"), and any supplemental FCC orders in the Reconfiguration proceeding or subsequent Actions after the date of this Agreement, are collectively referred to as the "Order."

C. Pursuant to the Order, Incumbent and Nextel are licensed on frequency allocations subject to Reconfiguration.

D. Pursuant to the Order, Nextel is obligated to pay Incumbent an amount to effect a Reconfiguration of Incumbent's affected frequency allocations ("Reconfiguration Cost").

E. The Parties desire to settle the parties' mutual obligations under the Order whereby Nextel will provide equipment to the County as set forth herein, and the County will discharge Nextel of any other obligation to pay for the County's Reconfiguration Costs.

F. This Agreement is subject to obtaining all required government approval and the execution of a Radio Communication System Purchase Contract_between the Incumbent and Harris Corporation to provide all services necessary to achieve the Reconfiguration.

THEREFORE, FOR GOOD AND VALUABLE CONSIDERATION, THE RECEIPT OF WHICH IS HEREBY ACKNOWLEDGED, THE PARTIES AGREE AS FOLLOWS:

AGREEMENT

1. The recitals as set forth above are true and correct and incorporated herein by reference.

2. **Frequencies to be Reconfigured**: Incumbent is the licensee under the license(s) granted by the FCC identified in Schedule A (the "Incumbent Licenses") for the operation of certain 800 MHz frequencies at the locations identified on Schedule A (the "Incumbent Frequencies"). Nextel, including its subsidiaries or affiliates, is the licensee under license(s) granted by the FCC (the "Nextel Licenses") for the operation of Specialized Mobile Radio ("SMR") systems on the frequencies and at the locations identified in Schedule B (the "Replacement Frequencies"). Pursuant to the Order, Incumbent must relinquish the Incumbent Frequencies and relocate its system to the Replacement Frequencies.

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3. **Frequency Reconfiguration Process:**

(a) On or before the Closing Date (as defined below) (i) Nextel or Incumbent will cause the modification of the Incumbent Licenses to add the Replacement Frequencies or Nextel will cause the creation of a new FCC license for Incumbent that includes the Replacement Frequencies; (ii) Incumbent will assign the Incumbent Frequencies to Nextel or at Nextel's election will cause the deletion of the Incumbent Frequencies from the Incumbent Licenses following Reconfiguration of Incumbent's system; and (iii) Nextel will cause the modification and/or cancellation of the FCC licenses it holds for the operation of 800 MHz frequencies that are co-channels of the Replacement Frequencies, to the extent required to meet the technical short-spacing requirements of Section 90.621(b) of the FCC's Rules, 47 C.F.R. § 90.621(b) ("Section 90.621(b)"), as such rule may be amended from time to time by the FCC.

(b) The Parties agree that Nextel will make the FCC assignment filings for the Replacement Frequencies on a future date to be determined by the Parties through mutual agreement, as provided in Section 6(ii). The Incumbent reserves the right to make its own FCC filings for the Replacement Frequencies on such mutually agreed date, rather than relying on Nextel to do so, by so notifying Nextel in accordance with the Notice provision of this Agreement.

4. **Incumbent Obligations and Reconfiguration Costs:**

(a) The Statement of Work attached to Schedule C, sets forth all of the activities needed to be completed in order to reconfigure the Incumbent's systems consistent with the requirements of the Order ("SOW").

(b) Incumbent acknowledges and agrees that it is obligated under the Order to reconfigure its systems. Incumbent warrants that it will ensure that its systems are reconfigured in accordance with the SOW as it may periodically be amended by the Incumbent and the vendor.

(c) Incumbent acknowledges that it is solely responsible for the payment of all costs necessary to reconfigure its systems in accordance with the Order, in excess of and subject to Nextel's obligations included in this Agreement.

(i) Funding Commitment. Incumbent warrants that all funding being provided by the Incumbent required to accomplish the SOW has been approved by the Miami-Dade County Board of County Commissioners and will be available prior to commencement of physical retuning (the "Commencement Date"). Incumbent further warrants that it will allocate all funds necessary for the reconfiguration of the Incumbent's systems in its annual budgets to cover each year's reconfiguration costs until such time as the reconfiguration is completed.

(ii) Vendor Resources Available. Incumbent warrants that it has made reasonable inquiries to ensure itself that all Vendors involved in the reconfiguration of the Incumbent's systems have committed the necessary resources to accomplishing the SOW in a timely manner and has entered into a Radio Communication System Purchase Contract with the Harris Corporation which includes the performance of all tasks identified in the SOW. Incumbent further warrants that Incumbent's selection of the Harris Corporation to perform the tasks identified in the SOW and Incumbent's award of the Radio Communication System Contract to the Harris Corporation complied with all applicable law, including, without limitation, all applicable state and local procurement laws, regulations and rules.

(iii) Incumbent will certify that following the reconfiguration of its systems in accordance with the SOW, Incumbent's resulting facilities shall be deemed comparable as the term "comparable" is defined in the FCC's rules and the Order. Incumbent shall execute such closing documentation as shall be

required by either the TA or Nextel to certify the comparability of Incumbent's facilities following the reconfiguration on its systems.

(d) The parties acknowledge that the SOW includes a schedule for relocating to the Replacement Frequencies and decommissioning the Incumbent Frequencies that extends beyond the Reconfiguration deadlines included in the Order. Within 15 days of the Effective Date, Incumbent shall file with the FCC the necessary request for waiver or extension of those deadlines. In addition, within 15 days of any changes to the SOW that extend the schedule for relocating to the Replacement Frequencies or decommissioning the Incumbent Frequencies, the Incumbent shall file with the FCC an updated request for wavier or extension. Furthermore, Incumbent agrees to comply with the FCC's orders and decisions issued regarding the waiver or extension of those deadlines.

(e) The Incumbent shall provide to the Transition Administrator copies of all filings and notices made pursuant to this Section. The email address for the copies is Waivers@800ta.org.

5. **Nextel Provided Equipment and Reconfiguration Costs:**

(a) The equipment set forth on Schedule D, sets forth all of the equipment to be provided to Incumbent in accordance with Nextel's obligations under the Orders ("Equipment"). Such Equipment shall consist of up to twenty-four thousand (24,000) terminal units (radios) and associated accessories purchased from the Harris Corporation ("Harris"). The Equipment shall be in new condition and shall be covered by any standard warranties offered by Harris on such equipment, or any such other warranties agreed to by Incumbent and Harris.

(b) The Parties agree that the Equipment identified in Schedule D may be amended by Incumbent for a period of 14 days following the Effective Date provided that such amendment may not cause the terminal units provided by Nextel to exceed twenty-four thousand (24,000) units

(c) Nextel will execute a purchase order with Harris for all Equipment set forth on Schedule D within 45 days from the Effective Date for delivery to Nextel within eighteen (18) months from the date of purchase. After Nextel purchases the Equipment set forth in Schedule D from Harris, Incumbent may direct Harris to substitute alternate terminal unit models and associated accessories for those models and associated accessories purchased by Nextel provided that such Equipment has not already been delivered to Nextel and the substitution does not alter the cost of the Equipment or the number of terminal units purchased.

(d) Upon receipt of the Equipment by Nextel, or a portion thereof, Nextel shall make periodic deliveries of the Equipment to the Incumbent upon a mutually agreed schedule to allow Incumbent adequate time to program and deploy the Equipment. Nextel shall bear all costs associated with delivering Equipment to Incumbent. Title to the Equipment or any portion thereof shall pass to Incumbent free and clear of liens and any other encumbrances upon acceptance of delivery, and Nextel shall execute such documentation as Incumbent may reasonably request to transfer title to Incumbent free and clear of all liens.

(e) Incumbent shall, within a reasonable period of time after receipt of the Equipment or a portion thereof, deliver to Nextel a number of terminal units (radios) ("Nextel Replaced Equipment") equal to the number of terminal units delivered to the County. The Nextel Replaced Equipment shall be either from Incumbent's inventory or of the inventory of a government agency using the Incumbent's system as of the Effective Date, and shall each bear a unique identifier. Title to the Nextel Replaced Equipment) shall pass to Nextel upon delivery to Nextel free and clear of liens and any other encumbrances. Nextel agrees that the Nextel Replaced Equipment shall not be reused and shall be destroyed after the Closing Date (as

defined below) in a manner determined by Nextel and approved by Incumbent. Nextel shall bear all costs associated with delivering Nextel Replaced Equipment to Nextel and destroying such equipment.

(f) If Incumbent fails to return any item of the Nextel Replaced Equipment to Nextel, Incumbent must return to Nextel those items of the Equipment that would have replaced the Nextel Replaced Equipment not returned in new condition within a reasonable period of time. If Incumbent fails to return any item of the Nextel Replaced Equipment to Nextel under this Section then Incumbent must pay Nextel the actual cost of the purchase of such Equipment from Harris within thirty (30) days of receipt of notice from Nextel that such a payment is due. Prior to the Closing Date, the parties shall prepare a statement reconciling the total number of units of Equipment with the total number of units of Nextel Replaced Equipment. In addition, prior to the Closing Date, the parties shall prepare an "Actual Cost Reconciliation Statement" confirming that Incumbent, either directly or for its benefit, did not receive any payments or reimbursement from Nextel other than the Equipment.

(g) Prior to the Closing Date (as defined below), Nextel will pay on behalf of itself and Incumbent, both Parties' applicable sales and transfer taxes, if any, and all FCC fees in connection with the preparation and filing of the necessary FCC applications for the assignment(s) described in Section 2 of this Agreement.

(h) Nextel agrees to pay all other reimbursable costs under the Planning Funding Agreement dated August 20, 2007, between Nextel and Incumbent as it may be amended in accordance with the policies and rules of the Transition Administrator.

6. **Retuning Cooperation** The Parties acknowledge that the number of frequencies and locations covered by this Agreement will require the Parties to cooperate closely in performing their respective reconfiguration activities. The Parties agree that: (i) as of the Effective Date, the Incumbent may begin the reconfiguration of its subscriber units, in accordance with the appropriate sections of Schedule C; and (ii) the Parties will agree on a schedule to make the FCC filings, clear the Replacement Frequencies and decommission the Incumbent Frequencies (the "Schedule"). Depending on the timing of the adoption of this Schedule, it may require an Amendment to this Agreement, but in any event the Parties agree to adopt the Schedule no later than sixty (60) days from the Effective Date of this Agreement.

7. **Representations and Warranties:** Each Party represents and warrants to the other as follows:

(i) it is duly organized, validly existing and in good standing under the laws of the state of its incorporation;

(ii) this Agreement has been duly authorized and approved by all required organizational action of the Party;

(iii) neither the execution and delivery of this Agreement nor the consummation of the transactions contemplated by this Agreement will conflict with, or result in any material violation or default under, any term of its articles of incorporation, by-laws or other organizational documents or any agreement, mortgage, indenture, license, permit, lease, encumbrance or other instrument, judgment, decree, order, law or regulation by which it is bound;

(iv) it is the lawful and exclusive FCC licensee of its respective license(s) described in this Agreement, such licenses are valid and in good standing with the FCC, and it has the authority to request the FCC to assign, modify or cancel such licenses;

(v) there is no pending or threatened action or claim that would have the possible effect of enjoining or preventing the consummation of this Agreement or awarding a third party damages on account of this Agreement; and

(vi) to the best of its knowledge, all information provided to the other Party concerning the transactions contemplated by this Agreement is true and complete.

All representations and warranties made in this Agreement shall survive the Closing Date (defined below) for two (2) years.

8. **Covenants:** From the Effective Date until the Closing Date (defined below), each Party will promptly notify the other Party of any pending or threatened action by the FCC or any other governmental entity or third party to suspend, revoke, terminate or challenge any license described in this Agreement or to investigate the construction, operation or loading of any system authorized under such licenses. From the Effective Date until the Closing Date, Incumbent will not enter into any agreement resulting in, or otherwise cause, the encumbrance of any license for the Incumbent Frequencies, and Nextel will not enter into any agreement resulting in, or otherwise cause, the encumbrance of any of the Replacement Frequencies.

9. **Closing:** The closing of the transactions contemplated by this Agreement will take place after (i) FCC approval of the assignment of the Incumbent Frequencies to Nextel and/or deletion of the Incumbent Frequencies from the Incumbent Licenses, (ii) FCC approval of the modification to add the Replacement Frequencies to the Incumbent Licenses or the creation of a new license for Incumbent that includes the Replacement Frequencies, (iii) notification by Incumbent to Nextel that the Incumbent Licenses are clear of all users, (iv) FCC approval of the modification and/or cancellation of the FCC licenses Nextel holds for the operation of 800 MHz frequencies that are co-channels of the Replacement Frequencies, to the extent required to meet the technical short-spacing requirements of Section 90.621(b) of the FCC's Rules, 47 C.F.R. § 90.621(b), as such rule may be amended from time to time by the FCC, and (v) the satisfaction of all other conditions specified in this Agreement (the "Closing Date").

10. **Closing Conditions:** Performance of each Party's Closing obligations is subject to satisfaction of the following conditions (except to the extent expressly waived in writing by the other Party):

(a) the continued truth and accuracy of the other Party's representations and warranties set forth in this Agreement;

(b) all of the covenants of the other Party described in this Agreement are performed in all material respects;

(c) execution and delivery by the other Party of Closing documents as well as any other Closing instruments and documents either Party or its counsel may reasonably request. Incumbent will execute and deliver to Nextel a closing certification required by the Transition Administrator ("Completion Certification"); and

(d) The Parties will cooperate in good faith and exercise their reasonable best efforts to finalize and execute these instruments and documents on or prior to the Closing Date in order to effect the Reconfiguration contemplated.

11. **Review Rights:** In order to enable the Transition Administrator to comply with its audit obligations under the Order, Incumbent agrees to maintain records and other supporting evidence related to the costs that Incumbent has expended in connection with the Reconfiguration contemplated by this

Agreement and that Nextel has paid or will pay to Incumbent pursuant to this Agreement. Incumbent agrees to maintain such records and make them reasonably available to the Transition Administrator for review or reproduction until eighteen (18) months after the date of Incumbent's executed Completion Certification required by this Agreement or for a longer period if Incumbent, for its own purposes, retains such records for a longer period of time. As used in this provision, "records" includes books, documents, accounting procedures and practices and other data regardless of type and regardless of whether such items are in written form, in the form of computer data or in any other form.

12. **Excluded Assets; No Assumption of Liabilities:** Nothing in this Agreement should be construed as a transfer or assignment from either Party to the other Party of any assets (including FCC licenses) except as expressly set forth in this Agreement. Other than as expressly provided in this Agreement, neither Party is obligated to assign and transfer to the other any asset, tangible or intangible, nor is either Party entitled to assume any asset, tangible or intangible. Neither Party is assuming, nor is either Party responsible for, any liabilities or obligations of the other Party arising out of or in connection with the other Party's licenses (or related systems and facilities) that are the subject of this Agreement.

13. **Confidentiality**: Any proprietary, non-public information regarding the Incumbent Frequencies, Replacement Frequencies, Nextel's business and Incumbent's business must be kept confidential by the Parties and their employees, shareholders, agents, attorneys and accountants (collectively, "Agents"), which confidentiality will survive the Closing or termination of this Agreement for a period of two (2) years. The Parties may make disclosures: (i) as required by law, (ii) to the Transition Administrator, (iii) to a manufacturer of Replacement Equipment to allow for the provisioning of that equipment to Incumbent (but only to the extent such disclosure specifically relates to that manufacturers equipment as identified on Schedule D), and (iv) to a Vendor (but only to the extent such disclosure specifically relates to that Vendor's work and costs under this Agreement (as identified on Schedule C) as required to perform obligations under this Agreement, provided, however, that each Party will cause all of its Agents to honor the provisions of this Section. Nextel, Incumbent and their respective Agents may make disclosures regarding the terms of this Agreement to other public safety licensees and their Agents. Each party involved in such disclosures shall cause all of its Agents to confine the disclosure of the terms of this Agreement to only public safety licensees and will advise the party to whom the disclosure was made, to limit further disclosure to only public safety licensees in accordance with the FCC Order, WT Docket No. 02-55, adopted January 8, 2007. Notwithstanding the foregoing, any compliance with, or good-faith attempt to comply with, Florida's Public Records Laws, Fla. Stat. 119, et. seq., shall not be a breach of this provision or this Agreement.

14. **Cooperation**: The Parties will cooperate with each other and the Transition Administrator with respect to the Reconfiguration work contemplated by this Agreement. Without limiting the foregoing obligations, the Parties agree to cooperate in the preparation of any applications required to be filed with the FCC, and Incumbent agrees to provide reasonable access to its facilities so that the Transition Administrator may comply with any audit obligations and so any Reconfiguration work contemplated by this Agreement may be performed in accordance with Schedule C and performance schedule. If a Party is subject to a denial of FCC benefits for delinquent non-tax debts owed to the FCC that would prevent or delay the timely processing of any FCC applications, such Party shall cure such delinquency in an expeditious manner and at its sole expense.

15. **Indemnification:** From and after the Closing Date, each Party (the "Indemnifying Party") will indemnify and defend the other Party, its officers, directors, employees and agents (collectively, the "Indemnified Party"), from and against all demands, claims, actions, losses, damages, liabilities, costs and expenses, including, without limitation, reasonable attorneys' fees and expenses (collectively, "Costs"), asserted against, imposed upon or incurred by the Indemnified Party arising from or related to: (i) any breach of any covenant, agreement, representation or warranty of the Indemnifying Party contained in, or

made pursuant to, this Agreement; or (ii) any and all liabilities (including successor liabilities) or obligations relating to periods prior to the Closing Date resulting from the Indemnifying Party's operation of the system operated pursuant to the Incumbent Licenses or the Nextel Licenses, as applicable, or the ownership or use of those licenses or from the Indemnifying Party's employment, or termination of employment, of its employees. The obligations under this Section survive the Closing for a period of three (3) years. Notwithstanding the foregoing, the Incumbent shall have no obligation to indemnify Nextel in excess of the limits set forth in Fla. Stat. Section 768.29 and does not waive its sovereign immunity in excess of the limited waiver provided for in Florida Law.

16. **Disputes:** The Parties agree that any dispute related to the Replacement Frequencies, Nextel's obligation to pay any cost of the Reconfiguration of Incumbent's system contemplated by this Agreement, or the comparability of Incumbent's reconfigured system to Incumbent's existing system prior to Reconfiguration, which is not resolved by mutual agreement, shall be resolved in accordance with the dispute resolution provisions of the Order, as it may be amended from time to time.

17. **No Gratuities**: No gift, gratuity, credit, thing of value or compensation of any kind shall be offered or provided by Incumbent, directly or indirectly, to any officer, employee or official of Nextel for the purpose of improperly obtaining or rewarding favorable treatment under this Agreement.

18. **Liens**: If any liens or security interests attach to any of Incumbent's facilities in favor of any vendor or service provider that is performing any Reconfiguration work contemplated by this Agreement as a result of Nextel's breach of any obligation to make direct payment (not in dispute) to such vendor or services provider, Nextel upon receipt of Notice from Incumbent will cooperate to remove any Liens.

19. **Vendor Performance Issues**: Incumbent will select and contract directly with any vendor or service provider performing work required to reconfigure the Incumbent's existing facilities to operate on the Replacement Frequencies. Neither the Transition Administrator nor Nextel will be responsible for, or assume the risk of any failure of that Vendor to perform its obligations under any contract entered into between Incumbent and such Vendor in connection with the Reconfiguration contemplated by this Agreement.

20. **Termination**: This Agreement may be terminated and the transactions contemplated by this Agreement abandoned: (i) by mutual consent of the Parties provided in writing; (ii) for cause by either Party upon material breach of the other Party, following a thirty (30) day period for cure by the breaching Party following written notice of the breach or (iii) by Nextel in the event of any Adverse Decision by any governmental entity of competent jurisdiction affecting the Order. For purposes of this Agreement, an "Adverse Decision" means an order, decree, opinion, report or any other form of decision by a governmental entity of competent jurisdiction that results, in whole or part, in a stay, remand, or reversal of the Order. In the event of termination, the Parties shall take all necessary action (including preparing and filing FCC documents) to return the *status quo ante* on the date of this Agreement. In the event of termination, Nextel shall pay all costs associated with the return to the *status quo ante* except if such termination was due to an uncured material breach by Incumbent. Notwithstanding the foregoing, in the event of a termination only due to material breach by Nextel or under (iii) above, Incumbent shall retain all Equipment delivered up to the date of termination and Nextel shall retain all Nextel Replaced Equipment delivered up to the date of termination.

21. **Notices**: All notices and other communications under this Agreement must be in writing and will be deemed given (i) the same day if delivered personally or sent by facsimile; (ii) the next business day if sent by overnight delivery via a reliable express delivery service; or (iii) after five (5) business days if sent by certified mail, return receipt requested, postage prepaid. All notices are to be delivered to the Parties at the following addresses:

If to Incumbent, to: Miami-Dade County Enterprise Technology Services Department Radio Communications Services Division 6010 SW 87th Avenue Miami, FL 33173 Attn: Felix Perez Phone: (305) 596-8098 E-mail Address: fap@miamidade.gov	If to Nextel, to: Nextel South Corp. c/o Sprint Nextel Corporation 2001 Edmund Halley Drive Reston, VA 20191 Attn: Heather P. Brown, Esq. Phone: (703) 433-4000 Fax: (703) 433-4483
With a copy that shall not constitute Notice: Miami-Dade County Enterprise Technology Department Information Technology Business Office 5680 SW 87th Avenue Miami, FL 33173 Attn: Contracts Manager AND TO: Miami-Dade County Department of Procure Management 111 NW 1st Street, Suite 1300 Miami, FL 33128 Attn: Director	With a copy that shall not constitute Notice: Sprint Nextel Corporation 6575 The Corners Parkway Norcross, GA 30092 Attn: William Jenkins, VP Spectrum Resources Phone: (770) 326-7484 Fax: (678) 405-8252

22. **Assignment**: This Agreement is binding upon and inures to the benefit of the Parties and their respective successors and permitted assigns. Either Party may assign this Agreement to any direct or indirect subsidiary or affiliate of the Party, upon delivery of written notice to the other Party.

23. **Amendments**: This Agreement, including without limitation the scope of work contemplated hereby and the Estimated Cost thereof to be paid by Nextel, may be amended or modified only by a written instrument signed by authorized representatives of both Parties, provided, however, no amendment or modification to this Agreement shall become effective until approved by the Transition Administrator.

24. **Benefits**: This Agreement is for the benefit of the Parties and their successors and permitted assigns, and nothing in this Agreement gives or should be construed to give any legal or equitable rights under this Agreement to any person or entity, other than (i) the successors and assigns of the Parties, and (ii) the Transition Administrator as specifically provided for in this Agreement.

25. **Miscellaneous**: If any provision(s) of this Agreement is held in whole or part, to be invalid, void or unlawful by any administrative agency or court of competent jurisdiction, then such provision(s) will be deemed severable from the remainder of this Agreement, will in no way affect, impair or invalidate any other provision contained in the Agreement and the Parties will use their commercially reasonable efforts to amend this Agreement to make the unlawful provision compliant with applicable law so as to preserve the rights and obligations of the Parties. No action taken pursuant to this Agreement should be deemed to constitute a waiver of compliance with any representation, warranty, covenant or

agreement contained in this Agreement and will not operate or be construed as a waiver of any subsequent breach, whether of a similar or dissimilar nature. This Agreement, together with the Schedules, constitutes the entire understanding and agreement between the Parties concerning the subject matter of this Agreement, and supersedes all prior oral or written agreements or understandings. This Agreement is governed by the laws of the State of Florida without regard to conflicts of law principles thereof. This Agreement may be executed in one or more counterparts, including by facsimile, which will be effective as original agreements of the Parties executing the counterpart.

In consideration of the mutual consideration set forth herein, this Agreement is effective as a legally binding agreement between the Parties upon execution by the Parties.

INCUMBENT:	NEXTEL: **Nextel South Corp.**
By:_____	By: William M Jenkins
Name:	Name:
Title:	Title: WILLIAM M JENKINS AUTHORIZED SIGNATORY

SCHEDULE A

Incumbent Frequencies

Incumbent's Name: Miami-Dade County

The Incumbent Frequencies listed on this Schedule A, represent the transmit (base station) frequencies on the Incumbent Licenses. Although not specifically listed, all related mobile frequencies and/or station classes listed on the Incumbent Licenses are herein incorporated by reference.

Incumbent Assigns to Nextel:

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
WPGD547	866.0375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.0375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.0375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.0375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.0625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.0625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.0625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.0625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.1125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.1125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.1125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.1125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.1375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.1375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.1375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.1375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.2875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	866.2875	Miami-Dade	[redacted]	01/27/2015	[redacted]	[redacted]

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
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WPGD547	866.3125	Miami-Dade County		01/27/2015		
WPGD547	866.3125	Miami-Dade County		01/27/2015		
WPGD547	866.3125	Miami-Dade County		01/27/2015		
WPGD547	866.3625	Miami-Dade County		01/27/2015		
WPGD547	866.3625	Miami-Dade County		01/27/2015		
WPGD547	866.3625	Miami-Dade County		01/27/2015		
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WPGD547	866.6375	Miami-Dade County		01/27/2015		
WPGD547	866.6375	Miami-Dade County		01/27/2015		
WPGD547	866.6375	Miami-Dade		01/27/2015		

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
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WPGD547	866.7625	Miami-Dade County		01/27/2015		
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WPGD547	866.8625	Miami-Dade County		01/27/2015		
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WPGD547	867.0625	Miami-Dade County		01/27/2015		
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WPGD547	867.1125	Miami-Dade County		01/27/2015		
WPGD547	867.1125	Miami-Dade County		01/27/2015		
WPGD547	867.1125	Miami-Dade		01/27/2015		

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
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WPGD547	867.1375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
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WPGD547	867.2375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	867.2875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	867.2875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	867.2875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	867.2875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	867.3125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	867.3625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	867.3625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	867.3625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
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WPGD547	867.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
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WPGD547	867.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
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Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
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WPGD547	867.5625	Miami-Dade County		01/27/2015		
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WPGD547	868.1125	Miami-Dade County		01/27/2015		
WPGD547	868.1125	Miami-Dade County		01/27/2015		
WPGD547	868.1125	Miami-Dade		01/27/2015		

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
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WPGD547	868.2625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.2625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.2625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.2625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.3625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.3625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
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WPGD547	868.3875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.3875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.3875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.3875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.4125	Miami-Dade	[redacted]	01/27/2015	[redacted]	[redacted]

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
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WPGD547	868.5125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.5125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.5125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.6125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.6125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.6125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.6125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.6375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.6375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.6375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.6375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.6625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.6875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.7375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.8625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.8625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.8625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.8625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.8875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.8875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.8875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD547	868.8875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD548	866.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	866.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	866.0125	Miami-Dade	[redacted]	05/20/2012	[redacted]	[redacted]

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County	[redacted]		[redacted]	[redacted]
WPGD548	866.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	866.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	866.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	866.5125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	866.5125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	866.5125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	866.5125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	866.5125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	866.5125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	867.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	867.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	867.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	867.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	867.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	867.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	867.5125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	867.5125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	867.5125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	867.5125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	867.5125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	867.5125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	868.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	868.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	868.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	868.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD548	868.0125	Miami-Dade	[redacted]	05/20/2012	[redacted]	[redacted]

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County	[redacted]		[redacted]	[redacted]
WPGD548	868.0125	Miami-Dade County	[redacted]	05/20/2012	[redacted]	[redacted]
WPGD549	866.0375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.0375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.0375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.0375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.0375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.0625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.0625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.0625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.0625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.0625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.1125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.1125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.1125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.1125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.1125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.1375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.1375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.1375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.1375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.1375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.2875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.2875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.2875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.2875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.2875	Miami-Dade	[redacted]	01/27/2015	[redacted]	[redacted]

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County				
WPGD549	866.3125	Miami-Dade County		01/27/2015		
WPGD549	866.3125	Miami-Dade County		01/27/2015		
WPGD549	866.3125	Miami-Dade County		01/27/2015		
WPGD549	866.3125	Miami-Dade County		01/27/2015		
WPGD549	866.3125	Miami-Dade County		01/27/2015		
WPGD549	866.3625	Miami-Dade County		01/27/2015		
WPGD549	866.3625	Miami-Dade County		01/27/2015		
WPGD549	866.3625	Miami-Dade County		01/27/2015		
WPGD549	866.3625	Miami-Dade County		01/27/2015		
WPGD549	866.3625	Miami-Dade County		01/27/2015		
WPGD549	866.3875	Miami-Dade County		01/27/2015		
WPGD549	866.3875	Miami-Dade County		01/27/2015		
WPGD549	866.3875	Miami-Dade County		01/27/2015		
WPGD549	866.3875	Miami-Dade County		01/27/2015		
WPGD549	866.3875	Miami-Dade County		01/27/2015		
WPGD549	866.5375	Miami-Dade County		01/27/2015		
WPGD549	866.5625	Miami-Dade County		01/27/2015		
WPGD549	866.5625	Miami-Dade County		01/27/2015		
WPGD549	866.5625	Miami-Dade County		01/27/2015		
WPGD549	866.5625	Miami-Dade County		01/27/2015		
WPGD549	866.5625	Miami-Dade County		01/27/2015		
WPGD549	866.6125	Miami-Dade County		01/27/2015		
WPGD549	866.6125	Miami-Dade County		01/27/2015		
WPGD549	866.6125	Miami-Dade County		01/27/2015		
WPGD549	866.6125	Miami-Dade County		01/27/2015		
WPGD549	866.6125	Miami-Dade		01/27/2015		

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County	[redacted]		[redacted]	[redacted]
WPGD549	866.6375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.6375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.6375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.6375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.6375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.7375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.7625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.7625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.7625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.7625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.7625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	866.8875	Miami-Dade	[redacted]	01/27/2015	[redacted]	[redacted]

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County				
WPGD549	867.0625	Miami-Dade County		01/27/2015		
WPGD549	867.0625	Miami-Dade County		01/27/2015		
WPGD549	867.0625	Miami-Dade County		01/27/2015		
WPGD549	867.0625	Miami-Dade County		01/27/2015		
WPGD549	867.0625	Miami-Dade County		01/27/2015		
WPGD549	867.1125	Miami-Dade County		01/27/2015		
WPGD549	867.1125	Miami-Dade County		01/27/2015		
WPGD549	867.1125	Miami-Dade County		01/27/2015		
WPGD549	867.1125	Miami-Dade County		01/27/2015		
WPGD549	867.1125	Miami-Dade County		01/27/2015		
WPGD549	867.1375	Miami-Dade County		01/27/2015		
WPGD549	867.1375	Miami-Dade County		01/27/2015		
WPGD549	867.1375	Miami-Dade County		01/27/2015		
WPGD549	867.1375	Miami-Dade County		01/27/2015		
WPGD549	867.1375	Miami-Dade County		01/27/2015		
WPGD549	867.2375	Miami-Dade County		01/27/2015		
WPGD549	867.2875	Miami-Dade County		01/27/2015		
WPGD549	867.2875	Miami-Dade County		01/27/2015		
WPGD549	867.2875	Miami-Dade County		01/27/2015		
WPGD549	867.2875	Miami-Dade County		01/27/2015		
WPGD549	867.2875	Miami-Dade County		01/27/2015		
WPGD549	867.3125	Miami-Dade County		01/27/2015		
WPGD549	867.3625	Miami-Dade County		01/27/2015		
WPGD549	867.3625	Miami-Dade County		01/27/2015		
WPGD549	867.3625	Miami-Dade County		01/27/2015		
WPGD549	867.3625	Miami-Dade		01/27/2015		

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County	[redacted]		[redacted]	[redacted]
WPGD549	867.3625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.3875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.3875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.3875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.3875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.3875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.5375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.5375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.5375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.5375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.5375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.5625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.5625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.5625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.5625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.5625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.6625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.6625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.6625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.6625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	867.6875	Miami-Dade	[redacted]	01/27/2015	[redacted]	[redacted]

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County				
WPGD549	867.7375	Miami-Dade County		01/27/2015		
WPGD549	867.7625	Miami-Dade County		01/27/2015		
WPGD549	867.7875	Miami-Dade County		01/27/2015		
WPGD549	867.7875	Miami-Dade County		01/27/2015		
WPGD549	867.7875	Miami-Dade County		01/27/2015		
WPGD549	867.7875	Miami-Dade County		01/27/2015		
WPGD549	867.8125	Miami-Dade County		01/27/2015		
WPGD549	867.8125	Miami-Dade County		01/27/2015		
WPGD549	867.8125	Miami-Dade County		01/27/2015		
WPGD549	867.8125	Miami-Dade County		01/27/2015		
WPGD549	867.9125	Miami-Dade County		01/27/2015		
WPGD549	867.9125	Miami-Dade County		01/27/2015		
WPGD549	867.9125	Miami-Dade County		01/27/2015		
WPGD549	867.9125	Miami-Dade County		01/27/2015		
WPGD549	868.1125	Miami-Dade County		01/27/2015		
WPGD549	868.1125	Miami-Dade County		01/27/2015		
WPGD549	868.1125	Miami-Dade County		01/27/2015		
WPGD549	868.1125	Miami-Dade County		01/27/2015		
WPGD549	868.1375	Miami-Dade County		01/27/2015		
WPGD549	868.1375	Miami-Dade County		01/27/2015		
WPGD549	868.1375	Miami-Dade County		01/27/2015		
WPGD549	868.1375	Miami-Dade County		01/27/2015		
WPGD549	868.1625	Miami-Dade County		01/27/2015		
WPGD549	868.1625	Miami-Dade County		01/27/2015		
WPGD549	868.1625	Miami-Dade County		01/27/2015		
WPGD549	868.1625	Miami-Dade		01/27/2015		

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County	[redacted]		[redacted]	[redacted]
WPGD549	868.2375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.2625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.2625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.2625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.2625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.3625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.3625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.3625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.3625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.3875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.3875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.3875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.3875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.4125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.5125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.5125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.5125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.5125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.6125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.6125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.6125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.6125	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.6375	Miami-Dade	[redacted]	01/27/2015	[redacted]	[redacted]

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County	[redacted]		[redacted]	[redacted]
WPGD549	868.6375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.6375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.6375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.6625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.6875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.7375	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.8625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.8625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.8625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.8625	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.8875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.8875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.8875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPGD549	868.8875	Miami-Dade County	[redacted]	01/27/2015	[redacted]	[redacted]
WPKI745	866.0125	Miami-Dade County	[redacted]	03/05/2012	[redacted]	[redacted]
WPKI745	866.0125	Miami-Dade County	[redacted]	03/05/2012	[redacted]	[redacted]
WPKI745	866.5125	Miami-Dade County	[redacted]	03/05/2012	[redacted]	[redacted]
WPKI745	867.0125	Miami-Dade County	[redacted]	03/05/2012	[redacted]	[redacted]
WPKI745	867.0125	Miami-Dade County	[redacted]	03/05/2012	[redacted]	[redacted]
WPKI745	867.5125	Miami-Dade County	[redacted]	03/05/2012	[redacted]	[redacted]
WPKI745	868.0125	Miami-Dade County	[redacted]	03/05/2012	[redacted]	[redacted]
WQIR731	867.5125	Miami-Dade County	[redacted]	10/17/2009	[redacted]	[redacted]
WPMP618	866.4125	Miami-Dade County	[redacted]	10/27/2013	[redacted]	[redacted]
WPMP618	866.9125	Miami-Dade County	[redacted]	10/27/2013	[redacted]	[redacted]
WPMP618	867.2625	Miami-Dade County	[redacted]	10/27/2013	[redacted]	[redacted]
WPMP618	868.9125	Miami-Dade	[redacted]	10/27/2013	[redacted]	[redacted]

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County				
WPGD547	821.0375	Miami-Dade County		1/27/2015		
WPGD547	821.0375	Miami-Dade County		1/27/2015		
WPGD547	821.0625	Miami-Dade County		1/27/2015		
WPGD547	821.0625	Miami-Dade County		1/27/2015		
WPGD547	821.1125	Miami-Dade County		1/27/2015		
WPGD547	821.1125	Miami-Dade County		1/27/2015		
WPGD547	821.1375	Miami-Dade County		1/27/2015		
WPGD547	821.1375	Miami-Dade County		1/27/2015		
WPGD547	821.2875	Miami-Dade County		1/27/2015		
WPGD547	821.2875	Miami-Dade County		1/27/2015		
WPGD547	821.3125	Miami-Dade County		1/27/2015		
WPGD547	821.3125	Miami-Dade County		1/27/2015		
WPGD547	821.3625	Miami-Dade County		1/27/2015		
WPGD547	821.3625	Miami-Dade County		1/27/2015		
WPGD547	821.3875	Miami-Dade County		1/27/2015		
WPGD547	821.3875	Miami-Dade County		1/27/2015		
WPGD547	821.5375	Miami-Dade County		1/27/2015		
WPGD547	821.5375	Miami-Dade County		1/27/2015		
WPGD547	821.5625	Miami-Dade County		1/27/2015		
WPGD547	821.5625	Miami-Dade County		1/27/2015		
WPGD547	821.6125	Miami-Dade County		1/27/2015		
WPGD547	821.6125	Miami-Dade County		1/27/2015		
WPGD547	821.6375	Miami-Dade County		1/27/2015		
WPGD547	821.6375	Miami-Dade County		1/27/2015		
WPGD547	821.7375	Miami-Dade County		1/27/2015		
WPGD547	821.7375	Miami-Dade		1/27/2015		

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County	[redacted]		[redacted]	[redacted]
WPGD547	821.7625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	821.7625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	821.8125	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	821.8125	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	821.8625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	821.8625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	821.8875	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	821.8875	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.0625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.0625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.1125	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.1125	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.1375	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.1375	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.2375	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.2375	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.2875	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.2875	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.3125	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.3125	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.3625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.3625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.3875	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.3875	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.4125	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.4125	Miami-Dade	[redacted]	1/27/2015	[redacted]	[redacted]

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County	[redacted]		[redacted]	[redacted]
WPGD547	822.5375	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.5375	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.5625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.5625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.6625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.6625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.6875	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.6875	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.7375	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.7375	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.7625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.7625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.7875	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.7875	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.8125	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.8125	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.9125	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	822.9125	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	823.1125	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	823.1125	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	823.1375	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	823.1375	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	823.1625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	823.1625	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	823.2375	Miami-Dade County	[redacted]	1/27/2015	[redacted]	[redacted]
WPGD547	823.2375	Miami-Dade	[redacted]	1/27/2015	[redacted]	[redacted]

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County				
WPGD547	823.2625	Miami-Dade County		1/27/2015		
WPGD547	823.2625	Miami-Dade County		1/27/2015		
WPGD547	823.3625	Miami-Dade County		1/27/2015		
WPGD547	823.3625	Miami-Dade County		1/27/2015		
WPGD547	823.3875	Miami-Dade County		1/27/2015		
WPGD547	823.3875	Miami-Dade County		1/27/2015		
WPGD547	823.4125	Miami-Dade County		1/27/2015		
WPGD547	823.4125	Miami-Dade County		1/27/2015		
WPGD547	823.5125	Miami-Dade County		1/27/2015		
WPGD547	823.5125	Miami-Dade County		1/27/2015		
WPGD547	823.6125	Miami-Dade County		1/27/2015		
WPGD547	823.6125	Miami-Dade County		1/27/2015		
WPGD547	823.6375	Miami-Dade County		1/27/2015		
WPGD547	823.6375	Miami-Dade County		1/27/2015		
WPGD547	823.6625	Miami-Dade County		1/27/2015		
WPGD547	823.6625	Miami-Dade County		1/27/2015		
WPGD547	823.6875	Miami-Dade County		1/27/2015		
WPGD547	823.6875	Miami-Dade County		1/27/2015		
WPGD547	823.7375	Miami-Dade County		1/27/2015		
WPGD547	823.7375	Miami-Dade County		1/27/2015		
WPGD547	823.8625	Miami-Dade County		1/27/2015		
WPGD547	823.8625	Miami-Dade County		1/27/2015		
WPGD547	823.8875	Miami-Dade County		1/27/2015		
WPGD547	823.8875	Miami-Dade County		1/27/2015		
WPGD547	866.0625	Miami-Dade County		1/27/2015		
WPGD547	866.1375	Miami-Dade		1/27/2015		

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County				
WPGD547	866.3125	Miami-Dade County		1/27/2015		
WPGD547	866.3875	Miami-Dade County		1/27/2015		
WPGD547	866.6375	Miami-Dade County		1/27/2015		
WQKZ227	866.5375	Miami-Dade County		5/1/2010		
WQKZ227	867.6625	Miami-Dade County		5/1/2010		
WQKZ227	867.7375	Miami-Dade County		5/1/2010		
WQKZ227	867.7625	Miami-Dade County		5/1/2010		
WQKZ227	867.7875	Miami-Dade County		5/1/2010		
WQKZ227	867.8125	Miami-Dade County		5/1/2010		
WQKZ227	867.9125	Miami-Dade County		5/1/2010		
WQKZ227	868.1125	Miami-Dade County		5/1/2010		
WQKZ227	868.1375	Miami-Dade County		5/1/2010		
WQKZ227	868.1625	Miami-Dade County		5/1/2010		
WQKZ227	868.2625	Miami-Dade County		5/1/2010		
WQKZ227	868.3625	Miami-Dade County		5/1/2010		
WQKZ227	868.3875	Miami-Dade County		5/1/2010		
WQKZ227	868.4125	Miami-Dade County		5/1/2010		
WQKZ227	868.5125	Miami-Dade County		5/1/2010		
WQKZ227	868.6125	Miami-Dade County		5/1/2010		
WQKZ227	868.6375	Miami-Dade County		5/1/2010		
WQKZ227	868.6625	Miami-Dade County		5/1/2010		
WQKZ227	868.6875	Miami-Dade County		5/1/2010		
WQKZ227	868.8625	Miami-Dade County		5/1/2010		
WQKZ227	868.8875	Miami-Dade County		5/1/2010		
WPKI745	821.0125	Miami-Dade County		3/5/2012		
WPKI745	821.0125	Miami-Dade		3/5/2012		

Call Sign	Frequency	Licensee	Location	Expire Date	Lat (N)	Long (W)
		County	[redacted]		[redacted]	[redacted]
WPKI745	821.5125	Miami-Dade County	[redacted]	3/5/2012	[redacted]	[redacted]
WPKI745	821.5125	Miami-Dade County	[redacted]	3/5/2012	[redacted]	[redacted]
WPKI745	822.0125	Miami-Dade County	[redacted]	3/5/2012	[redacted]	[redacted]
WPKI745	822.0125	Miami-Dade County	[redacted]	3/5/2012	[redacted]	[redacted]
WPKI745	822.5125	Miami-Dade County	[redacted]	3/5/2012	[redacted]	[redacted]
WPKI745	822.5125	Miami-Dade County	[redacted]	3/5/2012	[redacted]	[redacted]
WPKI745	823.0125	Miami-Dade County	[redacted]	3/5/2012	[redacted]	[redacted]
WPKI745	823.0125	Miami-Dade County	[redacted]	3/5/2012	[redacted]	[redacted]

SCHEDULE B

Replacement Frequencies

Incumbent's Name: Miami-Dade County

The related mobile frequencies and/or station classes for the Replacement Frequencies listed in this Schedule B will be assigned from Nextel to Incumbent based on the Incumbent Licenses listed in Schedule A.

Nextel Assigns to Incumbent:

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
WPGD547	851.0375	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	851.0375	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	851.0375	[redacted]	[redacted]	285	8	172	Miami-Dade County	[redacted]
WPGD547	851.0375	[redacted]	[redacted]	534	8	210	Miami-Dade County	[redacted]
WPGD547	851.0625	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	851.0625	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	851.0625	[redacted]	[redacted]	272	8	172	Miami-Dade County	[redacted]
WPGD547	851.0625	[redacted]	[redacted]	575	8	191	Miami-Dade County	[redacted]
WPGD547	851.1125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	851.1125	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	851.1125	[redacted]	[redacted]	285	8	172	Miami-Dade County	[redacted]
WPGD547	851.1125	[redacted]	[redacted]	337	8	210	Miami-Dade County	[redacted]
WPGD547	851.1375	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	851.1375	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	851.1375	[redacted]	[redacted]	272	8	172	Miami-Dade County	[redacted]
WPGD547	851.1375	[redacted]	[redacted]	363	8	191	Miami-Dade County	[redacted]
WPGD547	851.2875	[redacted]	[redacted]	30			Miami-Dade County	[redacted]

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
WPGD547	851.2875	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	851.2875	[redacted]	[redacted]	285	8	172	Miami-Dade County	[redacted]
WPGD547	851.2875	[redacted]	[redacted]	534	8	210	Miami-Dade County	[redacted]
WPGD547	851.3125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	851.3125	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	851.3125	[redacted]	[redacted]	272	8	172	Miami-Dade County	[redacted]
WPGD547	851.3125	[redacted]	[redacted]	575	8	191	Miami-Dade County	[redacted]
WPGD547	851.3625	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	851.3625	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	851.3625	[redacted]	[redacted]	285	8	172	Miami-Dade County	[redacted]
WPGD547	851.3625	[redacted]	[redacted]	337	8	210	Miami-Dade County	[redacted]
WPGD547	851.3875	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	851.3875	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	851.3875	[redacted]	[redacted]	272	8	172	Miami-Dade County	[redacted]
WPGD547	851.3875	[redacted]	[redacted]	363	8	191	Miami-Dade County	[redacted]
WPGD547	851.5375	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	851.5625	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	851.5625	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	851.5625	[redacted]	[redacted]	272	8	172	Miami-Dade County	[redacted]
WPGD547	851.5625	[redacted]	[redacted]	575	8	191	Miami-Dade County	[redacted]
WPGD547	851.6125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	851.6125	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	851.6125	[redacted]	[redacted]	285	8	172	Miami-Dade County	[redacted]
WPGD547	851.6125	[redacted]	[redacted]	337	8	210	Miami-Dade County	[redacted]
WPGD547	851.6375	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	851.6375	[redacted]	[redacted]	68	10	115	Miami-Dade	[redacted]

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
							County	
WPGD547	851.6375			272	8	172	Miami-Dade County	
WPGD547	851.6375			363	8	191	Miami-Dade County	
WPGD547	851.7375			30			Miami-Dade County	
WPGD547	851.7625			30			Miami-Dade County	
WPGD547	851.7625			68	10	115	Miami-Dade County	
WPGD547	851.7625			285	8	172	Miami-Dade County	
WPGD547	851.7625			534	8	210	Miami-Dade County	
WPGD547	851.8125			30			Miami-Dade County	
WPGD547	851.8125			68	10	115	Miami-Dade County	
WPGD547	851.8125			272	8	172	Miami-Dade County	
WPGD547	851.8125			575	8	191	Miami-Dade County	
WPGD547	851.8625			30			Miami-Dade County	
WPGD547	851.8625			68	10	115	Miami-Dade County	
WPGD547	851.8625			285	8	172	Miami-Dade County	
WPGD547	851.8625			337	8	210	Miami-Dade County	
WPGD547	851.8750			30			Miami-Dade County	
WPGD547	851.8875			68	10	115	Miami-Dade County	
WPGD547	851.8875			272	8	172	Miami-Dade County	
WPGD547	851.8875			363	8	191	Miami-Dade County	
WPGD547	852.0625			30			Miami-Dade County	
WPGD547	852.0625			68	10	115	Miami-Dade County	
WPGD547	852.0625			285	8	172	Miami-Dade County	
WPGD547	852.0625			534	8	210	Miami-Dade County	
WPGD547	852.1125			30			Miami-Dade County	
WPGD547	852.1125			68	10	115	Miami-Dade County	

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
WPGD547	852.1125			272	8	172	Miami-Dade County	
WPGD547	852.1125			575	8	191	Miami-Dade County	
WPGD547	852.1375			30			Miami-Dade County	
WPGD547	852.1375			68	10	115	Miami-Dade County	
WPGD547	852.1375			285	8	172	Miami-Dade County	
WPGD547	852.1375			337	8	210	Miami-Dade County	
WPGD547	852.2375			30			Miami-Dade County	
WPGD547	852.2875			30			Miami-Dade County	
WPGD547	852.2875			68	10	115	Miami-Dade County	
WPGD547	852.2875			272	8	172	Miami-Dade County	
WPGD547	852.2875			363	8	191	Miami-Dade County	
WPGD547	852.3125			30			Miami-Dade County	
WPGD547	852.3625			30			Miami-Dade County	
WPGD547	852.3625			68	10	115	Miami-Dade County	
WPGD547	852.3625			272	8	172	Miami-Dade County	
WPGD547	852.3625			575	8	191	Miami-Dade County	
WPGD547	852.3875			30			Miami-Dade County	
WPGD547	852.3875			68	10	115	Miami-Dade County	
WPGD547	852.3875			285	8	172	Miami-Dade County	
WPGD547	852.3875			337	8	210	Miami-Dade County	
WPGD547	852.4125			30			Miami-Dade County	
WPGD547	852.4125			68	10	115	Miami-Dade County	
WPGD547	852.4125			285	8	172	Miami-Dade County	
WPGD547	852.4125			534	8	210	Miami-Dade County	
WPGD547	852.5375			30			Miami-Dade County	
WPGD547	852.5375			68	10	115	Miami-Dade	

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
		[redacted]					County	[redacted]
WPGD547	852.5375	[redacted]		272	8	172	Miami-Dade County	[redacted]
WPGD547	852.5375	[redacted]		363	8	191	Miami-Dade County	[redacted]
WPGD547	852.5625	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	852.5625	[redacted]		68	10	115	Miami-Dade County	[redacted]
WPGD547	852.5625	[redacted]		272	8	172	Miami-Dade County	[redacted]
WPGD547	852.5625	[redacted]		575	8	191	Miami-Dade County	[redacted]
WPGD547	852.6625	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	852.6625	[redacted]		68	10	115	Miami-Dade County	[redacted]
WPGD547	852.6625	[redacted]		285	8	172	Miami-Dade County	[redacted]
WPGD547	852.6625	[redacted]		337	8	210	Miami-Dade County	[redacted]
WPGD547	852.6875	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	852.7375	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	852.7625	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	852.7875	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	852.7875	[redacted]		68	10	115	Miami-Dade County	[redacted]
WPGD547	852.7875	[redacted]		285	8	172	Miami-Dade County	[redacted]
WPGD547	852.7875	[redacted]		534	8	210	Miami-Dade County	[redacted]
WPGD547	852.8125	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	852.8125	[redacted]		68	10	115	Miami-Dade County	[redacted]
WPGD547	852.8125	[redacted]		272	8	172	Miami-Dade County	[redacted]
WPGD547	852.8125	[redacted]		575	8	191	Miami-Dade County	[redacted]
WPGD547	852.9125	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	852.9125	[redacted]		68	10	115	Miami-Dade County	[redacted]
WPGD547	852.9125	[redacted]		285	8	172	Miami-Dade County	[redacted]
WPGD547	852.9125	[redacted]		337	8	210	Miami-Dade County	[redacted]

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
WPGD547	853.1125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	853.1125	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	853.1125	[redacted]	[redacted]	272	8	172	Miami-Dade County	[redacted]
WPGD547	853.1125	[redacted]	[redacted]	363	8	191	Miami-Dade County	[redacted]
WPGD547	853.1375	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	853.1375	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	853.1375	[redacted]	[redacted]	285	8	172	Miami-Dade County	[redacted]
WPGD547	853.1375	[redacted]	[redacted]	534	8	210	Miami-Dade County	[redacted]
WPGD547	853.1625	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	853.1625	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	853.1625	[redacted]	[redacted]	272	8	172	Miami-Dade County	[redacted]
WPGD547	853.1625	[redacted]	[redacted]	575	8	191	Miami-Dade County	[redacted]
WPGD547	853.2375	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	853.2625	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	853.2625	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	853.2625	[redacted]	[redacted]	285	8	172	Miami-Dade County	[redacted]
WPGD547	853.2625	[redacted]	[redacted]	337	8	210	Miami-Dade County	[redacted]
WPGD547	853.3625	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	853.3625	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	853.3625	[redacted]	[redacted]	272	8	172	Miami-Dade County	[redacted]
WPGD547	853.3625	[redacted]	[redacted]	363	8	191	Miami-Dade County	[redacted]
WPGD547	853.3875	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	853.3875	[redacted]	[redacted]	68	10	115	Miami-Dade County	[redacted]
WPGD547	853.3875	[redacted]	[redacted]	285	8	172	Miami-Dade County	[redacted]
WPGD547	853.3875	[redacted]	[redacted]	534	8	210	Miami-Dade County	[redacted]
WPGD547	853.4125	[redacted]	[redacted]	30			Miami-Dade	[redacted]

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
							County	
WPGD547	853.4125			68	10	115	Miami-Dade County	
WPGD547	853.4125			272	8	172	Miami-Dade County	
WPGD547	853.4125			575	8	191	Miami-Dade County	
WPGD547	853.5125			30			Miami-Dade County	
WPGD547	853.5125			68	10	115	Miami-Dade County	
WPGD547	853.5125			285	8	172	Miami-Dade County	
WPGD547	853.5125			337	8	210	Miami-Dade County	
WPGD547	853.6125			30			Miami-Dade County	
WPGD547	853.6125			68	10	115	Miami-Dade County	
WPGD547	853.6125			272	8	172	Miami-Dade County	
WPGD547	853.6125			363	8	191	Miami-Dade County	
WPGD547	853.6375			30			Miami-Dade County	
WPGD547	853.6375			68	10	115	Miami-Dade County	
WPGD547	853.6375			285	8	172	Miami-Dade County	
WPGD547	853.6375			534	8	210	Miami-Dade County	
WPGD547	853.6625			30			Miami-Dade County	
WPGD547	853.6875			30			Miami-Dade County	
WPGD547	853.7375			30			Miami-Dade County	
WPGD547	853.8625			30			Miami-Dade County	
WPGD547	853.8625			68	10	115	Miami-Dade County	
WPGD547	853.8625			272	8	172	Miami-Dade County	
WPGD547	853.8625			363	8	191	Miami-Dade County	
WPGD547	853.8875			30			Miami-Dade County	
WPGD547	853.8875			68	10	115	Miami-Dade County	
WPGD547	853.8875			285	8	172	Miami-Dade County	

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
WPGD547	853.8875	[redacted]	[redacted]	534	8	210	Miami-Dade County	[redacted]
WPGD548	851.0125	[redacted]	[redacted]	212	10	341	Miami-Dade County	[redacted]
WPGD548	851.0125	[redacted]	[redacted]	261	10	233	Miami-Dade County	[redacted]
WPGD548	851.0125	[redacted]	[redacted]	250	10	289	Miami-Dade County	[redacted]
WPGD548	851.0125	[redacted]	[redacted]	732	10	213	Miami-Dade County	[redacted]
WPGD548	851.0125	[redacted]	[redacted]	369	10	541	Miami-Dade County	[redacted]
WPGD548	851.0125	[redacted]	[redacted]	250	7	259	Miami-Dade County	[redacted]
WPGD548	851.5125	[redacted]	[redacted]	212	10	341	Miami-Dade County	[redacted]
WPGD548	851.5125	[redacted]	[redacted]	261	10	233	Miami-Dade County	[redacted]
WPGD548	851.5125	[redacted]	[redacted]	250	10	289	Miami-Dade County	[redacted]
WPGD548	851.5125	[redacted]	[redacted]	732	10	213	Miami-Dade County	[redacted]
WPGD548	851.5125	[redacted]	[redacted]	369	10	541	Miami-Dade County	[redacted]
WPGD548	851.5125	[redacted]	[redacted]	250	7	259	Miami-Dade County	[redacted]
WPGD548	852.0125	[redacted]	[redacted]	212	10	341	Miami-Dade County	[redacted]
WPGD548	852.0125	[redacted]	[redacted]	261	10	233	Miami-Dade County	[redacted]
WPGD548	852.0125	[redacted]	[redacted]	250	10	289	Miami-Dade County	[redacted]
WPGD548	852.0125	[redacted]	[redacted]	732	10	213	Miami-Dade County	[redacted]
WPGD548	852.0125	[redacted]	[redacted]	369	10	541	Miami-Dade County	[redacted]
WPGD548	852.0125	[redacted]	[redacted]	250	7	259	Miami-Dade County	[redacted]
WPGD548	852.5125	[redacted]	[redacted]	212	10	341	Miami-Dade County	[redacted]
WPGD548	852.5125	[redacted]	[redacted]	261	10	233	Miami-Dade County	[redacted]
WPGD548	852.5125	[redacted]	[redacted]	250	10	289	Miami-Dade County	[redacted]
WPGD548	852.5125	[redacted]	[redacted]	732	10	213	Miami-Dade County	[redacted]
WPGD548	852.5125	[redacted]	[redacted]	369	10	541	Miami-Dade County	[redacted]
WPGD548	852.5125	[redacted]	[redacted]	250	7	259	Miami-Dade County	[redacted]
WPGD548	853.0125	[redacted]	[redacted]	212	10	341	Miami-Dade	[redacted]

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
		[redacted]					County	[redacted]
WPGD548	853.0125	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD548	853.0125	[redacted]		250	10	289	Miami-Dade County	[redacted]
WPGD548	853.0125	[redacted]		732	10	213	Miami-Dade County	[redacted]
WPGD548	853.0125	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD548	853.0125	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	851.0375	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	851.0375	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	851.0375	[redacted]		250	10	289	Miami-Dade County	[redacted]
WPGD549	851.0375	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	851.0375	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	851.0625	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	851.0625	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	851.0625	[redacted]		250	10	289	Miami-Dade County	[redacted]
WPGD549	851.0625	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	851.0625	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	851.1125	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	851.1125	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	851.1125	[redacted]		250	10	289	Miami-Dade County	[redacted]
WPGD549	851.1125	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	851.1125	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	851.1375	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	851.1375	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	851.1375	[redacted]		250	10	289	Miami-Dade County	[redacted]
WPGD549	851.1375	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	851.1375	[redacted]		250	7	259	Miami-Dade County	[redacted]

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
WPGD549	851.2875			212	10	341	Miami-Dade County	
WPGD549	851.2875			261	10	233	Miami-Dade County	
WPGD549	851.2875			250	10	289	Miami-Dade County	
WPGD549	851.2875			369	10	541	Miami-Dade County	
WPGD549	851.2875			250	7	259	Miami-Dade County	
WPGD549	851.3125			212	10	341	Miami-Dade County	
WPGD549	851.3125			261	10	233	Miami-Dade County	
WPGD549	851.3125			250	10	289	Miami-Dade County	
WPGD549	851.3125			369	10	541	Miami-Dade County	
WPGD549	851.3125			250	7	259	Miami-Dade County	
WPGD549	851.3625			212	10	341	Miami-Dade County	
WPGD549	851.3625			261	10	233	Miami-Dade County	
WPGD549	851.3625			250	10	289	Miami-Dade County	
WPGD549	851.3625			369	10	541	Miami-Dade County	
WPGD549	851.3625			250	7	259	Miami-Dade County	
WPGD549	851.3875			212	10	341	Miami-Dade County	
WPGD549	851.3875			261	10	233	Miami-Dade County	
WPGD549	851.3875			250	10	289	Miami-Dade County	
WPGD549	851.3875			369	10	541	Miami-Dade County	
WPGD549	851.3875			250	7	259	Miami-Dade County	
WPGD549	851.5375			55	10	541	Miami-Dade County	
WPGD549	851.5625			212	10	341	Miami-Dade County	
WPGD549	851.5625			261	10	233	Miami-Dade County	
WPGD549	851.5625			250	10	289	Miami-Dade County	
WPGD549	851.5625			369	10	541	Miami-Dade County	
WPGD549	851.5625			250	7	259	Miami-Dade	

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
		[redacted]					County	[redacted]
WPGD549	851.6125	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	851.6125	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	851.6125	[redacted]		250	10	289	Miami-Dade County	[redacted]
WPGD549	851.6125	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	851.6125	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	851.6375	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	851.6375	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	851.6375	[redacted]		250	10	289	Miami-Dade County	[redacted]
WPGD549	851.6375	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	851.6375	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	851.7375	[redacted]		499	9	214	Miami-Dade County	[redacted]
WPGD549	851.7625	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	851.7625	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	851.7625	[redacted]		250	10	289	Miami-Dade County	[redacted]
WPGD549	851.7625	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	851.7625	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	851.8125	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	851.8125	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	851.8125	[redacted]		250	10	289	Miami-Dade County	[redacted]
WPGD549	851.8125	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	851.8125	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	851.8625	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	851.8625	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	851.8625	[redacted]		250	10	289	Miami-Dade County	[redacted]
WPGD549	851.8625	[redacted]		369	10	541	Miami-Dade County	[redacted]

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
WPGD549	851.8625			250	7	259	Miami-Dade County	
WPGD549	851.8875			212	10	341	Miami-Dade County	
WPGD549	851.8875			261	10	233	Miami-Dade County	
WPGD549	851.8875			250	10	289	Miami-Dade County	
WPGD549	851.8875			369	10	541	Miami-Dade County	
WPGD549	851.8875			250	7	259	Miami-Dade County	
WPGD549	852.0625			212	10	341	Miami-Dade County	
WPGD549	852.0625			261	10	233	Miami-Dade County	
WPGD549	852.0625			250	10	289	Miami-Dade County	
WPGD549	852.0625			369	10	541	Miami-Dade County	
WPGD549	852.0625			250	7	259	Miami-Dade County	
WPGD549	852.1125			212	10	341	Miami-Dade County	
WPGD549	852.1125			261	10	233	Miami-Dade County	
WPGD549	852.1125			250	10	289	Miami-Dade County	
WPGD549	852.1125			369	10	541	Miami-Dade County	
WPGD549	852.1125			250	7	259	Miami-Dade County	
WPGD549	852.1375			212	10	341	Miami-Dade County	
WPGD549	852.1375			261	10	233	Miami-Dade County	
WPGD549	852.1375			250	10	289	Miami-Dade County	
WPGD549	852.1375			369	10	541	Miami-Dade County	
WPGD549	852.1375			250	7	259	Miami-Dade County	
WPGD549	852.2375			499	9	214	Miami-Dade County	
WPGD549	852.2875			212	10	341	Miami-Dade County	
WPGD549	852.2875			261	10	233	Miami-Dade County	
WPGD549	852.2875			250	10	289	Miami-Dade County	
WPGD549	852.2875			369	10	541	Miami-Dade	

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
							County	
WPGD549	852.2875			250	7	259	Miami-Dade County	
WPGD549	852.3125			55	10	541	Miami-Dade County	
WPGD549	852.3625			212	10	341	Miami-Dade County	
WPGD549	852.3625			261	10	233	Miami-Dade County	
WPGD549	852.3625			250	10	289	Miami-Dade County	
WPGD549	852.3625			369	10	541	Miami-Dade County	
WPGD549	852.3625			250	7	259	Miami-Dade County	
WPGD549	852.3875			212	10	341	Miami-Dade County	
WPGD549	852.3875			261	10	233	Miami-Dade County	
WPGD549	852.3875			250	10	289	Miami-Dade County	
WPGD549	852.3875			369	10	541	Miami-Dade County	
WPGD549	852.3875			250	7	259	Miami-Dade County	
WPGD549	852.4125			212	10	341	Miami-Dade County	
WPGD549	852.4125			261	10	233	Miami-Dade County	
WPGD549	852.4125			250	10	289	Miami-Dade County	
WPGD549	852.4125			369	10	541	Miami-Dade County	
WPGD549	852.4125			250	7	259	Miami-Dade County	
WPGD549	852.5375			212	10	341	Miami-Dade County	
WPGD549	852.5375			261	10	233	Miami-Dade County	
WPGD549	852.5375			250	10	289	Miami-Dade County	
WPGD549	852.5375			369	10	541	Miami-Dade County	
WPGD549	852.5375			250	7	259	Miami-Dade County	
WPGD549	852.5625			212	10	341	Miami-Dade County	
WPGD549	852.5625			261	10	233	Miami-Dade County	
WPGD549	852.5625			250	10	289	Miami-Dade County	

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
WPGD549	852.5625			369	10	541	Miami-Dade County	
WPGD549	852.5625			250	7	259	Miami-Dade County	
WPGD549	852.6625			212	10	341	Miami-Dade County	
WPGD549	852.6625			261	10	233	Miami-Dade County	
WPGD549	852.6625			369	10	541	Miami-Dade County	
WPGD549	852.6625			250	7	259	Miami-Dade County	
WPGD549	852.6875			499	9	214	Miami-Dade County	
WPGD549	852.7375			55	10	541	Miami-Dade County	
WPGD549	852.7625			209	10	233	Miami-Dade County	
WPGD549	852.7875			212	10	341	Miami-Dade County	
WPGD549	852.7875			261	10	233	Miami-Dade County	
WPGD549	852.7875			55	10	541	Miami-Dade County	
WPGD549	852.7875			250	7	259	Miami-Dade County	
WPGD549	852.8125			212	10	341	Miami-Dade County	
WPGD549	852.8125			261	10	233	Miami-Dade County	
WPGD549	852.8125			369	10	541	Miami-Dade County	
WPGD549	852.8125			250	7	259	Miami-Dade County	
WPGD549	852.9125			212	10	341	Miami-Dade County	
WPGD549	852.9125			261	10	233	Miami-Dade County	
WPGD549	852.9125			369	10	541	Miami-Dade County	
WPGD549	852.9125			250	7	259	Miami-Dade County	
WPGD549	853.1125			212	10	341	Miami-Dade County	
WPGD549	853.1125			261	10	233	Miami-Dade County	
WPGD549	853.1125			369	10	541	Miami-Dade County	
WPGD549	853.1125			250	7	259	Miami-Dade County	
WPGD549	853.1375			212	10	341	Miami-Dade	

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
		[redacted]					County	[redacted]
WPGD549	853.1375	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	853.1375	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	853.1375	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	853.1625	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	853.1625	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	853.1625	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	853.1625	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	853.2375	[redacted]		499	9	214	Miami-Dade County	[redacted]
WPGD549	853.2625	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	853.2625	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	853.2625	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	853.2625	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	853.3625	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	853.3625	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	853.3625	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	853.3625	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	853.3875	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	853.3875	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	853.3875	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	853.3875	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	853.4125	[redacted]		212	10	341	Miami-Dade County	[redacted]
WPGD549	853.4125	[redacted]		261	10	233	Miami-Dade County	[redacted]
WPGD549	853.4125	[redacted]		369	10	541	Miami-Dade County	[redacted]
WPGD549	853.4125	[redacted]		250	7	259	Miami-Dade County	[redacted]
WPGD549	853.5125	[redacted]		212	10	341	Miami-Dade County	[redacted]

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
WPGD549	853.5125	[redacted]	[redacted]	261	10	233	Miami-Dade County	[redacted]
WPGD549	853.5125	[redacted]	[redacted]	369	10	541	Miami-Dade County	[redacted]
WPGD549	853.5125	[redacted]	[redacted]	250	7	259	Miami-Dade County	[redacted]
WPGD549	853.6125	[redacted]	[redacted]	212	10	341	Miami-Dade County	[redacted]
WPGD549	853.6125	[redacted]	[redacted]	261	10	233	Miami-Dade County	[redacted]
WPGD549	853.6125	[redacted]	[redacted]	369	10	541	Miami-Dade County	[redacted]
WPGD549	853.6125	[redacted]	[redacted]	250	7	259	Miami-Dade County	[redacted]
WPGD549	853.6375	[redacted]	[redacted]	212	10	341	Miami-Dade County	[redacted]
WPGD549	853.6375	[redacted]	[redacted]	261	10	233	Miami-Dade County	[redacted]
WPGD549	853.6375	[redacted]	[redacted]	369	10	541	Miami-Dade County	[redacted]
WPGD549	853.6375	[redacted]	[redacted]	250	7	259	Miami-Dade County	[redacted]
WPGD549	853.6625	[redacted]	[redacted]	209	10	233	Miami-Dade County	[redacted]
WPGD549	853.6875	[redacted]	[redacted]	257	7	259	Miami-Dade County	[redacted]
WPGD549	853.7375	[redacted]	[redacted]	499	9	214	Miami-Dade County	[redacted]
WPGD549	853.8625	[redacted]	[redacted]	212	10	341	Miami-Dade County	[redacted]
WPGD549	853.8625	[redacted]	[redacted]	261	10	233	Miami-Dade County	[redacted]
WPGD549	853.8625	[redacted]	[redacted]	369	10	541	Miami-Dade County	[redacted]
WPGD549	853.8625	[redacted]	[redacted]	250	7	259	Miami-Dade County	[redacted]
WPGD549	853.8875	[redacted]	[redacted]	212	10	341	Miami-Dade County	[redacted]
WPGD549	853.8875	[redacted]	[redacted]	261	10	233	Miami-Dade County	[redacted]
WPGD549	853.8875	[redacted]	[redacted]	369	10	541	Miami-Dade County	[redacted]
WPGD549	853.8875	[redacted]	[redacted]	250	7	259	Miami-Dade County	[redacted]
WPKI745	851.0125	[redacted]	[redacted]	84	10	115	Miami-Dade County	[redacted]
WPKI745	851.0125	[redacted]	[redacted]	465	8	210	Miami-Dade County	[redacted]
WPKI745	851.5125	[redacted]	[redacted]	84	10	115	Miami-Dade County	[redacted]
WPKI745	852.0125	[redacted]	[redacted]	84	10	115	Miami-Dade	[redacted]

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
		[redacted]					County	[redacted]
WPKI745	852.0125	[redacted]		465	8	210	Miami-Dade County	[redacted]
WPKI745	852.5125	[redacted]		84	10	115	Miami-Dade County	[redacted]
WPKI745	853.0125	[redacted]		84	10	115	Miami-Dade County	[redacted]
WQIR731	852.5125	[redacted]		65	3	135	Miami-Dade County	[redacted]
WPMP618	851.4125	[redacted]		3			Miami-Dade County	[redacted]
WPMP618	851.9125	[redacted]		3			Miami-Dade County	[redacted]
WPMP618	852.2625	[redacted]		3			Miami-Dade County	[redacted]
WPMP618	853.9125	[redacted]		3			Miami-Dade County	[redacted]
WPGD547	806.0375	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	806.0375	[redacted]		60			Miami-Dade County	[redacted]
WPGD547	806.0625	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	806.0625	[redacted]		60			Miami-Dade County	[redacted]
WPGD547	806.1125	[redacted]		60			Miami-Dade County	[redacted]
WPGD547	806.1125	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	806.1375	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	806.1375	[redacted]		60			Miami-Dade County	[redacted]
WPGD547	806.2875	[redacted]		60			Miami-Dade County	[redacted]
WPGD547	806.2875	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	806.3125	[redacted]		60			Miami-Dade County	[redacted]
WPGD547	806.3125	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	806.3625	[redacted]		60			Miami-Dade County	[redacted]
WPGD547	806.3625	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	806.3875	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	806.3875	[redacted]		60			Miami-Dade County	[redacted]
WPGD547	806.5375	[redacted]		60			Miami-Dade County	[redacted]

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
WPGD547	806.5375	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	806.5625			30			Miami-Dade County	
WPGD547	806.5625			60			Miami-Dade County	
WPGD547	806.6125			30			Miami-Dade County	
WPGD547	806.6125			60			Miami-Dade County	
WPGD547	806.6375			30			Miami-Dade County	
WPGD547	806.6375			60			Miami-Dade County	
WPGD547	806.7375			60			Miami-Dade County	
WPGD547	806.7375			30			Miami-Dade County	
WPGD547	806.7625			30			Miami-Dade County	
WPGD547	806.7625			60			Miami-Dade County	
WPGD547	806.8125			30			Miami-Dade County	
WPGD547	806.8125			60			Miami-Dade County	
WPGD547	806.8625			30			Miami-Dade County	
WPGD547	806.8625			60			Miami-Dade County	
WPGD547	806.8875			60			Miami-Dade County	
WPGD547	806.8875			30			Miami-Dade County	
WPGD547	807.0625			60			Miami-Dade County	
WPGD547	807.0625			30			Miami-Dade County	
WPGD547	807.1125			60			Miami-Dade County	
WPGD547	807.1125			30			Miami-Dade County	
WPGD547	807.1375			30			Miami-Dade County	
WPGD547	807.1375			60			Miami-Dade County	
WPGD547	807.2375			30			Miami-Dade County	
WPGD547	807.2375			60			Miami-Dade County	
WPGD547	807.2875			30			Miami-Dade	

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
							County	
WPGD547	807.2875			60			Miami-Dade County	
WPGD547	807.3125			30			Miami-Dade County	
WPGD547	807.3125			60			Miami-Dade County	
WPGD547	807.3625			60			Miami-Dade County	
WPGD547	807.3625			30			Miami-Dade County	
WPGD547	807.3875			60			Miami-Dade County	
WPGD547	807.3875			30			Miami-Dade County	
WPGD547	807.4125			60			Miami-Dade County	
WPGD547	807.4125			30			Miami-Dade County	
WPGD547	807.5375			30			Miami-Dade County	
WPGD547	807.5375			60			Miami-Dade County	
WPGD547	807.5625			60			Miami-Dade County	
WPGD547	807.5625			30			Miami-Dade County	
WPGD547	807.6625			30			Miami-Dade County	
WPGD547	807.6625			60			Miami-Dade County	
WPGD547	807.6875			30			Miami-Dade County	
WPGD547	807.6875			60			Miami-Dade County	
WPGD547	807.7375			60			Miami-Dade County	
WPGD547	807.7375			30			Miami-Dade County	
WPGD547	807.7625			30			Miami-Dade County	
WPGD547	807.7625			60			Miami-Dade County	
WPGD547	807.7875			30			Miami-Dade County	
WPGD547	807.7875			60			Miami-Dade County	
WPGD547	807.8125			30			Miami-Dade County	
WPGD547	807.8125			60			Miami-Dade County	

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
WPGD547	807.9125	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPGD547	807.9125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	808.1125	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPGD547	808.1125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	808.1375	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPGD547	808.1375	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	808.1625	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	808.1625	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPGD547	808.2375	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	808.2375	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPGD547	808.2625	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPGD547	808.2625	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	808.3625	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	808.3625	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPGD547	808.3875	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	808.3875	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPGD547	808.4125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	808.4125	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPGD547	808.5125	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPGD547	808.5125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	808.6125	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPGD547	808.6125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	808.6375	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPGD547	808.6375	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	808.6625	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPGD547	808.6625	[redacted]	[redacted]	60			Miami-Dade	[redacted]

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
		[redacted]					County	[redacted]
WPGD547	808.6875	[redacted]		60			Miami-Dade County	[redacted]
WPGD547	808.6875	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	808.7375	[redacted]		60			Miami-Dade County	[redacted]
WPGD547	808.7375	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	808.8625	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	808.8625	[redacted]		60			Miami-Dade County	[redacted]
WPGD547	808.8875	[redacted]		60			Miami-Dade County	[redacted]
WPGD547	808.8875	[redacted]		30			Miami-Dade County	[redacted]
WPGD547	851.0625	[redacted]		186			Miami-Dade County	[redacted]
WPGD547	851.1375	[redacted]		186			Miami-Dade County	[redacted]
WPGD547	851.3125	[redacted]		186			Miami-Dade County	[redacted]
WPGD547	851.3875	[redacted]		186			Miami-Dade County	[redacted]
WPGD547	851.6375	[redacted]		186			Miami-Dade County	[redacted]
WQKZ227	851.5375	[redacted]		250	10	292	Miami-Dade County	[redacted]
WQKZ227	852.6625	[redacted]		250	10	292	Miami-Dade County	[redacted]
WQKZ227	852.7375	[redacted]		250	10	292	Miami-Dade County	[redacted]
WQKZ227	852.7625	[redacted]		250	10	292	Miami-Dade County	[redacted]
WQKZ227	852.7875	[redacted]		250	10	292	Miami-Dade County	[redacted]
WQKZ227	852.8125	[redacted]		250	10	292	Miami-Dade County	[redacted]
WQKZ227	852.9125	[redacted]		250	10	292	Miami-Dade County	[redacted]
WQKZ227	853.1125	[redacted]		250	10	292	Miami-Dade County	[redacted]
WQKZ227	853.1375	[redacted]		250	10	292	Miami-Dade County	[redacted]
WQKZ227	853.1625	[redacted]		250	10	292	Miami-Dade County	[redacted]
WQKZ227	853.2625	[redacted]		250	10	292	Miami-Dade County	[redacted]
WQKZ227	853.3625	[redacted]		250	10	292	Miami-Dade County	[redacted]

Call Sign	Replacement Frequency	Lat (N)	Long (W)	ERP (W)	Gnd Elev (ft)	Ant. Hgt (ft)	New Licensee	Location
WQKZ227	853.3875	[redacted]	[redacted]	250	10	292	Miami-Dade County	[redacted]
WQKZ227	853.4125	[redacted]	[redacted]	250	10	292	Miami-Dade County	[redacted]
WQKZ227	853.5125	[redacted]	[redacted]	250	10	292	Miami-Dade County	[redacted]
WQKZ227	853.6125	[redacted]	[redacted]	250	10	292	Miami-Dade County	[redacted]
WQKZ227	853.6375	[redacted]	[redacted]	250	10	292	Miami-Dade County	[redacted]
WQKZ227	853.6625	[redacted]	[redacted]	250	10	292	Miami-Dade County	[redacted]
WQKZ227	853.6875	[redacted]	[redacted]	250	10	292	Miami-Dade County	[redacted]
WQKZ227	853.8625	[redacted]	[redacted]	250	10	292	Miami-Dade County	[redacted]
WQKZ227	853.8875	[redacted]	[redacted]	250	10	292	Miami-Dade County	[redacted]
WPKI745	806.0125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPKI745	806.0125	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPKI745	806.5125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPKI745	806.5125	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPKI745	807.0125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPKI745	807.0125	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPKI745	807.5125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPKI745	807.5125	[redacted]	[redacted]	60			Miami-Dade County	[redacted]
WPKI745	808.0125	[redacted]	[redacted]	30			Miami-Dade County	[redacted]
WPKI745	808.0125	[redacted]	[redacted]	60			Miami-Dade County	[redacted]

SCHEDULE C

800 MHZ RECONFIGURATION

COST ESTIMATE - CERTIFIED REQUEST

Request for Reconfiguration Funding

Incumbent's Name: Miami-Dade County

Pursuant to the Order, Incumbent is required to reconfigure its existing facilities and requests Nextel to fund the estimated reconfiguration costs included below:

Incumbent and Vendor Payment Terms:

1. System Description: See Attached Statement of Work

2. Reconfiguration Milestones: See Attached Statement of Work

3. Implementation Plan: See Attached Statement of Work

4. Cost Estimate: The County shall be solely responsible for the payment of the costs associated with the Statement of Work, subject to Nextel's obligations to provide the Schedule D Equipment.

Certification

Pursuant to the Order, Incumbent hereby certifies to the Transition Administrator appointed pursuant to the Order that the funds and equipment requested in this agreement are the minimum necessary to provide Incumbent reconfigured facilities comparable to those presently in use in a manner that is reasonable, prudent and timely. Incumbent further certifies, to the best of Incumbent's knowledge, that any vendor costs identified on the Schedule C are comparable to costs previously charged by each such vendor to Incumbent.

Signature: _____
Print Name: _____
Title: _____
Phone Number: _____
E-mail: _____
Date: _____

SCHEDULE D

REPLACEMENT AND REPLACED EQUIPMENT IS DISCUSSED IN SECTION 5.

1) Replacement Equipment (provided by Nextel)

Quantity	Manufacturer	Description	Model Number	New/Used
		Control Station Radios		
368	Harris	MOBILE, M7300, 764-870 MHz, Half Duplex, Unencrypted	MAMW-SDMXX	New
250	Harris	MOBILE, M7300, AES, 764-870 MHz, Half Duplex	MAMW-SDMXA	New
486	Harris	Control Unit, CH-721, Scan, Front Mount	MAMW-NCP9G	New
132	Harris	Control Unit, CH-721, System, Front Mount	MAMW-NCP9H	New
618	Harris	Feature, Maximum (1,024+) Systems/Groups	MAMW-NPL3R	New
618	Harris	Feature, P25 Personality Lock	HTPL7G	New
618	Harris	Feature Package, Opensky, P25 Trunking, and ProVoice Trunking (includes EDACS, P25 Conventional, and Analog Conventional Operation)	MAMW-PKGFB	New
618	Harris	Feature ProFile Over-the-Aire-Personality Programming	MAMW-NPL5K	New
250	Harris	Feature, Status Message	MAMW-NPL3Y	New
250	Harris	Feature, Radio Textlink	MAMW-NPL7N	New
618	Harris	Control Station Antenna 700/800 MHz	TBD	New
618	Harris	Microphone, Desktop, CH-721 Control Unit	MAMW-NMC7Y	New
618	Harris	Control Station, CS7000, Remote Control, M7300	MAMW-NZN8L	New
618	Harris	Accessories, M7300 Front Mount	MAMW-NZN6W	New
50	Harris	Manual Maintenance, CS7000	MAMM-07KCS	New
50	Harris	Cable Programming CS7000	MAHK-NCL7R	New
50	Harris	Cable Programming Front CS7000	MATQ-NCL8U	New
		Mobile Radios		
5,714	Harris	MOBILE, M7300, 764-870 MHz, Half Duplex, Unencrypted	MAMW-SDMXX	New
3,486	Harris	MOBILE, M7300, AES, 764-870 MHz, Half Duplex	MAMW-SDMXA	New
3,849	Harris	Control Unit, CH-721, Scan,	MAMW-NCP9G	New

Quantity	Manufacturer	Description	Model Number	New/Used
		Front Mount		
2	Harris	Control Unit, CH-721, System, Front Mount	MAMW-NCP9H	New
5,000	Harris	Control Unit, CH-721, Scan, Remote Mount	MAMW-NCP9E	New
112	Harris	Control Unit, CH 721, System, Remote Mount	MAMW-NCP9F	New
169	Harris	Control Unit, Dual Control, CH 721, Scan	MAMW-NZN7C	New
68	Harris	Control Unit, Dual Control, CH 721, System	MAMW-NZN7D	New
825	Harris	Special: Horn Tone – Extended Option Cable	TBD	New
9,200	Harris	Feature, Maximum (1,024+) Systems/Groups	MAMW-NPL3R	New
9,200	Harris	Feature, P25 Personality Lock	HTPL7G	New
9,200	Harris	Feature Package, Opensky, P25 Trunking, and ProVoice Trunking (includes EDACS, P25 Conventional, and Analog Conventional Operation)	MAMW-PKGFB	New
9,200	Harris	Feature ProFile Over-the-Air-Personality Programming	MAMW-NPL5K	New
3,389	Harris	Feature, Status Message	MAMW-NPL3Y	New
3,389	Harris	Feature, Radio Textlink	MAMW-NPL7N	New
1,300	Harris	Transit Antenna 700/800 MHz low profile – OpenSky (Bus, Mover, & Rail)	TBD	New
7,800	Harris	Mobile Antenna 700/800 MHz	MAMW-NAN3J	New
100	Harris	Mobile Motorcycle - Antenna 700/800 MHz	TBD	New
100	Harris	Accessories, M7300 Motorcycle Kit	MAMW-NZN7X	New
9,437	Harris	Microphone, Standard, CH-721 Control Unit	MAMW-NMC7Z	New
5,349	Harris	Accessories, M7300 Remote Mount	MAMW-NZN7R	New
3,851	Harris	Accessories, M7300 Front Mount	MAMW-NZN6W	New
50	Harris	Manual Maintenance, M7300	MAMM-780MW	New
50	Harris	Cable Programming Front, M7300	MATQ-NCL8U	New
50	Harris	Cable Key Manager Encryption Programming, M7300	TBD	New
50	Harris	Cable Programming, M7300	MAMW-NCL7R	New
		Portable Radios		
8,903	Harris	Portable, P7150, 806-870 MHz,	HT7150S81A	New

Quantity	Manufacturer	Description	Model Number	New/Used
		Scan, AES		
204	Harris	Portable, P7170, 806-870 MHz, System, AES	HT7170T81A	New
230	Harris	Immersible Radio Operation (applies to any Operational Mode Feature Package)	HTMR	New
9,107	Harris	Feature Package, P25 Trunking and ProVoice (includes P25 CAI, EDACS, and Conventional operation)	MAHT-PKGPP	New
9,107	Harris	Feature, Extended Network (ProFile and ProScan)	HTEN	New
9,107	Harris	Feature, 1024+ Systems/Groups	HTPL3R	New
9,107	Harris	Feature, Status/Message and Radio Textlink	HTTS	New
9,107	Harris	Feature, ProFile OTAP	HTPL5K	New
9,107	Harris	Feature, P25 Personality Lock	HTPL7G	New
18,214	Harris	Battery, Extra High Capacity – (Li-Ion)	TBD	New
9,107	Harris	Charger, Desk, Tri-Chemistry (Li-Ion)	TBD	New
179	Harris	Charger, Multi, Tri-Chemistry (Li-Ion)	TBD	New
6,328	Harris	Antenna, 806-870 MHz, Flexible end Fed Gain <IS> ½ wave	HTNC5K	New
9,172	Harris	Antenna, 806-870 MHz, Whip <IS> ¼ wave	HTNC1K	New
8,528	Harris	Belt Loop, Leather, with Swivel <IS>	HTHC7T	New
609	Harris	Belt Clip, Metal <IS>	HTHC7P	New
6,502	Harris	Microphone, Lapel, Antenna Plus	OT-V2-10120	New
2	Harris	Microphone, Lapel, includes rubber PTT, Emerg button, 2-position volume control, and ear jack	MAHM-AE7A	New
50	Harris	Earphone, Lapel Microphone	HTAE3Z	New
127	Harris	Charger, Vehicular EVC (Li-ION)	H2VPDE – Li-ION	New
50	Harris	Manual Maintenance, P7100	MM800HT	New
50	Harris	Cable Programming, P7100	TQ3419	New
50	Harris	Cable Key Manager Encryption Programming, P7100	TQ3415	New
P7300 Series Radio 700/800 MHz, plus accessories				
4,276	Harris	Portable, P7350, 764-870 MHz, Scan, AES	TBD	New
799	Harris	Portable, P7370, 764-870 MHz, System, AES	TBD	New

Quantity	Manufacturer	Description	Model Number	New/Used
194	Harris	Immersible Radio Operation (applies to any Operational Mode Feature Package)	TBD	New
5,075	Harris	Feature Package, P25 Trunking and ProVoice (includes P25 CAI, EDACS, and Conventional operation)	TBD	New
5,075	Harris	Feature, Extended Network (ProFile and ProScan)	TBD	New
5,075	Harris	Feature, ProFile OTAP	MAEV-NPL5K	New
5,075	Harris	Feature, 1024+ Systems/Groups	TBD	New
5,075	Harris	Feature, Status/Message and Radio Textlink	TBD	New
5,075	Harris	Feature, P25 Personality Lock	TBD	New
10,150	Harris	Battery, Extra High Capacity – (Li-Ion)	TBD	New
5,075	Harris	Charger, Desk, Tri-Chemistry (Li-Ion)	TBD	New
315	Harris	Charger, Multi, Tri-Chemistry (Li-Ion)	TBD	New
1,390	Harris	Antenna, 806-870 MHz, Flexible end Fed Gain <IS> ½ wave	TBD	New
4,184	Harris	Antenna, 806-870 MHz, Whip <IS> ¼ wave	TBD	New
242	Harris	Belt Loop, Leather, with Swivel <IS>	TBD	New
4,833	Harris	Belt Clip, Metal <IS>	TBD	New
318	Harris	Microphone, Lapel, Antenna Plus	TBD	New
341	Harris	Microphone, Lapel, includes rubber PTT, Emerg button, 2-position volume control, and ear jack	TBD	New
33	Harris	Earphone, Lapel Microphone	TBD	New
299	Harris	Charger, Vehicular EVC (Li-ION)	TBD	New
50	Harris	Manual Maintenance, P7300	TBD	New
50	Harris	Cable Programming, P7300	TBD	New
50	Harris	Cable Key Manager Encryption Programming, P7300	TBD	New

2) Replaced Equipment (to be delivered to Nextel without accessories)

Quantity	Manufacturer	Description	Model Number	New/Used
618	Harris	Control Station Radios (MDX, EDACS 500M, and Orion)	Multiple	Used

9,200	Harris	Mobile Radios (MDX, MDR, EDACS 500M, and Orion)	Multiple	Used
14,182	Harris	Portable Radios (EDACS 300P, LPE, M-PA, M-RK, and PCS)	Multiple	Used

Incumbent Information

The following questions are required for processing Electronic Funds Transfers and if Incumbent wants Nextel to complete the FCC filings on its behalf. All information contained herein shall be kept strictly confidential and will be used only in completion of the Frequency Reconfiguration transaction.

I. INCUMBENT INFORMATION

Please provide the following information:

Company/Name: _____

Contact: _____ Title: _____

Address: _____

City/State/Zip: _____

Phone: _____ Fax: _____

Email: _____

Check Appropriate Box: ☐ Individual/Sole Proprietor ☐ Corporation ☐ Partnership
☐ Other_____

II. BANK ACCOUNT INFORMATION (Required for payment processing.)

Please select preferred payment method: ☐ Wire Transfer ☐ ACH ☐ Check

Name of Bank: _____

Address of Bank: _____

City/State/Zip: _____

Bank Phone #: _____

ABA (Routing #): _____

Account #: _____

Name on Account: _____

Federal, State or Individual SS #: _____

Name of Brokerage Firm (if applicable): _____

Brokerage Account # (if applicable): _____

In the event Incumbent will not provide information for Wire Transfer or ACH, Incumbent acknowledges that all payments will be made by check.

Acknowledged by Incumbent: _____ ***(signature required only if Incumbent does not want an electronic funds transfer)***

III. TAX INFORMATION

The Internal Revenue Service and state tax authorities require Nextel to report all transactions, even if the transaction is exempt from taxation (if so, it will be reported to the IRS as a like-kind exchange). Therefore, it is necessary for Nextel to collect the information below. If you have specific questions about your tax implications in this transaction, you should consult your own accountant or financial advisor.

Incumbent's Federal or Individual Tax ID #, FEIN (Federal) or SSN (individuals): _____

State(s) – sales tax license, resale permit, employment, etc.): _____

Local (if applicable): _____

Current State and County location for your principal executive office: _____

If there has been more than one location for the principal executive office within the past five (5) years, list each such City/County/State location: _____

_____

IV. FINANCIAL RECONCILIATION CONTACT INFORMATION (indicate one)

A. Check here if *same* as indicated in Item I above_____

B. Fill in below if *different* from Item I above as follows:

Financial Contact Name: _____

Title: _____

Address: _____

City/State/Zip: _____

Phone: _____ **Fax:** _____

Email: _____

V. REGULATORY INFORMATION

Would you like Nextel's Regulatory department to prepare and file all necessary FCC paperwork on your behalf? Yes / No

If yes, please provide the following **Universal Licensing System ("ULS")** information for your licenses:

FRN (FCC Registration Number): _____

ULS PASSWORD: _____

If no, please provide the following information regarding who will take care of the preparation and filing of all necessary FCC paperwork on your behalf:

Contact Name:_____

Organization:_____

Contact Representative for any FCC related issues:

Name: _____

Phone Number: _____

Address: _____

City: _____

State/Zip: _____

Phone Number: _____

Email Address: _____

I hereby acknowledge that all of the information provided herein is true and correct as of the date signed below.

Incumbent Signature: _____

Print Name: _____

Title: _____

Date: _____

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3.2 – Mutual Aid System Description

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Attachment B – Coverage Maps

Attachment C – Mutual Aid Drawings

Attachment D – Channelization Requirements

4 – Staging

5 – Site Development

6 – System Cutover and Installation

7 – Subscriber Programming and Installation

8 – P25^{IP} Training

9 – Warranty Support Services

Appendices –Acceptance Test Procedures

Appendix A – System Acceptance and Test Plan for P25 Trunking System

Appendix B – Staging/Factory Functional Test Procedures for P25 Simulcast System A

Appendix C – Staging/Factory Functional Test Procedures for P25 Simulcast System B

Appendix D – Fielded Functional Test Procedures for P25 Simulcast System A

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Appendix K – Aircraft Coverage Test

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Section 1 – Scope

This Statement of Work (SOW) outlines the provision of equipment and services to be incorporated in the System Purchase Contract between Harris Corporation, RF Communications Division (Harris) and Miami-Dade County (Miami-Dade). The objective of this document is to define the major tasks and the responsible party for each task throughout the project. Where possible, this document makes reference to equipment and/or activities where interdependencies are required for successful project execution.

This document is organized into sections that describe the program elements, the system components and description, and the key project phases. A draft project schedule is also included in order to define the timeframe in which the implementation is planned.

Section 2 – Project Management Plan

Introduction

This project management plan defines how the Miami-Dade Rebanding project is planned, executed, monitored, controlled and closed. This project plan includes tasks performed by Harris. However, the Miami-Dade Rebanding Project is truly a partnership between Miami-Dade and Harris, with each party being responsible for tasks. Harris' progress depends on the successful completion of the tasks that are the responsibility of Miami-Dade. This plan addresses Harris' performance during the life of this project. The following areas will be discussed:

- Project Team
- Planning
- Major Program Events
- Execution
- Schedule
- Controlling and Monitoring
- Communications
- Change Order Process
- Risk Management
- Quality
- Safety

Project Team

A Harris Senior Project Manager will lead this project and will be Miami-Dade's single point of contact for the Harris project team. The Senior Project Manager will define the need for and supplement with additional project managers, as necessary, throughout the project.

Miami-Dade will be required to assign a Technical Project Manager to function as the single point-of-contact and official liaison between Harris' Senior Project Manager and Miami-Dade. Harris' Senior Project Manager will direct all communications concerning the project and associated work scopes to the Miami-Dade Technical Project Manager.

All official communications regarding the project will be between Miami-Dade's Technical Project Manager and Harris' Senior Project Manager. Any other supporting Project Managers will report to the Senior Project Manager and take on responsibilities assigned by the Senior Project Manager.

The project management team is responsible for:

- Developing schedules, monitoring progress and taking the action(s) needed to ensure that schedules are met.
- Ensuring the progress and quality of work performed.

- The successful implementation of the project and fulfillment of contractual obligations.
- Overall project cost and processing of any contract change orders.
- Regular project status reporting to the Miami-Dade team to include items such as project progress, issues reporting, proposed issue resolution, and schedule updates.

Harris will assign a system engineering team with full technical responsibility for the radio system design. This team will be led by a Senior System Engineer and will report to the Senior Project Manager and will be responsible for:

- Configuring Harris standard products and various vendor products into an operational system as defined in the deliverables.
- Participating in all design review meetings and providing technical support to the Senior Project Manager.
- Conducting the Acceptance Test Plan.
- Providing technical support to Technical Publications for provision of technical, as-builts, and manuals for the system.

Planning

This is a large, complex project that will need to be divided into sub-tasks. The Senior Project Manager and the Miami-Dade team, in a joint effort, must integrate both organizations' tasks into a complete project plan. Significant sub-tasks for Harris include items such as:

- Infrastructure System Design and Installation
- Subscriber Equipment – shared task with Miami-Dade
- Cutover – shared task with Miami-Dade
- Test Plans – shared task with Miami-Dade
- Subscriber Programming – shared task with Miami-Dade

Further detail regarding these sub-tasks is captured in the relevant sections of this SOW.

Infrastructure System Design and Installation

The Senior System Engineer will finalize the system design and prepare the design documents. Refer to Sections 3, 4, and 5 regarding details on system design and installation.

Subscriber Equipment

Programming and distribution of the subscriber equipment is a shared task between Miami-Dade and Harris. The specific tasks for Harris and the quantity of radios that are programmed by Harris are defined in Section 7 - Subscriber Programming and Installation Plan.

Cutover

Cutover methodology is discussed in Section 6 – System Cutover and Installation.

Test Plans

Test Plans are located in the appendices section of this SOW. Scheduling for these tests will be mutually agreed upon between Harris and Miami-Dade.

Subscriber Programming

Subscriber programming is an integrated task between Miami-Dade and Harris. Miami-Dade will be responsible for writing and testing all of the radio personalities. Harris and Miami-Dade will share the task of final subscriber programming. Details are provided in Section 7 – Subscriber Programming and Installation Plan.

Major Program Events

Project Kickoff and Site Audit

The Harris Senior Project Manager will initiate the project with a Project Kick-off Meeting. The timing of this meeting will be mutually agreed upon between Harris and Miami-Dade. The objectives of this meeting include:

- Introduction of all project participants
- Review of the roles of the project participants
- Review of the overall project scope and objectives
- Review of the resource and scheduling requirements
- Review of current site status
- Review of the current frequency plan

Site visits will be conducted following the kickoff meeting.

Detailed Design Review (DDR)

After the kickoff meeting, Harris will meet with Miami-Dade's project team to review the system design, technical data, site-specific information, and to achieve written agreement on the overall system design.

Harris will provide the following documents to Miami-Dade for their review and approval:

- Project Schedule
- Preliminary Site Layout Drawings
- Shelter Floor Plan Drawings
- Rack Elevation Drawings
- System Block and Level Diagrams
- Conventional Circuits Listing
- Power and HVAC Loads
- Antenna Network Diagrams

- Site Frequency Plan (including spectrum analysis and intermodulation studies of existing and proposed frequencies at each site).
- TX Combiner Plan by Site
- Network & Microwave Requirements
- Preliminary Acceptance Test Documents
- Miami-Dade P25 Mandatory Requirements and Options Compliance Matrix
- Change Management Plan

Harris will identify by location what equipment will require re-locating or moving by Miami-Dade.

Within fifteen business days after the DDR has been performed Miami-Dade will sign-off on the system design to acknowledge completion of the DDR. After DDR performance signatures are received Harris will schedule all factory orders in order to meet the approved project schedule.

This phase is considered complete when all documentation associated with this phase have been delivered to Miami-Dade and signed by the designated representative from Miami-Dade.

Furthermore, it is understood that all sites and frequencies must be finalized at least 30 calendar days before the final DDR meeting can be conducted. This is necessary for Harris to properly prepare for the final DDR. Miami-Dade and Harris may mutually agree to conduct multiple preliminary DDRs, as needed, in order to promote open communications and to make risk-based decisions that may be necessary for the overall benefit of the program.

Order Processing and Manufacturing

After the Detailed Design Review, Harris will process orders for equipment and start the equipment manufacturing process.

Execution

The Senior Project Manager and the Harris project team will direct the activities necessary for the successful execution of the project. Following the final design approval, Harris will proceed to load equipment into the Harris system for procurement and manufacturing. The project team integrates the materials and equipment to produce the system(s). The simulcast and multisite systems will be assembled in the Harris factory and staged before shipping. Equipment, which is specific to the installation of the sites, will ship to a designated location in the Miami area.

Schedule

The schedule identifies the Harris and Miami-Dade projected timeline for completing the required project tasks .Updates to the start dates and durations will be made as the information is known and the project evolves. Throughout the project, the Senior Project Manager will utilize schedule compression techniques such as leads and lags in order to integrate tasks more efficiently and effectively. For executive overviews, the Senior Project Manager may use a technique such as precedence diagramming to show major milestones and the interdependency between milestones. Milestones are used to portray significant events in the schedule.

Harris is providing a preliminary Project Schedule at the end of this section.

Controlling and Monitoring

Harris has internal processes associated with initiating, planning, executing, monitoring/controlling, and closing a project. These processes cover broad areas to include procurement, technical, managerial, etc. For this project, there are many processes that will need Miami-Dade participation.

Communications

Communication is an essential aspect of this project. Harris and Miami-Dade will establish a plan that defines regular meetings, reporting structure, and other communications activities. The purpose is to help ensure that all project stakeholders and team members receive the information they need in a timely manner. Activities include:

- Workshops or working sessions that may be needed throughout the project to plan sub-tasks.
- Final Design Review to communicate the final engineering design.
- Formal communication to Miami-Dade's Technical Project Manager that include monthly reports concerning accomplishments and work-in-progress.
- Quarterly on-site status meetings that will be scheduled with Miami-Dade's Technical Project Manager. Harris' Senior Project Manager and Miami-Dade's Technical Project Manager will provide the updates.
- Conference calls will be held with Harris' project team and Miami-Dade's project team. The purpose of these calls will be to discuss tasks, assign responsibility, and establish schedules.
- A joint outreach program, led by Miami-Dade, will be established to manage user expectations.

Change Order Process

During the course of this project, contract modifications may arise to accommodate changes in scope. Either party may request changes within the general scope of the contract. Changes are initiated via a Change Order Process as described in the System Purchase Contract.

Risk Management

Harris follows the Project Management Institute (PMI) and Project Management Body of Knowledge (PMBOK) methodology when assessing risk. To understand the risks and how to minimize their impact, Harris' methodology is to identify the project's critical evolutions, identify the risks associated with those evolutions, perform a risk analysis of the work elements, identify critical parameters for the successful completion for the work scope, and apply risk mitigating tools to manage the risks commensurate with consequences and likelihood.

It will be the responsibility of all project stakeholders including Harris' Senior Program Manager and implementation team, and Miami-Dade's project team to:

- Identify potential risk
- Analyze, evaluate and rate the risk

- Identify the options
- Create the best risk mitigation plan

As part of regularly scheduled status meetings, the Senior Program Manager will review the status of risk mitigation efforts and review assessments for any new risk items. Harris' Project Management Team, along with Miami-Dade, will proactively mitigate the impact of risk in order to keep the project on track.

Quality

Harris' Quality Assurance Organization "Customer Advocacy and Business Excellence Organization" (CABE) has overall responsibility for quality associated with this project. It fulfills this responsibility through direct oversight of product and service realization activities, and by partnering with the Harris Project Team and Subcontractor Organizations.

Safety

Harris is cognizant of the importance of safety on projects. We require all employees to understand the procedures for reporting a work-related injury or illness, the difference in correct and unsafe/unhealthy work conditions or practices, and that everyone complies with safe work practices. Documentation of applicable safety laws and OSHA regulations are posted, and all work complies with applicable Federal laws and regulations.

Closing

During the project closing, records will be updated and/or prepared to reflect the final results. Harris will provide as-built drawings to Miami-Dade in Auto-CAD format. Miami-Dade and Harris will sign off on completion, agreeing that project closing has been completed. Immediately following system acceptance, frequencies will be available for return to Sprint-Nextel.

Preliminary Project Schedule

A preliminary project schedule is included in Appendix M.

Section 3 – System Description

Introduction

The primary objective of this SOW is to reband Miami-Dade's Communications System. Harris will perform the required system reconfiguration by replacing Miami-Dade's existing EDACS infrastructure with a standardized P25 system and modifying certain ancillary sub-systems including conventional, NPSPAC mutual aid equipment. The rebanded system will leverage Miami-Dade's previous investments in the Harris VIDA (Voice, Interoperability, Data and Access), a network that unifies. Included are communications network components, such as the ISSI server, the EDACS-IP Gateways, the NetworkFirst Gateway (the only Qualified Anti-Terrorism Interoperability Technology under the Department of Homeland Security's SAFETY Act), and the P25 700 MHz and 800 MHz infrastructure purchased under the PSIC grant.

Design Rationale

Harris has leveraged as much of existing Miami-Dade assets as possible, to keep costs of site development low for Miami-Dade and to ensure the availability of site locations for the proposed system. As a result, the P25 Phase 1 network utilizes the same site locations as the existing EDACS infrastructure. The general approach is to replace or upgrade existing EDACS infrastructure to P25 infrastructure. This includes all of the existing RF sites, the dispatch locations, and the subscriber units. Additionally, Harris has included design improvements beyond the capabilities of the existing system, as detailed in the coverage design.

While many of the components and subsystems of the P25 system are software upgradable to P25 Phase 2, the scope of this project does not include P25 Phase 2.

Table A denotes the existing Miami-Dade EDACS components and the replacement sub-systems and equipment.

Table A - EDACS System Replacements

System Name	Existing System	Replacement System
EDACS Backbone	[redacted]	[redacted]
System A	[redacted]	[redacted]

System Name	Existing System	Replacement System
	[redacted]	
System B	[redacted]	
System C	[redacted]	
System D		
System E		
System F		
System G		
RDCS #1		
RDCS #2		

Section 3.1 – P25 System Description

This section describes the new Miami-Dade P25 System. Additional relevant sections of the SOW for the P25 System are:

- Attachment A (System Block Diagrams) – System Block Diagrams
- Attachment A (P25 Rack Drawings) – Rack up Drawings of Proposed Equipment
- Section 6 (Cutover and Installation Plan) – Detailed Installation and Cutover Plan

VIDA Backbone

VIDA is an acronym for Voice, Interoperability, Data, and Access; but more than that, it represents a single unified network to support the County's communications needs, whether they are Public Safety voice communications, Transit Data Communications, or digital dispatch they are supported under the Harris VIDA network with a single system for network monitoring, routing, and switching.

Harris will install a new VIDA network to support the new P25 systems and integrate several pieces of existing Miami-Dade equipment into the VIDA network. The VIDA network will include the network switching equipment, alarm monitoring, and system management capabilities.

[redacted]

Additionally, Harris will integrate [redacted]

Harris will utilize Miami-Dade's existing EDACS IP Gateways to facilitate the cutover from the existing EDACS systems to the new P25 systems. The EDACS IP Gateways' operations require that Miami-Dade identify specific talkgroups that must be passed between the systems [redacted]

Harris will integrate [redacted]

SOW. One ISSI server can talk to multiple agencies; each external agency will need its own ISSI server. The talkpath limit is 200 concurrent calls per ISSI.

The Regional VIDA Manager contains an activity warehouse tool, which is a database used for searching historical system call activity. Regular system operations require managing the activity warehouse. It will be Miami-Dade's responsibility to manage this tool.

Table B - VIDA Network Equipment

Site	Existing Equipment (Reused)	New Equipment
[redacted]	[redacted]	[redacted]
[redacted]		[redacted]

Information Assurance

Harris recognizes the importance of Information Assurance (network and computer security) for the successful deployment [redacted] Harris will provide baseline security services including authorized login to different system components including radios, network switch, management system, and networking equipment. Harris has many years of experience working with customers to harden network security and will work with the County to address their security concerns. Harris applies industry best practices and 'Defense in Depth' to create a layered security approach that includes technical and procedural elements. In this context, 'Defense in Depth' is the application of multiple computer security techniques in products from multiple vendors to mitigate the risk of any one defense being compromised or circumvented. This security solution is modeled after systems provided for the Department of Defense.

Note: This quote includes all acquired VIDA network equipment supporting the new P25 Phase 1 Communications System as described in this SOW. Any existing County hardware that is reused such as logging recorders, administration terminals, firewall, etc. is not included.

Harris will provide the following system security elements:

- **System Lockdown** – [redacted] system components, including the servers, the workstations, and the network routers. These controls include removing unused services and daemons, removing unnecessary rights from user and service logins, configuring secured web browsers, utilize secured remote administration tools, and applying the latest third party security patches.
- **Centralized Security Server** – Harris will provid[redacted]
- **Encrypted Communication Links** – By default, using a [redacted] enable use of this protection.
- **Perimeter Firewalls** – [redacted]
- **Anti-Virus** – [redacted] server and w[redacted] and in computer memory. Computer users can manually scan hard drives or setup the antivirus to automatically "scan on access." Generally, antivirus software is setup to fix files that contain known viruses and quarantine files it cannot fix. The software recognizes known viruses and suspicious code based upon an underlying database of antivirus signatures. Since new computer viruses are constantly encountered, antivirus software needs regular signature updates.

Software FX

A comprehensive software maintenance program has been included as an option that provides semi-annual upgrades to Harris developed software applications. These software upgrades include enhancements to the existing software baseline, corrections to issues, and the ability to purchase and enable newly developed licensed features. Software FX is purchased on an annual or multi-year basis. Harris will provide FX under the current EDACS FX agreement through year 5 at a fixed price as defined in Exhibit B to the SPC.

SUMSplus

To help prevent existing vulnerabilities from being exploited, it is important to regularly patch IT infrastructure. However, patch application can sometimes negatively affect the performance of critical communications LMR systems. For example, a patch might update the TCP/IP stack and affect packet fragmentation. Testing security patches in a controlled environment prior to production rollout is a best practice. The solution is to have Harris conduct the testing in their Lynchburg, Virginia engineering facility. The Security Update Management Service (SUMS), which is offered in a variety of selections, is the complete answer. The security patches and anti-virus signatures provided by SUMS are tested using the most current versions of Harris application software.

SUMS*plus* is an automated software distribution service provides third-party security related patches and anti-virus signatures applicable to the VIDA Network on a quarterly basis. SUMS*plus* automates distribution to the components within the VIDA Network using the SUMS*plus* Automatic Server. SUMS*plus* also provides the additional service of posting timely assessments of vulnerabilities that affect the VIDA Network. On behalf of SUMS*plus* subscribers, Harris will obtain, evaluate, and deliver security related remediation to third-party software applicable to the VIDA Network. These remediations may include security related patches to operating systems, databases, web servers, web browsers, and antivirus signatures. SUMSplus is purchased on an annual or multi-year basis as an additional charge to go with an FX subscription. SUMS Plus pricing for year 5 and the subsequent optional terms has been defined as part of Exhibit B to the SPC.

System A

System A is a [redacted] system will be [redacted]

Table C - System A Equipment by Site

Site	Configuration	Equipment
[redacted]	System [redacted]	[redacted]
	System [redacted]	
	System [redacted]	
	System [redacted]	
	System [redacted]	

Site	Configuration	Equipment
[redacted]	System [redacted]	[redacted]
	System [redacted]	
	System [redacted]	

Site	Configuration	Equipment
[redacted]	System [redacted] Site	[redacted]
	System [redacted] Site	

System [redacted]

System [redacted]

[redacted]

The System [redacted] capable of [redacted] Programmin [redacted] subscriber te [redacted]

The System [redacted] point. The s [redacted] this critical s [redacted] The [redacted]

Table D - System B Equipment by Site

Site	Configuration	Equipment
[redacted]	System [redacted]	[redacted]
	System [redacted]	

Site	Configuration	Equipment
[redacted]	[redacted]	[redacted]
	Systen	
	Systen	
	Systen	
	Systen	

Site	Configuration	Equipment
[redacted]	[redacted]	[redacted]

Site	Configuration	Equipment
		[redacted]

System [redacted]

The System [redacted] travel into [redacted] EDACS site [redacted] stations. H[redacted]

[redacted]

System [redacted]

The System [redacted] system testi[redacted] P25 site usi[redacted]

[redacted]

System [redacted]

[redacted]

System [redacted]

System [redacted]
provide services to allow i [redacted]

System [redacted]

System [redacted]
will provide services to allow integration of this site into the [redacted]

RDCS #1

The Rapid Deployable Communications System (RDCS) #1 is an [redacted]

will be installed in [redacted]
existing antennas, f [redacted]
consists of: [redacted]

RDCS #2

The Rapid Deployable Communications System #2 is an [redacted]

Other Sub-Systems

Jail Systems [redacted] Since this frequency does not require rebanding, Harris has not planned any infrastructure work at these facilities.

System

new filtering network to the existing antenna system transmission line. This modification of the

Harris will configure

Global

When a network or other type of failure occurs and the system enters into bypass. When this occurs

Harris will configure
nd the r

disable a site or place the site into the bypass mode. When the decision has been reached that the site should be placed into bypass mode, this computer will indicate to both the site and the simulcast The MASTR V stations will begin operating in their pre-set

Harris will
places the C
antennas.

When the fault that has
indicate that
Harris will c
the simulcast antennas o

Harris will work with Miami-Dade
the o be finalized at the

Harris will provide guidance and documentation, along with up to two weeks of engineering time, to [redacted]

Harris will provide the County a list of [redacted] Harris will also perform Power Failure testing exercising the [redacted] Plan.

Logging Recorder

Harris will [redacted] located at [redacted] operations [redacted] algorithms. [redacted]

Dispatch

Harris will replace [redacted] of the [redacted]

In the EDACS system architecture, [redacted] systems will be able to access talk[redacted] will allow more functionality with Miami-Dade's existing fallback plan for System B. It will enable [redacted]

The VIDA Console Exchange (VCE) is [redacted] Miami-Dade has purchased for the [redacted] architecture. The VCE is configured as [redacted] located by site as shown [redacted]

- Desktop Microphone (Transit Only)
- Call Director Kit
- Dual Headset Jack

[redacted] *Consoles*

- [redacted] Console Computer
- [redacted]
- Feature Licenses Kit
- 17" Touchscreen Monitor
- Three Button Trackball Mouse
- Two Speakers (Select and Unselect)
- Dual Footswitch
- Desktop Microphone [redacted]
- Dual Headset Jack

[redacted] *Consoles*

- [redacted]
- [redacted]
- Feature Licenses Kit
- Three Button Trackball Mouse
- Two Speakers (Select and Unselect)
- USB Port to Headset Adaptor

Harris will also [redacted]
a single key pre[redacted]

Backhaul

Harris will leverage Miami-Dade's [redacted]
exercise [redacted]
Commun[redacted]
requirem[redacted] quirements for Harris to fully implement the network.

Remote Access

Miami-Dade wil[redacted]
remote support. [redacted]

[redacted]

addition, at any [redacted] addresses) a [redacted] resses, and [redacted]

Leased T1s [redacted]

Miami-Dade will need to supply to Harris [redacted] h the following specifications:

- [redacted]

Bandwidth Requirements

Table F - P25 Network Bandwidth Requirements [redacted]

Site	Site Type	Microwave Requirements	Fiber Requirements
[redacted]			

Site	Site Type	Microwave Requirements	Fiber Requirements
[redacted]			

Please refer to Attachment D of the system description for further information on the backhaul bandwidth requirements.

Equipment Summary by Site

Table G [redacted]
at that site.

Table G - Equipment Summary

Name	Location	System equipment
[redacted]		

Name	Location	System equipment
[redacted]		

Table E - Dispatch Console Equipment Locations

Site	Equipment	Description
[redacted]	[redacted]	[redacted]
[redacted]		
[redacted]		
[redacted]		
[redacted]		
[redacted]		
[redacted]	[redacted]	[redacted]
[redacted]		Fire and Transit
[redacted]		

Fire and Transit Consoles

- [redacted]
- Feature Licenses Kit
- 17" Touchscreen Monitor
- Three Button Trackball Mouse
- Two Speakers (Select and Unselect)
- Dual Footswitch

Coverage

Harris has leveraged [redacted]

system when compared to the existing systems. [redacted]

In order to facilitate system cutover, the new Systen [redacted]

Harris has provided [redacted]
Systems B and will [redacted]

plans. Harris has provided copies of the coverage test plans for System [redacted]
of this SOW. [redacted]
talk-out limite [redacted]
being able to communicate back. The site parameters and settings that [redacted]
talk-out limited will be presented to the County as part of the DDR.

No coverage testing is proposed for the other systems.

It is agreed to by the parties that the test plans incorporated into this Statement of Work are preliminary in nature, including the noise floor, and are subject to finalization as part of the DDR as mutually agreed to by both parties.

Table H and I describe the antennas on a site by site basis needed for proposed coverage.

Table H - System A Interim Antenna Configurations

Site Name	Transmit Antenna Model	Transmit Antenna Height	Receive Antenna Model	Receive Antenna Height	Azimuth
[redacted]					

Site Name	Transmit Antenna Model	Transmit Antenna Height	Receive Antenna Model	Receive Antenna Height	Azimuth
[redacted]					

Table I - System B and Final System A Antenna Configurations

Site Name	Transmit Antenna Model	Transmit Antenna Height	Receive Antenna Model	Receive Antenna Height	Azimuth
[redacted]					

Note: Certain conditions such as tower loading analysis and interference analyses may cause alternate antenna heights and/or antenna selection to change.

Frequency Planning

Harris has examined Miami-Dade's frequencies and will utilize the frequency plan developed by RCC Consultants during the rebanding planning so as to minimize the chances for intermodulation products. This plan involves swapping several transit channels with Systems A and B channels, specifically swap Bus Channel 1 with System A channel 4, swap Mover Channel 1 with System A Channel 6, and swap Rail Channel 1 with System B Channel 9.

Combining Plan

The following tables depict the P25 Systems combiner configurations.

Table J - System [redacted]

Frequency	Name	FCC Channel # 90.613
[redacted]	[redacted]	

Table K - System [redacted]

Frequency	Name	FCC Channel # 90.613
[redacted]	[redacted]	

Table L - System [redacted]

Frequency	Name	FCC Channel # 90.613
[redacted]		

Table M - System [redacted]

Frequency	Name	FCC Channel # 90.613
[redacted]		

Table N - System [redacted]

Frequency	Name	FCC Channel # 90.613
[redacted]		

Table O - Syster

Name	Frequency	FCC Channel # 90.613

Table P - System

System D Combiner B	Frequency	FCC Channel # 90.613

The System RF infrastructure will not be modified so the combiner configurations will remain the same. The RDCS

Intermodulation Studies

During the rebanding planning, RCC performed an extensive intermodulation study and determined that a theoretical possibility exists for intermodulation to occur, which may result in self interference when operating the new and old NPSPAC frequencies at a si t sites d and new or the potentially occur during a cutover process from the The theoretical possibility is significantly reduced once the old channels have been turned off. However, the possibility of self interference during the cutover process can not be ignored. Harris has proposed an intermodulation mitigation plan included below in this System Description. This plan will be performed prior to system cutover to determine the best approach to the turning down of old channels and turning up of new channels in the simulcast systems.

Harris has taken several steps with its design and cutover approach intended to mitigate intermodulation. Harris will use low PIM products where available as standard products from our vendors. Harris will use DIN connectors where needed and practical to do so. DIN connectors are subject to availability within the industry for antennas but we will strive to deploy DIN-equipped antennas. However, Harris will avoid the use of between-series adapters for the sake of providing a

DIN connector on a transmission line. Harris has planned the [redacted] cutover to include significant vertical separation between the old and new NPSPAC channels at all of [redacted]

In the discussion that follows, the following references will be used.

- [redacted] refers to existing systems operating on the non-rebanded channels
- [redacted] refers to new systems operating on the rebanded channels

Note that the discussion that follows refers primarily to those sites where it is not possible to achieve vertical separation between transmit and receive antennas on an antenna mounting structure – in other words, [redacted]

In the rebanding of the Miami Dade communications system, Harris proposes to use a procedure whereby [redacted] be built and put into service. To ensure continuity of service, this New [redacted] fully tested and "burned in" (in accordance with an agreed upon test and burn-in procedure). During this transition period [redacted] will remain in operation serving their respective user bases, while the [redacted] is being commissioned. Ideally, one would like to fully activate the [redacted] and perform all test procedures in accordance with the test and burn-in plan. Under this ideal condition, migration of users from the [redacted] system would be a relatively straightforward procedure.

One aspect of planning for use of this implementation procedure has been the performance of a frequency compatibility study – an Intermod Analysis. Such intermod studies have been performed by both RCC and Harris; both reaching the same conclusion – that there is the mathematical possibility for the generation of 5th and 7th order intermod products resulting from the combination of the new and old channels falling on an old receive channel (for the [redacted] portion of the implementation). The potential for the creation of intermod products appears to be pervasive and has the potential for impacting all operating channels. The sheer number of intermod "hits" revealed in these studies leads one to the conclusion that there are no (sub)sets of channels that could be used that would avoid the problem altogether – at least from the mathematical perspective.

That having been said, one cannot state with certainty that the mathematical possibility of occurrence will result in an actual intermod event. As various reports have noted, intermod products can be generated in both the system equipment (where the RF mixing would occur), and in external sources in close proximity to the site. Considerable concern has been raised about the condition of the catwalks and other structures atop the [redacted] where it has been noted that these structures exhibit extensive rusting. Such a condition is known to support the generation of intermodulation products. However, one cannot state with certainty whether such products will be generated, and if they will be of such a level that will degrade performance on the receive channel in question.

To re-emphasize, showing that a mathematical possibility exists that such an intermodulation product could occur does not necessarily ensure the certainty that the problem will occur. If it could be shown that intermod products did not in fact exist, then one could proceed with the ideal implementation plan that allowed both [redacted] system to be simultaneously active. Implementation of the [redacted] in such a fashion would, from an overall implementation, testing and cutover perspective, mitigate many of the legitimate concerns expressed by Miami-Dade.

In order to empirically determine the presence of intermod products at levels that would impact system performance, Harris proposes to perform testing in the following manner at those sites where the problem has the greatest potential of occurrence [redacted]

- Install the complete set of hardware for [redacted]
- Using the previously performed intermod studies for [redacted] (the active systems under consideration) as a guide, activate on a case-by-case basis the [redacted] channel that may play a role in the generation of a particular intermod product, and examine the receive channel predicted by the study where the intermod is expected to occur. Note that to perform this empirical analysis, one would be required to only remove one channel at a time from active service of the impacted system; this channel being inactive only for that period of time while the evaluation is being performed.
- Proceed methodically through all possible combinations of channels predicted by the intermod study, noting where intermod has (or hasn't) occurred.
- Using the results of this procedure, develop an appropriate test and cutover plan.
- Employ similar methodology for the [redacted] system has been decommissioned.

In proceeding in this proposed manner, one will have empirically determined either the presence of intermod products on particular channels, or ideally, the lack thereof. If the latter, one would be able to proceed with confidence in a much simpler test and cutover plan. If the former, one will have specific knowledge of the extent of the problem, and be able to plan accordingly, formulating a test and cutover plan that, to the greatest degree possible, addresses such concerns as those related to the testing of a complete system, and migration of users to the [redacted] Of course, similar procedures and comments would apply to the migration of users to th[redacted]

Licensing

Proposed coverage and the coverage guarantees are all contingent on being able to license the frequencies as proposed.

NPSPAC frequency licensing in the State of Florida has to be submitted to the frequency coordinator with a report generated by the [redacted] Within the [redacted] each frequency is input along with site locations, antenna patterns, and power levels. The tool analyzes each frequency to determine if it will cause co-channel and/or adjacent channel interference to other previously licensed systems. In a simulcast system, since each channel must transmit the same ERP at a site, the most ERP limited frequency in the system sets the limits of the system as a whole. Additionally, the [redacted] contained within [redacted] political boundary, in this case, Miami-Dade County. Exceptions are made for contours extending over the ocean as there is no potential interferer over this area.

Harris has reviewed the [redacted] for all of the proposed frequencies to determine the most limited channels of Miami-Dade and has designed coverage to be contained by the extents of these contours. Additionally, Harris has ensured that the [redacted] are contained within a [redacted] Miami-Dade. Harris will work with Miami-Dade to run [redacted] eports for each of the Miami-Dade frequencies for licensing the P25 Network. Miami-Dade is responsible

for frequency coordination fees, submitting the [redacted] completing the FCC license applications, and submitting the applications to the frequency coordinator.

Assumptions

- [redacted] own in drawing: SL-A81659 dated 06-28- [redacted] This Statement of Work assumes the microwave network as depicted in SL-A81659 is in place prior to installation of the P25 Phase 1 Communications System.
- Should Miami-Dade procure a Microwave Network different in design from SL-A81659 that is not part of an option to purchase under this Contract, the integration of the P25 Phase 1 Communication System Scope of Work will change. This change will necessitate a change order which must be mutually agreed to by both Parties.
- Should Miami-Dade procure a Microwave Network by exercising the Option offered under this Contract, any changes necessitated by that Network will be handled as part of the Option to Purchase.
- Miami-Dade will provide [redacted], excluding the [redacted] systems. Should a [redacted] the Network, Equipment and Route Redundancy described in this Statement of Work may change.
- Miami-Dade will provide microwave connectivity from [redacted] If Miami-Dade decides not to implement the additional two [redacted] from [redacted] this will result in a less than optimal network design for redundancy.
- Miami-Dade will provide [redacted]
- Miami-Dade shall notify Harris if they wish to exercise the Microwave Network Option offered under this Contract no later than sixty (60) days prior to the DDR Meeting.
- The existing System [redacted] are fully functional and in good working order. If antenna systems are not acceptable, Miami-Dade will correct the problem(s).
- The [redacted] will be operational during the cutover of this system. Refer to Section 6, System Cutover and Installation.
- Coverage guarantees are contingent on antenna mounting position feasibility and space availability. It is known today that [redacted] do not have sufficient structural capacity to facilitate the installation of additional antenna systems. The process of addressing these deficiencies is detailed in the Contract and Harris is in the process of conducting structural analysis on all the planned towers for both [redacted]
- Intermodulation products will not cause detrimental effects to the new or [redacted] nd [redacted] Intermodulation analysis shows that a potential does exist for 2-channel, 5th-order, on frequency hits to occur on the old [redacted] base station receive frequencies and for 2-channel, 7th-order, on frequency hits to occur on the new [redacted] ation receive frequencies. The potential 5th order hits are a result of new [redacted] channels mixing with old [redacted] hannels or with new mutual

aid channels mixing with old mutual aid channels. The potential 7th order hits are the result of new mutual aid channels mixing with old mutual aid channels. The use of [redacted] Bypass antennas for mutual aid transmitters is used to mitigate this at all tower sites as well as the placement of intermediate [redacted] and old [redacted] At locations where vertical separation is not possible [redacted] and intermodulation products cause self interference, old and or new mutual aid channels may be disabled on the transmit or receive side to minimize self interference on a temporary basis during Cutover. New P25 channels may need to be turned up while turning down old EDACS channels.

- The cutover process will be a phased approach as described in the cutover and installation section.
- The Phase 1 P25 Communication System configuration as depicted in the RAPTR project reports and associated coverage maps can be licensed. Harris has completed a [redacted] analysis of the P25 Phase 1 Communication System Configuration which meets the requirements of the [redacted] Plan.
- The [redacted] is in good working order.
- The PSIC grant project will be implemented before equipment deployment begins under this SOW.
- [redacted] consoles will be upgraded from [redacted] using Miami-Dade provided equipment delivered by Harris with the [redacted].
- Each console uses an average of one unique conventional interface at a time at each dispatch location, or less. This has been used to determine the bandwidth requirements for console locations.
- A single [redacted] This has been used to determine bandwidth required to console locations.
- [redacted] will not operate from [redacted] equipment installation and will move from [redacted]
- Police dispatchers will not operate from [redacted] dispatch equipment installation, and will move from [redacted] in cutover to facilitate upgrades to the [redacted]
- Known existing in-building repeater systems [redacted] do not operate on frequencies that require rebanding. Harris has not included in its Statement of Work the retuning or replacement of any in-building repeater systems.
- One of the RDCS may be deployed at the [redacted] site as an intermod mitigation device, if needed. The need for the RDCS at the [redacted] will be determined at DDR.
- The [redacted] from the duplexer to the fifth floor is broad enough to allow the transmission of old and new NPSPAC channels. Prior to DDR, the parties will jointly review [redacted] to determine its ability to allow for transmission of both old and new NPSPAC Channels.
- [redacted] when communicating with consoles. This is used to calculate console location bandwidth requirements.

- Miami-Dade will provide the necessary staff to aid in the cutover process.
- The [redacted] System will be deployed as a [redacted] If [redacted] chooses a non-VIDA system platform, the consoles and console support equipment in this system description for transit are not applicable.

Section 3.2 – Mutual Aid System Description

Note: This is a preliminary plan that will be further refined before DDR.

Existing Mutual Aid System Configurations

Miami-Dade operates three Mutual Aid channels within the County [redacted] These channels serve interagency communications between the County and other and other local government and State. The Mutual Aid equipment at each site operates through its own transmit antenna, [redacted] The Mutual Aid equipment shares receive antenna systems with [redacted] where it has its own receive antenna. The configurations of these Mutual Aid channels are briefly described below.

[redacted]

Th[redacted] channel is configured as a conventional simulcast system with a County-wide service area. The channel currently is using Miami-Dade's NEC multiplexer shelves. [redacted] channel is deployed are identified in Table Q.

[redacted]

[redacted] is deployed in both voted and non-voted configurations. [redacted] the central areas of Miami-Dade and can be enabled either at the [redacted] or at the [redacted], when needed, in a non-voted configuration. When the [redacted] site is enabled, [redacted] is disabled elsewhere. Sites where the [redacted] channel is deployed are identified in Table Q.

[redacted]

[redacted] is currently implemented as a voted system, similar [redacted] Miami-Dade is currently contracted with Harris to replace the [redacted] as a part of the PSIC grant. The new [redacted] will be configured as a conventional simulcast system using GPS reference clocks for timing. This deployment will not require the reliance on the obsolete NEC multiplexer that [redacted] uses today. Harris has assumed that the new [redacted] system will be deployed and that the [redacted] system will be removed during this implementation of the PSIC grant. Sites where the [redacted] channel is deployed are identified in Table Q. The following table indicates Mutual Aid RF infrastructure by site.

Table Q - Mutual Aid RF Infrastructure by Site

Site name	Latitude	Longitude	MA-TAC equipment	Receive Antenna
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Mutual Aid Reconfiguration Steps

Due to space limitations within many of the [redacted] simulcast remote transmit sites, the Mutual Aid equipment reconfiguration will begin before deployment of the new P25 system infrastructure. This is a preliminary plan that will be further refined before DDR.

As one of the first steps in the process, Harris will upgrade the [redacted] channel to the same GPS simulcast configuration as the new [redacted] equipment. This will be accomplished by using replacement stations that are later models than currently in use by Miami-Dade, and that have been taken from a previous rebanding project. Miami-Dade's existing antenna systems and RF cabling will be used for this reconfiguration (no new antenna system equipment will be supplied). Empty rack space within the [redacted] simulcast rack will be used to locate the [redacted] equipment. The [redacted] simulcast equipment will be utilized as common equipment and shared between the upgraded [redacted] The existing [redacted] equipment cabinet will be removed from the site to create additional space for the [redacted] simulcast

equipment, except at the Airport site, where the existing [redacted] station will be removed from the existing rack.
Once the upgrade of the [redacted] system has been completed, Mutual Aid frequency reconfiguration may begin. The exact timing of this reconfiguration is contingent on the deployment of other [redacted]

Harris will utilize the simulcast bypass antennas at each tower site to facilitate deployment of swing transmit equipment on the old NPSPAC Mutual Aid channels. These antennas were chosen because of the vertical isolation that they will provide between the old and new channels' transmitters; this vertical separation aids in minimizing the possibility of intermodulation self-interference. Two site locations do not support vertical isolation between channels, [redacted] (both rooftop antenna sites). At these sites, testing will be conducted to analyze the actual intermodulation conditions. If it is determined that these sites do not allow operation of both old and new NPSPAC Mutual Aid channels, then the new channels will be brought into operation at these sites in receive-only configurations and the old channels will continue to be accessible with mobile coverage within the county until the conclusion of parallel operations of old and new channels. The new Mutual Aid frequencies will be deployed on the existing [redacted] bypass antennas and the [redacted] receive antennas. The new System A receive antenna multicoupler will be used for input into the Mutual Aid receiver at sites that are shared with the P25 simulcast system after it has been deployed. The [redacted] multicoupler will be used for input into the Mutual Aid receiver located at [redacted]

For Miami-Dade Mutual Aid, Harris proposes a combination of a temporary multicast and crosspatch techniques to maintain interoperability during reconfiguration. Equipment that will be used during the reconfiguration process includes; [redacted] two-port combiners, and Rebanding Diplexers. This specialized equipment will be deployed as appropriate to the system under reconfiguration. The Convex Rebanders will be used at all Mutual Aid simulcast and voted sites. At the [redacted] will be utilized. Two-port combiners and Rebanding Diplexers will be used to attach the parallel Mutual Aid transmitters to the existing [redacted] bypass antennas.

During reconfiguration, it will be possible for users to access a particular Mutual Aid channel either on its original frequency assignment or its new frequency assignment. Operation is preserved whereby dispatchers transmit simultaneously to users on original and reconfigured channel assignments. Users may transmit on either assignment and be heard by the dispatcher and all users regardless of frequency assignment received.

The following table shows the existing and proposed Mutual Aid TAC channels.

Table R - Mutual Aid Channels

NAME	EXISTING		REPLACEMENT	
	Tx	Rx	Tx	Rx
[redacted]				

Non-Voted [redacted]

Step 1. Verify re-programmed user radios contain both new and old frequency sets.

Step 2. Verify swing MASTR III base is tuned to the old [redacted] channel.

Step 3. Install swing MASTR III base station with SOR, IM Suppression Panel, Duplexer, and Antenna System [redacted]

Step 4. Install Vega Rebanding Panel, but only interface to the swing MASTR III base station at [redacted] at this time (4-wire audio and SOR).

Step 5. Choose a date for transition initiation.

Step 6. Disable existing MA-TAC 3 base station at [redacted] and power on swing MASTR III operating on old frequency assignment.

Step 7. Install IM Suppression Panel between existing [redacted] transmitter and Duplexer.

Step 8. Reconfigure existing [redacted] MASTR III station and Duplexer at [redacted] Install SOR Relay Kit.

Step 9. Remove existing [redacted] base station at [redacted] from leased line equipment (4-wire audio) and reconnect to Vega Rebanding Panel. Also connect base station SOR to Vega Rebanding Panel. Connect Vega Rebanding Panel to 4-wire audio leased line equipment port assigned to [redacted]

Step 10. Reactivate existing MASTR III station a[redacted] now retuned for operation on new [redacted] frequency assignment. System now operates as back-to-back repeater system on old and new channel assignments for [redacted]

Mutual Aid Swing Equipment

In order to provide seamless interoperability between the old and new frequency assignments during the reconfiguration period, Harris proposes additional equipment which includes multicast and crosspatch equipment as well as parallel base stations and/or auxiliary receivers at each of the nine Mutual Aid sites. The existing Miami-Dade Mutual Aid stations will continue to be used and will be the stations that remain operational upon completion of channel reconfiguration.

At the outset of the Mutual Aid reconfiguration process, Harris will add swing equipment to each Mutual Aid sub-system to establish multicast and crosspatch functionality between old and new frequency assignments. All swing equipment will be provided by Harris for the duration of the statewide rebanding of the Mutual Aid systems. The County's existing and replacement base stations will be retuned to new frequency assignments while the swing base stations will be tuned to operate on old frequency assignments. On a site-by-site basis, the following table delineates the existing equipment components of the various Mutual Aid sub-systems along with replacement and swing equipment. Many of the components are common among sub-systems.

	EXISTING EQUIPMENT	SWING / REPLACEMENT EQUIPMENT	RATIONALE
SITE [redacted]			
[redacted]			
Rack	-	-	Share existing Rack
SITE [redacted]			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	[redacted]
CTCSS Filter Assembly	(1) 188D6825G1 for [redacted] (1) Spectracom Model 1118-2 for [redacted]	(1) Spectracom Model 1118-2 for [redacted]	[redacted]
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	DB8062F2-B	DB8062F2-B	Replace existing combiner with pre-tuned DB8062F2-B for new NPSPAC channels. Use old combiner to combine swing equipment.

	EXISTING EQUIPMENT	SWING / REPLACEMENT EQUIPMENT	RATIONALE
Rebanding Diplexer	-	Rebanding Diplexer	The diplexer allows combining of the swing equipment onto the [redacted] Bypass antenna.
SITE [redacted]			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	[redacted]
CTCSS Filter Assembly	(1) 188D6825G1 for [redacted] (1) Spectracom Model 1118-2 for [redacted]	(1) Spectracom Model 1118-2 for [redacted]	Module used to generate CTCSS tone on simulcast station. No module needed for existing [redacted] [redacted]dule required to upgrade [redacted] Existing modules can be used for both existing stations and swing stations.
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	DB8062F2-B	DB8062F2-B	Replace existing combiner with pre-tuned DB8062F2-B for new NPSPAC channels. Use old combiner to combine swing equipment.
Rebanding Diplexer	-	Rebanding Diplexer	The diplexer allows combining of the swing equipment onto the System A Bypass antenna.
SITE [redacted]			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	Retune existing MASTR III Stations for [redacted] new frequency assignments. Add swing MASTR III stations tuned to old channel assignments on [redacted] and [redacted] for back-to-back repeater operation. Add replacemen[redacted] [redacted] MASTR III.

	Existing Equipment	Swing / Replacement Equipment	Rationale
Auxiliary Receivers	(1) MASTR III	(1) MASTR III 800MHz Repeater, TX Disabled	Retune existing [redacted] MASTR III Auxiliary Receiver and place on new System A multicoupler. Temporarily add swing MASTR III Repeater on old frequency assignment and place on new System A multicoupler.
CTCSS Filter Assembly	(1) 188D6825G1 for [redacted] (1) Spectracom Model 1118-2 for [redacted]	(1) Spectracom Model 1118-2 for [redacted]	Module used to generate CTCSS tone on simulcast station. No [redacted] module needed for existing [redacted] ule required to upgrade [redacted] Existing modules can be used for both existing stations and swing stations.
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	DB8062F2-B	DB8062F2-B	Replace existing combiner with pre-tuned DB8062F2-B for new NPSPAC channels. Use old combiner to combine swing equipment.
Rebanding Diplexer	-	Rebanding Diplexer	The diplexer allows combining of the swing equipment onto th[redacted] Bypass antenna.
SITE: [redacted]			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	Retune existing MASTR III Stations for [redacted] new frequency assignments. Add swing MASTR III stations tuned to old channel assignments on [redacted] for back-to-back repeater operation. Add replacement [redacted] MASTR III.
CTCSS Filter Assembly	(1) 188D6825G1 for [redacted] (1) Spectracom Model 1118-2 for [redacted]	(1) Spectracom Model 1118-2 for [redacted]	Module used to generate CTCSS tone on simulcast station. No module needed for existing [redacted] module required to upgrade [redacted] Existing modules can be used for both existing stations and swing stations.

	Existing Equipment	Swing / Replacement Equipment	Rationale
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	DB8062F2-B	DB8062F2-B	Combine swing equipment transmitters
Rebanding Diplexer	-	Rebanding Diplexer	The diplexer allows combining of the swing equipment onto the [redacted] bypass antenna.
SITE [redacted]			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	Retune existing MASTR III Stations fo[redacted]o new frequency assignments. Add swing MASTR III stations tuned to old channel assignments on [redacted]r back-to-back repeater operation. Add replacement [redacted] MASTR III.
CTCSS Filter Assembly	(1) 188D6825G1 for [redacted] (1) Spectracom Model 1118-2 for [redacted]	(1) Spectracom Model 1118-2 for [redacted]	Module used to generate CTCSS tone on simulcast station. No module needed for existing [redacted]C One module required to upgrade [redacted] Existing modules can be used for both existing stations and swing stations.
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	DB8062F2-B	DB8062F2-B	Combine swing equipment transmitters
Rebanding Diplexer	-	Rebanding Diplexer	The diplexer allows combining of the swing equipment onto the [redacted] bypass antenna.
SITE: AIRPORT			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	Retune existing MASTR III Stations for [redacted] to new frequency

	Existing Equipment	Swing / Replacement Equipment	Rationale
			assignments. Add swing MASTR III stations tuned to old channel assignments on [redacted] back-to-back repeater operation. Add replacement [redacted] ASTR III.
CTCSS Filter Assembly	(1) 188D6825G1 for MA-TAC 2 (1) Spectracom Model 1118-2 for [redacted]	(1) Spectracom Model 1118-2 for [redacted]	Module used to generate CTCSS tone on simulcast station. No module needed for existing [redacted] One module required to upgrade [redacted] Existing modules can be used for both existing stations and swing stations.
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	DB8062F2-B	DB8062F2-B	Combine swing equipment transmitters
Rebanding Diplexer	-	Rebanding Diplexer	The diplexer allows combining of the swing equipment onto the [redacted] bypass antenna.
SITE: [redacted]			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	Retune existing MASTR III Stations fo[redacted]o new frequency assignments. Add swing MASTR III stations tuned to old channel assignments on [redacted] or back-to-back repeater operation. Add replacement [redacted] MASTR III.
Auxiliary Receivers	(1) MASTR III	(1) MASTR III 800MHz Repeater, TX Disabled	Retune existing [redacted] MASTR III Auxiliary Receiver and place on System A multicoupler. Temporarily add swing MASTR III Repeater on old frequency assignment and place on [redacted] ulticoupler.
CTCSS Filter Assembly	(1) 188D6825G1 for [redacted]	(1) Spectracom Model 1118-2 for [redacted]	Module used to generate CTCSS tone on simulcast station. No module needed for existing [redacted] One module required to upgrade

	Existing Equipment	Swing / Replacement Equipment	Rationale
	(1) Spectracom Model 1118-2 for [redacted]		[redacted] Existing modules can be used for both existing stations and swing stations.
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	(2) DB8062H5	(1) DB8062F6-B	Use [redacted] Replacement Combiner [redacted] for swing equipment. System D combiner must be replaced prior to installing Mutual Aid Swing Equipment. See combiner plan in table below.
SITE: [redacted]			
Repeater Station	(1) MASTR III	(1) MASTR III Station	Retune existing MASTR III Station for [redacted] to new frequency assignment. Add swing MASTR III station tuned to old channel assignment for back-to-back repeater operation
SOR Relay Kit	-	(2) SXSU3D	Required for parallel system operation.
Duplexer	(1) TBD	(1) (1) TBD	Required for parallel system operation.
IM Suppression Panel	-	(2) TBD	Required to mitigate intermodulation interference during parallel system operation.
Antenna System	(1) TBD	(1) TBD	Required for parallel system operation.
Vega Rebanding Panel	-	(1)SYS000010000	Required for parallel system operation.
Rack	-	(1) 69 IN	Required to house swing equipment.

Table S - Syster[redacted]

Port	Channel ID	Frequency
1	[redacted]	
2		
3		
4		
5		

Table T - [redacted]stalled With P25 Infrastructure)

Port	Channel ID	Frequency
1	[redacted]	5
2		5
3		5
4		5
5		5
6		5

Mutual Aid Reconfiguration Assumptions

The following assumptions were made in this Mutual Aid Reconfiguration segment of the P25 upgrade proposal.

- Coverage maps will be provided as part of the DDR for informational purposes.
- The new [redacted]imulcast System will be deployed prior to reconfiguration of Mutual Aid as part of the PSIC grant.
- Miami-Dade will provide the full T1 (from the Mutual Aid Control Point to each Mutual Aid Simulcast Site) that will be implemented for the [redacted]deployment under the PSIC grant for shared [redacted]on the same simulcast infrastructure and for th[redacted]Backhaul will be identified by Miami-Dade as part of the DDR.
- Miami-Dade will provide the [redacted]simulcast synchronization and control point equipment supplied under the PSIC grant for use in the [redacted]system upgrade and for th[redacted]dio backhaul.
- The new P25 Phase 1 Communication System A antennas and multicouplers will be installed prior to the final (rebanded) reconfiguration of the Mutual Aid equipment. The Mutual Aid

talk-in coverage will be contingent on the location of these antennas on the appropriate towers.

- Miami-Dade will allow the [redacted] Bypass antennas to be utilized for the Mutual Aid swing equipment operating on the new frequencies until the conclusion of Mutual Aid system rebanding.

- Intermodulation products will not cause detrimental effects to the new or old NPSPAC Mutual Aid channels at the [redacted]. Intermodulation analysis shows that a potential does exist for 2-channel, 5th-order, on frequency hits to occur on the old [redacted] and [redacted] base station receive frequencies and for 2-channel, 7th-order, on frequency hits to occur on the new MA-TAC 2 and MA-TAC 4 base station receive frequencies. The potential 5th-order hits are a result of new System A channels mixing with old [redacted] or old [redacted] channels or with new Mutual Aid channels mixing with old Mutual Aid channels. The potential 7th-order hits are the result of new Mutual Aid channels mixing with old Mutual Aid channels. The use of [redacted] Bypass antennas for Mutual Aid transmitters is used to mitigate this at all tower sites. At locations where vertical separation is not possible ([redacted]) and intermodulation products cause self interference, old and or new Mutual Aid channels may be disabled on the transmit or receive side to minimize self interference. The disabling of these channels will result in a decrease of Mutual Aid coverage around that site throughout the duration of Mutual Aid rebanding. Every effort will be made to minimize the channels disabled.

- All currently used Mutual Aid antenna systems are in good working order and do not require replacement. As a result, final coverage is expected to be comparable to existing coverage and no coverage tests will be performed on the Mutual Aid Systems.

- Any additions to the Mutual Aid System beyond what is described in this Statement of Work are not covered and would require a change order to this Contract.

Drawings

The drawing package is included in Attachment A.

Section 4 – Staging

Staging

Staging is the organization, assembly, and test of an assembled system under controlled factory conditions. The Miami-Dade P25 systems will be assembled for staging at the Harris Customer Integration Center (CIC) in Forest, Virginia. Once the Design Review has been approved, Harris proceeds to place orders for the materials required to configure the Miami-Dade system. As orders are processed, preparations are made to stage equipment in accordance with the project schedule.

As described in Article 4(C) of the Contract, advance notice will be provided to Miami-Dade so they may attend a formal acceptance test in the factory when the system is ready.

Staging/Factory Functional Test Procedure

Refer to the Appendices for review of the Staging/Factory Functional Test Plan.

Section 5 – Site Development

Harris' Program Managers will review each fixed network equipment site, make assessments for scheduling required work, and drive site development.

Site Access

Miami-Dade shall:

- Provide free and open access to all owned or leased sites of work, as defined below. Access must be available 24 hours a day during the course of this project to the extent that Miami-Dade requires such access.
- Be responsible for ensuring adequate access is provided at all sites such that tractor trailers, cranes, etc. have adequate room to perform required work.
- Provide escort at no charge, if escorts are required at any particular site. The availability of such escort shall not be unreasonably withheld.
- Issue temporary identification cards to Harris personnel and its authorized subcontractors, if required, for access to Miami-Dade or any of the sites.

Site Permits & Licensing

Harris shall:

- Obtain and complete the necessary forms for building and construction permits required for Harris to perform any new site construction or electrical work cited in the "Site Details" section of this document that may require a permit.
- Harris shall obtain all permits as required for site modifications as identified in the attached Responsibility Matrix.

Miami-Dade shall:

- Obtain all FCC licenses, necessary for this project.
- Provide support for any permits needed by Harris.
- Be responsible for the coordination, acquisition, application fees, and licensing of all frequencies and any necessary licensing modifications for frequencies used in this system design, including all requisite fees. Miami Dade will need to obtain necessary 800 MHz licenses to operate within any regulatory ERP limits that may be imposed. Such tasks may require coordination with Sprint Nextel. Miami Dade shall be responsible for any interface with Sprint Nextel on these items.

Site Material Procurement

After the final Detailed Design Review approval and written notice to proceed is received from Miami-Dade, Harris will order vendor materials required for the sites for those items identified to be a Harris responsibility (antennas, associated cables, combiners and receive multicouplers, etc.). Shipments will be coordinated with the vendors and based on the project schedule to ensure availability of parts as they are needed on site.

Site Location Changes

Harris assumes that only the sites listed in this document will be used. If any sites change, this could impact design, coverage, schedule and overall performance of the system. Site locations must be known before the final Detailed Design Review can be conducted. All changes in sites will be considered a change in scope and will require an analysis to determine the effect on cost, design, coverage, schedule and overall performance of the system. Any scope changes will likely incur delays in the schedule. Change Orders may be necessary with any site changes and will be evaluated on a case-by-case basis in accordance with the change order process within the contract.

General Responsibilities

The following statements define the respective general responsibilities of Harris and Miami-Dade in their contract to provide the equipment outlined in this proposal. Miami-Dade is responsible for the purchase and installation of all civil equipment such as towers, shelters, AC power sources, HVAC, generators, floor space, and links between equipment locations (microwave, fiber, leased lines, T1, LAN, etc.), with the exception o[redacted]unless otherwise noted in this document as a Harris responsibility or mutually agreed upon in the Contract.

Harris and Miami-Dade will conduct a detailed site survey to 1) determine the best location for antenna placement and how the cables will be run down the existing towers, and 2) determine the best location for the new racks of equipment in the existing equipment rooms/shelters. Harris will provide its rack space and floorplan requirements, and Miami-Dade will take the actions necessary to provide for the necessary rack space.

Harris shall provide the following services and equipment:

- A Senior Program Manager to work with Miami-Dade for project implementation and deployment of the system
- A Senior Systems Engineer who will be responsible for design and testing of the new systems
- Equipment and installation services as described within this document
- Provide any information needed to properly prepare the site to handle new equipment
- Provide engineering services to define site AC/DC power loads, BTU calculations, and site connectivity requirements for the site
- Provide as-built drawings as required for final site layout
- Connec[redacted]o the new network alarm reporting tool, per site.

- Provide project documentation as defined at the DDR.

Miami-Dade shall provide the following services:

- Assign a Technical Project Manager to represent Miami-Dade on all radio system details. The Miami-Dade Technical Project Manager will be the primary point-of-contact for Harris and its implementation team.
- Identify the efforts required by the Miami-Dade team and ensure they are completed per the project schedule.
- Work with Harris' Project Manager to incorporate Miami-Dade's tasks into the overall project schedule as the project schedule will highlight interdependencies.
- Participate in all scheduled Project Review meetings.
- Review and administer change control procedures that may be needed.
- Provide timely responses to issues related to project progress.
- Act as the program liaison to any third party site owners.
- Approve and release payments in a timely manner for project deliverables.

Towers & Antennas

Miami-Dade shall:

- Be responsible for the first $750,000 in cost associated with tower strengthening or tower replacement as the tower analysis dictates.
- Ensure towers have adequate cable ladders so that Harris' antenna crew can properly secure new coaxial cable runs for new antennas.

Harris shall:

- Install antennas and transmission lines per the antenna charts located in this SOW's Section 3 – System Description
- Obtain the necessary construction permits for any tower or tower foundation modifications required
- Be responsible for costs above the first $750,000 as provided by Miami-Dade associated with tower strengthening or tower replacement as the tower analyses provided by Harris dictate.

Equipment Rooms / Shelters

Miami-Dade shall:

- Provide adequate floor space for the new backbone equipment in [redacted] a new shelter, an equipment room, or rooftop with the exception o[redacted]
- Ensure shelters, or equipment rooms have adequate RF cable entry ports (except as specifically noted in this SOW) with copper buss plates at the end of each shelter or room facing the tower.

- Ensure shelters, or equipment rooms have a cable bridge at each site which will connect the shelter to the tower, except as noted for the new [redacted] The purpose of the cable bridge is to support and protect the coaxial runs.
- Ensure existing HVAC facilities in existing shelters or equipment rooms will support the proposed equipment BTUs as outlined below unless otherwise noted in this SOW.
- Ensure shelters, or equipment rooms have adequate lighting.
- Provide adequate security including fences and access controls.

Harris shall:

- Remove decommissioned equipment and wiring once each sub-system has been cutover and accepted.

Electrical Power / Emergency Power:

Miami-Dade shall:

- Be responsible to assure sufficient primary electrical power is available to power all existing equipment as well as new equipment inside each shelter or building and within 25 feet of where Harris will install the new equipment. Power required at each site for new equipment is detailed below by site. For Palmetto Rail Yard, Miami-Dade shall provide power to an H-frame within 25 feet of the proposed shelter location.
- Be responsible for all power usage costs during both the construction/installation effort and on an ongoing basis.
- Ensure all shelters, equipment rooms and dispatch locations have adequate electrical power (per the site requirements provided in the System Description) to support the proposed equipment and ensure proper operation of the current design and future needs.
- Provide electrical power within 4-6 feet of where Harris will install new console equipment.
- Provide emergency generators and automatic transfer switches (ATS) at each site to provide backup electrical power in the event of commercial power failure. Emergency generators and ATSs must have adequate capacity to handle the radio equipment load (new equipment plus existing equipment) and the HVAC unless otherwise noted in this SOW.
- Provide an automatic transfer panel to switch the primary power from commercial to generator as needed at each site unless otherwise noted in this SOW.
- Provide the generator fuel tank, except as noted for Palmetto Rail Yard or as otherwise noted in this SOW.
- Provide the generator fuel at each site as required..

Harris shall:

- Connect the equipment it installs to the electrical power/emergency power provided by Miami-Dade or UPS installed by Harris.
- Provide dedicated power panels with 20 amp breakers and dedicated twist-lock receptacles for each new cabinet it installs (as noted below).
- Provide protected power via UPSs and maintenance by-pass switches where noted below.

Grounding

For all grounding standards, Harris follows guidelines that have been prepared to improve personal safety and to prevent equipment damage. Harris procedure "Site Grounding and Lightning Protection" AE/LZT 123 4618/1 exceeds the NEC and local codes.

Harris' grounding system design goal for every site is a measurable five (5) ohms or less resistance between any connected point on the ground bus and earth ground. Harris assumes that soil conditions local to the RF site are typical, conducive to good grounding systems and the RF site geography can receive a standard grounding system. Where these conditions do not exist, or a five (5) ohms resistance cannot reasonably be obtained, Harris can recommend to Miami-Dade the most cost effective grounding solution possible any site that may need additional grounding. There may be an additional fee for this service that can be incorporated via the change order process.

Miami-Dade is responsible for the grounding system at all sites (except for the [redacted] site as noted below where Harris will install a new shelter, generator and fuel tank), **that includes:**

- A halo ground system which provides adequate ground for the tower, shelter, ice bridge, RF entry port, generator, fuel tank and fencing in accordance with general practices, local codes and Harris' grounding procedure or equivalent.
- Provide a single point ground demarcation point inside equipment rooms, shelters, or rooftop structures. The ground system should be in the form of a #2-awg stranded copper wire ring attached to standoffs approximately eight (8) feet above the floor.
- Measure the ground system, or provide documentation to ensure the resistance path to ground is five (5) ohms or less impedance, correct deficiencies found, and report the results to Harris.
- Lightning/grounding protection on each existing feed line entering equipment room.
- Lightning/grounding protection for all existing telephone circuits.

Harris shall:

- Provide grounding for each antenna coax cable run every fifty feet that Harris installs.
- Terminate the coaxial cable run at the RF cable entry port provided by Miami-Dade.
- Provide Poly-phasor lightning protection devices for each new cable run that Harris installs at the RF cable entry copper ground buss (provided by Miami-Dade) location.
- Attach any new equipment installed to the Master Ground Bar (MGB) or point designated by the space owner. Harris should verify that this ground connection point has been properly installed and meets the Harris standard listed above. In the event that the ground connection point is not adequate, Miami-Dade will be responsible for correcting the deficiencies.
- Provide grounding to all new equipment and appropriate interface blocks that Harris installs.
- Ensure all new shelters provided by Harris will come pre-wired per our grounding standard.

Connectivity:

Miami-Dade shall:

- Provide adequate connectivity links in accordance with requirements identified at the Detailed Design Review.
- Bring properly-leveled, conventional audio inputs to a demarcation point within the interoperability gateway equipment room for all conventional interfaces required. Further determination of requirements shall be discussed at the Detailed Design Review.
- Provide all required network connectivity between the Network Switching Center (NSC), RF site, Dispatch Center, and interoperability stations to meet requirements provided by Harris. Connectivity shall be tested for bandwidth, latency and jitter and the results provided to Harris prior to installation of the P25 Phase 1 Communications System. If the County exercises the Option for microwave from Harris, this requirement only applies to non-microwave backhaul.

Site Details

This section outlines the Harris and Miami-Dade responsibilities as it pertains to installation of physical facilities at the RF transmitter sites. Harris has performed preliminary site surveys and has determined and included/priced the following civils requirements as necessary for the installation of the proposed design.

[redacted]

Miami-Dade shall:

- Provide power and floor space for [redacted] Site Equipment, [redacted] The necessary floor space will be defined at the Detailed Design Review.
- Provide floor space for UPS equipment.

Harris shall:

- Instal [redacted] and the [redacted]
- Install permanent and swing antennas (interim [redacted] antennas) with coaxial cable and sweep lines.
- Remove replaced antennas and lines.
- Provide and install an RF cable entry port.
- Install overhead cable tray (if required)
- Install UPSs with 2-hour runtime and by-pass switches for the Simulcast Synchronous Equipment, [redacted]
- Install power panels.

- Install power circuits for [redacted] MASTR-V Base Stations, Simulcast Synchronous Equipment, [redacted] from power panels to equipment racks and equip with twist-lock receptacles. Cleanup area after installation is complete.
- Install UPSs with 15-minutes runtime and by-pass switches for the [redacted] base stations at the conclusion of the removal of old [redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.

Expected Site Power and BTU Requirements

[redacted]	Watts	BTUs
[redacted]	14,620	43,060
[redacted]	14,620	43,060
[redacted]	3,900	11,601
[redacted]	2,284	7,793
[redacted]	2,200	7,506
[redacted]	698	1,699
[redacted]		3,186
[redacted]		10,614
[redacted]		2,124
[redacted]	7,860	26,818
Total	46,182	157,461

[redacted]

Miami-Dade shall:

- Provide power and floor space for the [redacted] and the [redacted] The necessary floor space will be defined at the Detailed Design Review.

Harris shall:

- Install the [redacted] Point rack [redacted]
- Install UPSs with 2-hour runtime and by-pass switches for the [redacted]
- Install power panels.
- Install power circuits from power panels to equipment racks and equip with twist-lock receptacles.
- Cleanup area after installation is complete.
- Install overhead cable tray (if required)

Expected Site Power and BTU Requirements

	Watts	BTUs
[redacted]	1,410	4,811
	2,200	7,506
Total	3,610	12,317

[redacted]

Miami-Dade shall:

- Provide power and floor space for [redacted] Site Equipment. The necessary floor space will be defined at the Detailed Design Review.
- Provide floor space for UPS equipment.
- Provide floor space and power in the transit dispatch area for the VCE.

Harris shall:

- Install [redacted] Site Equipment racks.
- Install antennas with coaxial cable on the roof catwalk and sweep lines.
- Install in-building filter network to interface to existing in-building antenna
- Remove replaced antennas and lines.
- Install an RF cable entry port.
- Install UPSs with a 2-hour runtime and by-pass switches for the Simulcast Synchronous Equipment.
- Install power panels.
- Install overhead cable tray (if required)
- Install power circuits from power panels to equipment racks and equip with twist-lock receptacles.
- Install UPSs with 15-minutes runtime and by-pass switches for the [redacted] base stations at the conclusion of the removal of old [redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

	Watts	BTUs
	14,620	43,060
	14,620	43,060
	10,991	32,383
	698	1,699
		2,124
		10,614
Total	40,929	132,940

Miami-Dade shall:

- Be responsible for removing workbench.
- Remove unused control station rack.
- Provide power and floor space for Site Equipment. The necessary floor space will be defined at the Detailed Design Review.
- Provide floor space for UPS equipment.

Harris shall:

- Install Site Equipment racks.
- Install permanent and swing antennas with coaxial cable lines and sweep lines.
- Remove replaced antennas and lines.
- Install an RF cable entry port
- Install UPSs with 2-hour runtime and by-pass Switches for the Simulcast Synchronous Equipment.
- Install power panels.
- Install overhead cable tray (if required)
- Install power circuits from power panel to equipment racks and equip with twist-lock receptacles.
- Install UPSs with 15-minutes runtime and by-pass switches for the stations at the conclusion of the removal of old equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

[redacted]	Watts	BTUs
[redacted]	14,620	43,060
[redacted]	14,620	43,060
[redacted]	698	1,699
[redacted]		2,124
[redacted]		10,614
Total	29,938	100,557

[redacted]

Miami-Dade shall:

- Be responsible for relocating the existing workbench.
- Ensure that the site is dry and free from water penetration
- Provide power and floor space for [redacted] equipment. The necessary floor space will be defined at the Detailed Design Review.
- Provide floor space for UPS equipment.

Harris shall:

- Install [redacted] Site Equipment racks.
- Install permanent and swing antennas with coaxial cable line on 50' tower located on roof and sweep lines.
- Remove replaced antennas and lines.
- Install an RF cable entry port.
- Install overhead cable tray (if required)
- Install UPSs with 2-hour runtime and by-pass switches for the Simulcast Synchronous Equipment.
- Install power panels.
- Install power circuits from power panel to equipment racks and equip with twist-lock receptacles.
- Install UPSs with 15-minutes runtime and by-pass switches for the [redacted] stations at the conclusion of the removal of old [redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Replace two 2-ton HVAC units with two 3-ton HVAC units.
- Remove the current 60kW generator and replace it with a 75 kW generator.
- Install a new generator automatic transfer switch.
- Install two (2) 1000 gallon LP tanks.

- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

	Watts	BTUs
[redacted]	14,620	43,060
[redacted]	14,620	43,060
[redacted]	698	1,699
[redacted]		10,614
[redacted]		2,124
Total	29,938	100,557

[redacted]

Miami-Dade shall:

- Provide power and floor space fo[redacted] Equipment. The necessary floor space will be defined at the Detailed Design Review.
- Provide floor space for UPS equipment.

Harris shall:

- Install [redacted] Site Equipment racks.
- Install permanent and swing antennas and permanent and swing antennas with coaxial cable line and sweep lines.
- Remove replaced antennas and lines.
- Install UPSs with 2-hour runtime and by-pass switches for the Simulcast Synchronous Equipment.
- Install power panels.
- Install power circuits from power panel to equipment racks and equip with twist-lock receptacles.
- Install UPSs with 15-minutes runtime and by-pass switches for the [redacted] stations at the conclusion of the removal of old [redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Install a new 4-ton HVAC unit.
- Install overhead cable tray (if required)
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

	Watts	BTUs
[redacted]	14,620	43,060
	14,620	43,060
	698	1,699
		2,124
		10,614
Total	29,938	100.557

[redacted]

Miami-Dade shall:

- Provide power and floor space for [redacted]Site Equipment. The necessary floor space will be defined at the Detailed [redacted]
- Provide floor space for UPS equipment.

Harris shall:

- Install [redacted]Site Equipment racks.
- Install antennas with coaxial cable and sweep lines.
- Remove replaced antennas and lines.
- Install an RF cable entry port.
- Install overhead cable tray (if required)
- Install UPSs with 2-hour runtime and by-pass switches for the Simulcast Synchronous Equipment.
- Install power panels.
- Install power circuits from power panels to equipment racks and equip with twist-lock receptacles.
- Install UPSs with 15-minutes runtime and by-pass switches for the [redacted] base stations at the conclusion of the removal of old [redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

[redacted]	Watts	BTUs
[redacted]	14,620	43,060
[redacted]	14,620	43,060
[redacted]	698	1,699
[redacted]		2,124
[redacted]		10,614
Total	29,938	100,557

[redacted]

Miami-Dade shall:

- Remove metal opposite the side of the tower from existing shelter.
- Provide/update site drawings to reflect location of new shelter.
- Verify hazardous materials are not present where construction is planned.
- Provide first fill-up of propane gas for LP tank(s).

Harris shall:

- Perform geotechnical analysis for new shelter location.
- Provide new shelter installation permits.
- Provide silt fencing during construction.
- Install weed barrier & gravel 3' around perimeter of the new shelter.
- Install a new concrete shelter foundation, emergency generator foundation, and LP tank foundation (includes soils analysis for permitting).
- Install a new one-room 12' x 40' shelter to adequately handle the load including four 5 ton HVAC units.
- Install cable ice bridge between the new shelter and existing tower.
- Install Tower Cable Ladder.
- Install new primary power service with surge protection from Miami-Dade demark to new shelter.
- Install an 75 KW emergency generator and automatic transfer switch (ATS)
- Install two (2) 1000 gallon LP tanks
- Install shelter, generator and LP tank grounds and tie back to existing tower ground ring.
- Install UPSs with 2-hour runtime and by-pass switches for the Simulcast Synchronous Equipment.
- Install Systems A and B Site Equipment racks.
- Move mutual aid equipment from old shelter to new shelter (does not include relocation of any other existing equipment from old shelter to new shelter).

- Install permanent and swing antennas with coaxial cable line and sweep lines.
- If the County exercises the Option for Harris to provide microwave network, Harris will install the new microwave equipment in the new shelter.
- Remove replaced antennas and lines.
- Install UPSs with 15-minutes runtime and by-pass switches for th[redacted] base stations at the conclusion of the removal of old[redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Install an L-shaped concrete wall around the new site generator.
- Install a U-shaped concrete wall around up to three new site LP-tanks.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

[redacted]		Watts	BTUs
		14,620	43,060
		14,620	43,060
		698	1,699
			2,124
			10,614
	Total	29,938	100,557

[redacted]

Miami-Dade shall:

- Provide power and floor space for [redacted]ux Receive Site Equipment. The necessary floor space will be defined at the Detailed Design Review.

Harris shall:

- Instal[redacted]Aux Receive Site Equipment racks.
- Install antennas with coaxial cable line and sweep lines.
- Remove replaced antennas and lines.
- Install overhead cable tray (if required)
- Install Site Common Equipment UPS
- Install power panel(s).
- Install power circuits from power panels to equipment racks and equip with twist-lock receptacles.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

		Watts	BTUs
		1,536	5,241
		1,536	5,241
	Total	3,072	10,482

Palm Springs

Miami-Dade shall:

- Provide power and floor space fo[redacted] Aux Receive Site Equipment. The necessary floor space will be defined at the Detailed Design Review.

Harris shall:

- Instal[redacted] Aux Receive Site Equipment racks.
- Install a side-arm bracket and antennas with coaxial cable line and sweep lines.
- Remove replaced antennas and lines.
- Install power panel(s).
- Install overhead cable tray (if required)
- Install Site Common Equipment UPS
- Install power circuits from power panel(s) to equipment racks and equip with twist-lock receptacles.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

		Watts	BTUs
		1,536	5,241
		1,536	5,241
	Total	3,072	10,482

[redacted]

Miami-Dade shall:

- Provide power and floor space for [redacted] Site Equipment. The necessary floor space will be defined at the Detailed Design Review.
- Provide cable tray and power circuits to the new equipment racks.
- Provide the UPS (supplied by Harris under the PSIC project) and wire in under the PSIC scope of work.

Harris shall:

- Instal[redacted] Equipment racks.
- Install antennas with coaxial cable line and sweep lines.

- Install overhead cable tray (if required)
- Remove replaced antennas and lines.
- Cleanup area after installation is complete

Expected Site Power and BTU Requirements

	Watts	BTUs
[redacted]	4,041	12,082
[redacted]	3,926	11,690
Total	7,967	23,772

[redacted]

Miami-Dade shall:

- Provide power and floor space fo[redacted] Site Equipment. The necessary floor space will be defined at the Detailed Design Review.
- Provide a second A/C unit to assure adequate site redundancy as recommended by Harris.

Harris shall:

- Install racks of [redacted] Site Equipment.
- Install cable entry port and cable tray.
- Install power panel(s).
- Install overhead cable tray (if required)
- Install power circuits from power panel(s) to equipment racks and equip with twist-lock receptacles.
- Install UPSs with 15-minutes runtime and by-pass switches for the [redacted] base stations at the conclusion of the removal of old [redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

	Watts	BTUs
[redacted]	2,646	8,005
[redacted]		2,124
Total	2,646	10,129

Console Locations

Miami-Dade shall:

- Provide power and space for the [redacted] VIDA Console Exchanges, Site Routers and Switches. The necessary floor space will be defined at the Detailed Design Review.

- [redacted] cabling between the [redacted] area and the RF equipment room.

Harris shall:

- [redacted] VIDA Console Exchanges, Site Routers and Switches as defined at Detailed Design Review.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

[redacted]

[redacted]	Watts	BTUs
[redacted]	2,833	9,666
[redacted]	18,300	62,430
[redacted]	1,252	4,272
Total	22,385	76,368

[redacted]

[redacted]	Watts	BTUs
[redacted]	2,833	9,666
[redacted]	7,320	24,972
Total	10,153	34,638

[redacted]

[redacted]	Watts	BTUs
[redacted]	610	2,081
Total	610	2,081

[redacted]

[redacted]	Watts	BTUs
[redacted]	610	2,081
Total	610	2,081

[redacted]

[redacted]	Watts	BTUs
[redacted]	610	2,081
Total	610	2,081

[redacted]

[redacted]	Watts	BTUs
[redacted]	1,220	4,162
Total	1,220	4,162

[redacted]

[redacted]	Watts	BTUs
[redacted]	610	2,081
Total	610	2,081

[redacted]

[redacted]	Watts	BTUs
[redacted]	2,833	9,666
[redacted]	11,590	39,539
[redacted]	1,252	4,272
[redacted]Total	15,675	53,477

Assumptions

Should any assumptions stated above or within this section on the part of Harris be incorrect, correction of said assumptions would lead to a Change Order as outlined in the contract between Harris and Miami-Dade.

Harris makes the following assumptions:

- Only the sites listed in this document at the time of this submittal will be used.
- All Back-up Control Stations and mobiles with power supplies acting as control stations will either be re-programmed or replaced using existing power, space and antenna systems. Any deficiencies found in the above will be remedied by Miami-Dade.

Section 6 – System Cutover and Installation

Introduction

This Installation and Cutover Plan describes the installation tasks required to properly install and cutover the new Miami-Dade P25 Phase 1 LMR Trunking and Simulcast/Multisite Communications System. Successful completion of the Acceptance Test Plans will constitute final customer acceptance of the Miami-Dade P25 LMR Trunking System and certify that it is completely installed and fully operational.

Components of the cutover to a new P25 Phase-1 Communications System consist of:

- Integrate all P25 equipment listed in the system description, unless otherwise noted, into the new VIDA switch.
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

- [redacted]

The key elements of installation and cutover are:

- Installation
- Functional testing
- Coverage testing
- Customer Acceptance
- System Cutover
- Old Equipment Removal

System Cutover

Rebanding and Cutover Methodology

[redacted]

For interoperability, Miami-Dade ha[redacted] As described in the system description, [redacted] will first be upgraded to a GPS simulcast configuration. The Mutual Aid system design describes the replacement of some of the repeaters to consolidate equipment allowing for additional space for [redacted] imulcast. For rebanding, back-to-back repeaters will be installed. The use of back-to-back repeaters will permit continued use of the existing NPSPAC mutual aid frequencies and the new frequencies. The stations will be tuned such that the stations designated to remain subsequent to rebanding will operate on the new rebanded frequencies and the swing (temporary) repeaters will operate on the existing mutual aid NPSPAC frequencies. The Convex or VEGA rebanding panels will provide the functionality required for parallel operation of two channels. Once installed and functional, users working through either old or new channel assignments would be heard by all parties. During subscriber programming Touch 1, Miami-Dade will prepare radio personalities with both the old and new mutual aid frequencies. During Touch 2, the old mutual aid frequencies will be removed. At some time in the future when all interoperability users are on the new mutual aid frequencies, the swing repeaters will be removed.

[redacted]

To reband System A from its existing NPSPAC frequencies to the new NPSPAC frequencies, a new parallel P25 Simulcast System A will be installed. Prior to cutting over to the parallel system, all users will have radios programmed to operate on the existing and new rebanded frequencies. To keep the existing systems operational, the existing antennas must remain on their present tower locations.

New swing antennas will be installed at specified available positions with consideration of the associated performance. The [redacted] will be connected to and provisioned on the new VIDA network via the existing NetworkFirst Gateway. This system will [redacted]

EDACS [redacted]

To reban[redacted]s, a new parallel P25 Simulcast system will be installed. As with [redacted] all users will already have their radios programmed with the new NPSPAC frequencies during subscriber programming Touch 1. Harris will use the new antennas installed on the tower as part of the County's microwave replacement project at that site. This system will communicate with the remainder of the Miami-Dade network through the VIDA switch. Testing will be performed and the users will move to the P25 system by selecting the new system/group in the radio. Once all the users have migrated to the new P25 simulcast system with the new NPSPAC frequencies, the EDACS [redacted] will be removed. During Touch 2, the old frequencies will be removed from the radios. Rebanding will be complete at this point [redacted]

EDACS [redacted]

[redacted] will be replaced with new P25 systems. To move the users from the current EDACS systems to P25, the P25 systems will be installed in parallel. Existing antenna systems for EDACS [redacted] will be reused. Neither system requires frequency changes for rebanding.

P25 [redacted]

P25 700 MHz Multisite [redacted] will be integrated into the new Miami-Dade VIDA network.

Dispatch for [redacted]

Currently, Miami-Dade Transit users are dispatched on [redacted] operational today, it is assumed that [redacted] will be operational at the time this installation is implemented. There is one (1) console at ETSD currently used on [redacted]. To transition the dispatchers from the EDACS [redacted] to the parallel P25 [redacted] consoles will be installed in parallel a[redacted] In addition, one (1) parallel C3 Maestro™ console will be installed at ETSD. At [redacted] will be removed and two (2) C3 Maestro™ consoles will be installed. During Subscriber Touch 1, all backup radios would have been reprogrammed with existing and new frequencies and so should the [redacted] have an event that requires the use of backup radios, the radios will provide the backup capability on both the EDACS systems and the P25 systems.

At the point that Miami-Dade starts to migrate users on to the new system, dispatch will occur on both the EDACS and P25 consoles. For Fire, this means Miami-Dade will require dispatchers at two locations. [redacted] When all users have completely migrated to the

new P25 systems, Fire dispatchers will continue to dispatch from [redacted] and Fire dispatchers at [redacted] The two (2) Fire consoles [redacted] will then be converted from EDACS to C3 Maestro^{IP} consoles after which, dispatchers can return to [redacted] At [redacted] the dispatchers will continue to use the C3 Maestro^{IP} [redacted] and discontinue using the EDACS consoles. The EDACS consoles can then be removed a[redacted]nd ETSD.

P25 [redacted]

To reband [redacted] from the existing NPSPAC frequencies to the new NPSPAC frequencies, a new parallel P25 Simulcast system will be installed with the new rebanded frequencies. During Subscriber Touch 1, the user radios will have already been programmed to operate on [redacted] existing and new rebanded frequencies. The removal of the EDACS Simulcast System A will provide floor space at the sites for the new P25 Simulcast System and new [redacted] antennas will be installed in the locations where the EDACS [redacted] antennas were removed. This system will be communicating with the remainder of the Miami-Dade network through the VIDA switch and [redacted] Testing will be performed after which the users will move to the new P25 system by selecting the new system/group in the radio. Once all the users have migrated to the new P25 system, the [redacted] can be powered down and removed (including the antenna systems).

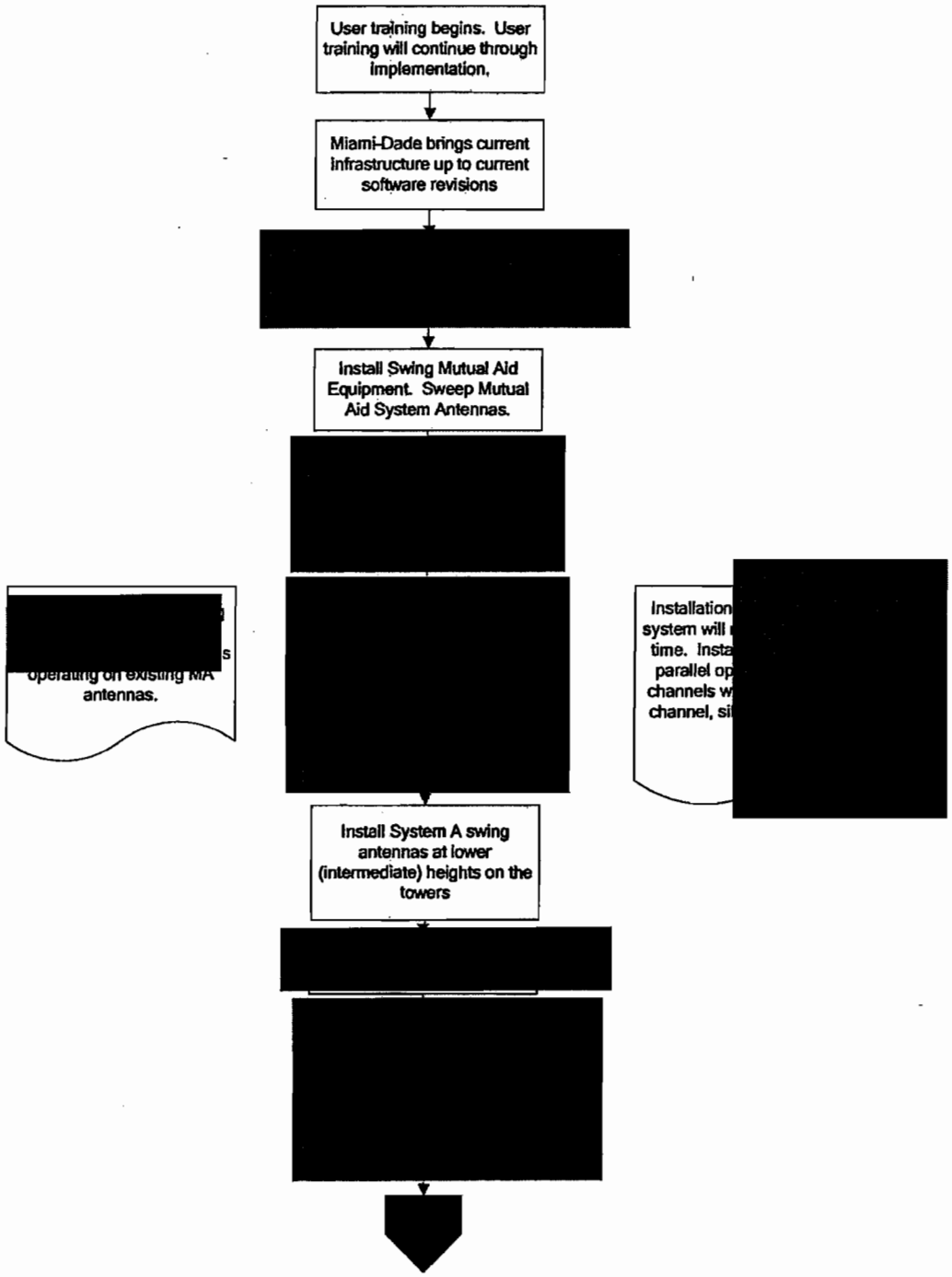
Dispatch for [redacted]

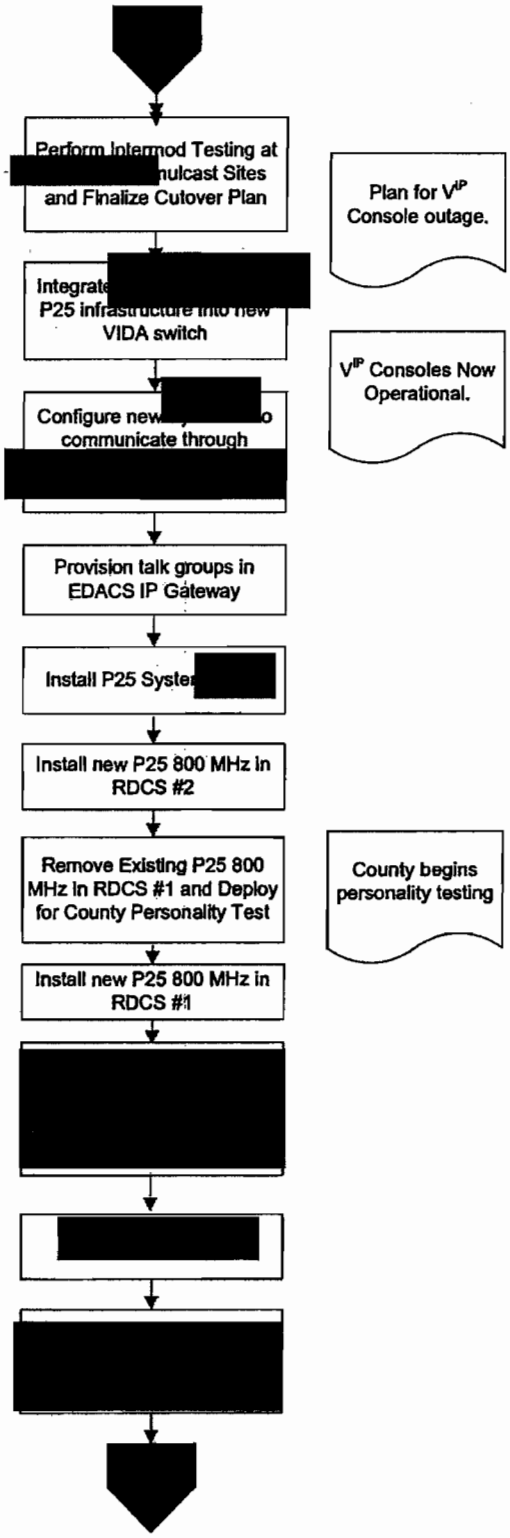
Currently, [redacted] While today [redacted] is operational, it is assumed [redacted] this project is being implemented. Similar to the Fire dispatch transition at [redacted] During Subscriber Touch 1, all backup radios would have been reprogrammed with existing and new frequencies and so should the dispatchers a[redacted]ave an event that requires the use of backup radios, the radios will provide the backup capability on both the EDACS systems and the P25 systems. [redacted] console will also be installed.

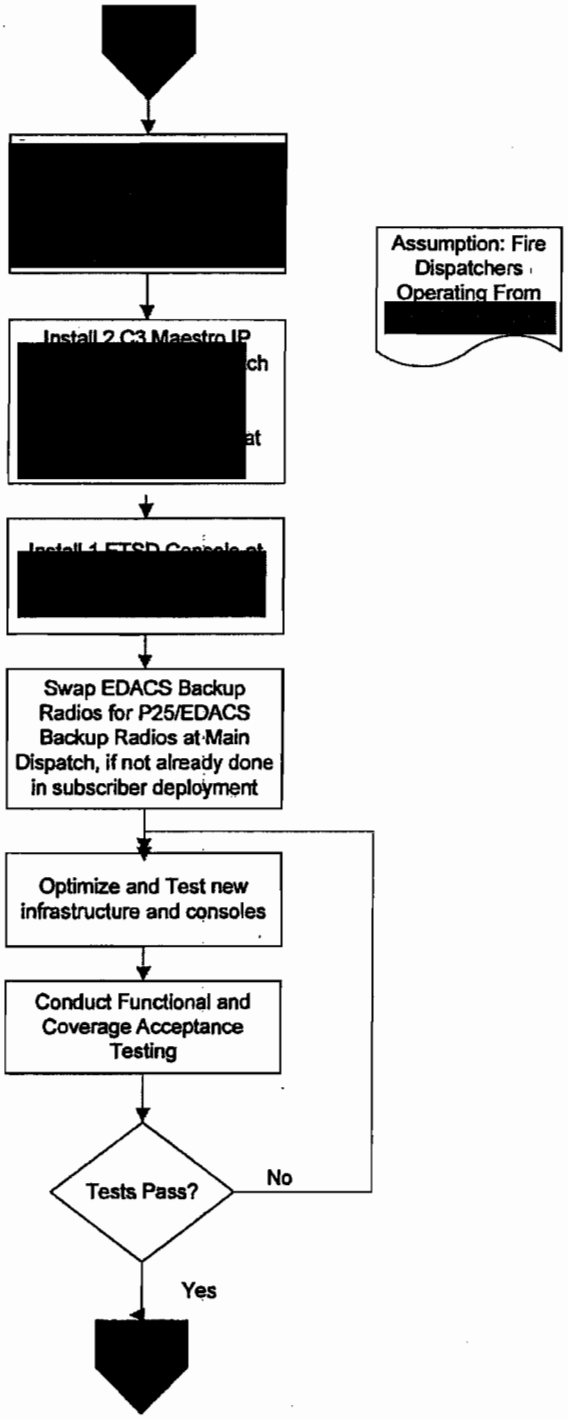
At the point that Miami-Dade starts to migrate the users, dispatch will occur using both the EDACS consoles and the P25^{IP} consoles. For Police, this means Miami-Dade [redacted] When all the users have completely migrated to the new P25 systems, Police dispatchers will continue to dispatch from [redacted] will discontinue dispatching. [redacted] at [redacted] will then be converted from EDACS to [redacted] Upon completion of the conversion, dispatchers can return to [redacted] At TCC, the dispatcher will continue to use the C3 [redacted] onsoles and discontinue using the EDACS consoles. The EDACS consoles can then be removed.

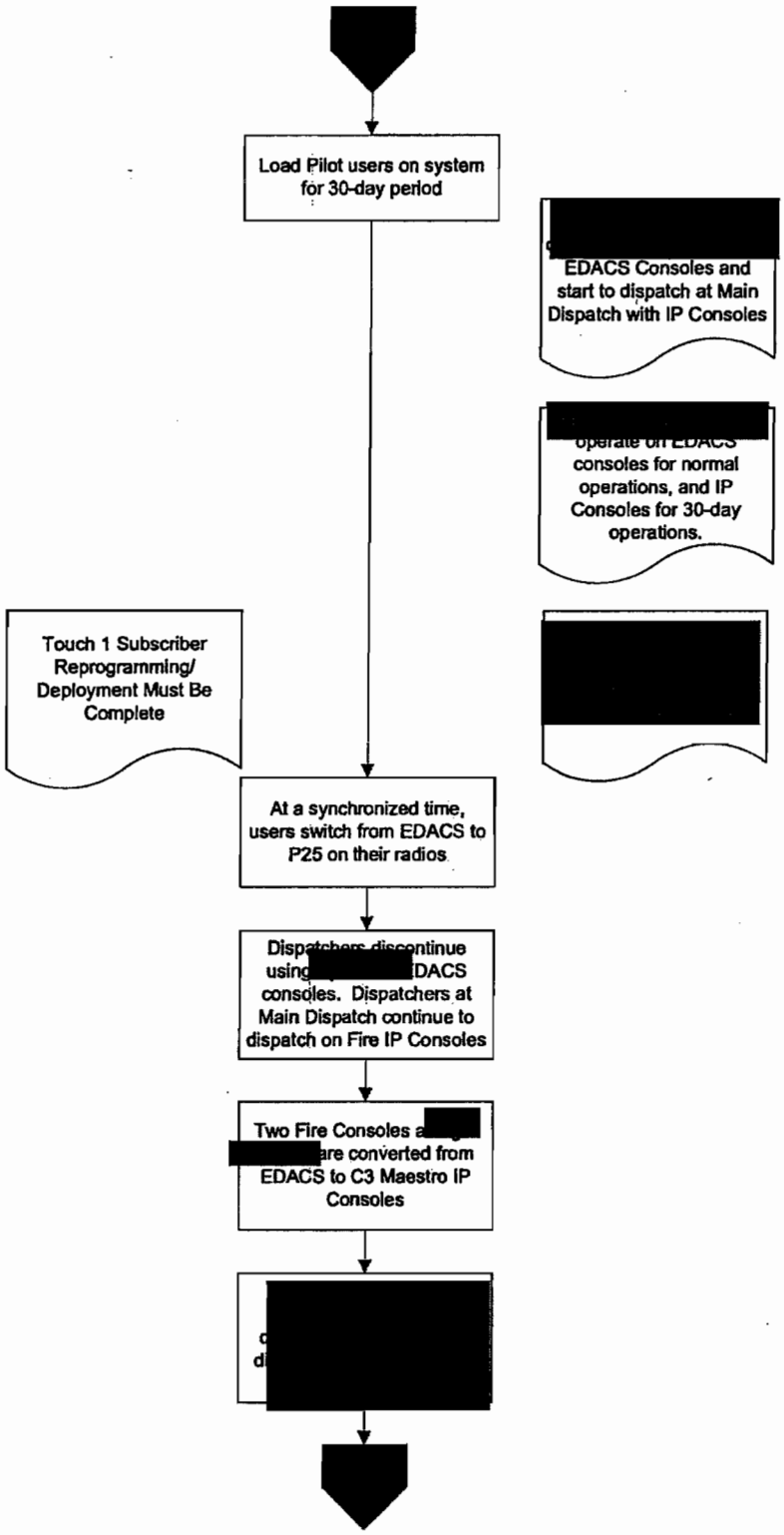
Miami-Dade Install and Cutover Diagram

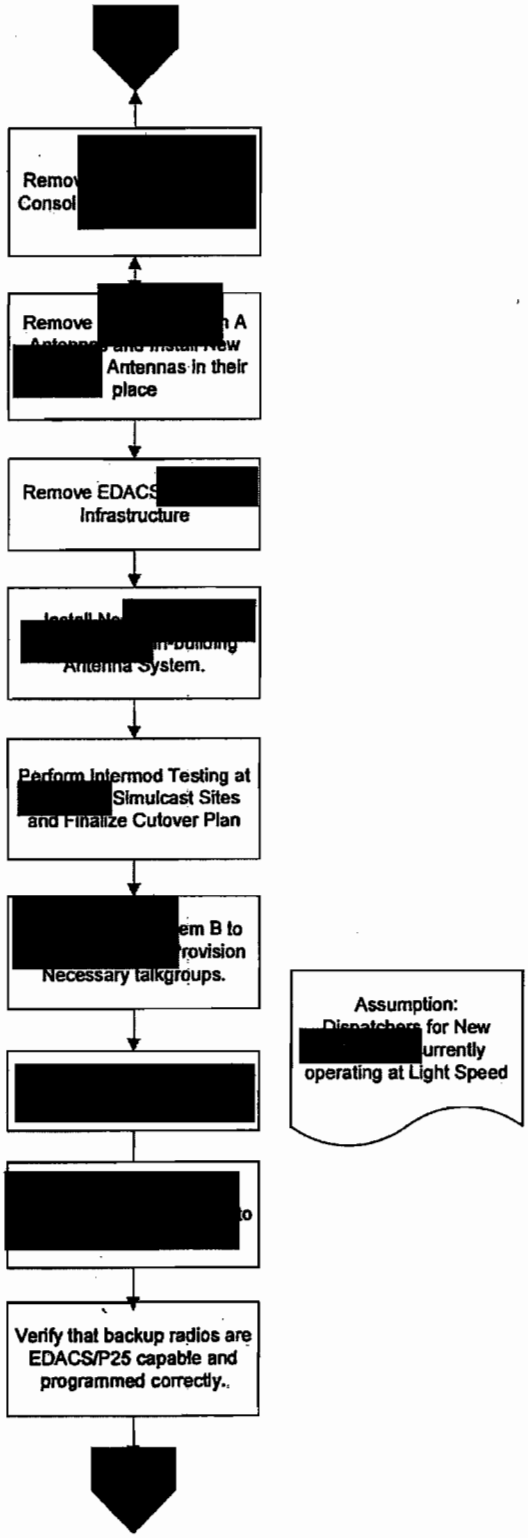
This plan assumes that the transit system will be on a VIDA platform. If the transit system is rebanded through another system architecture, all referenced to transit consoles are not applicable.

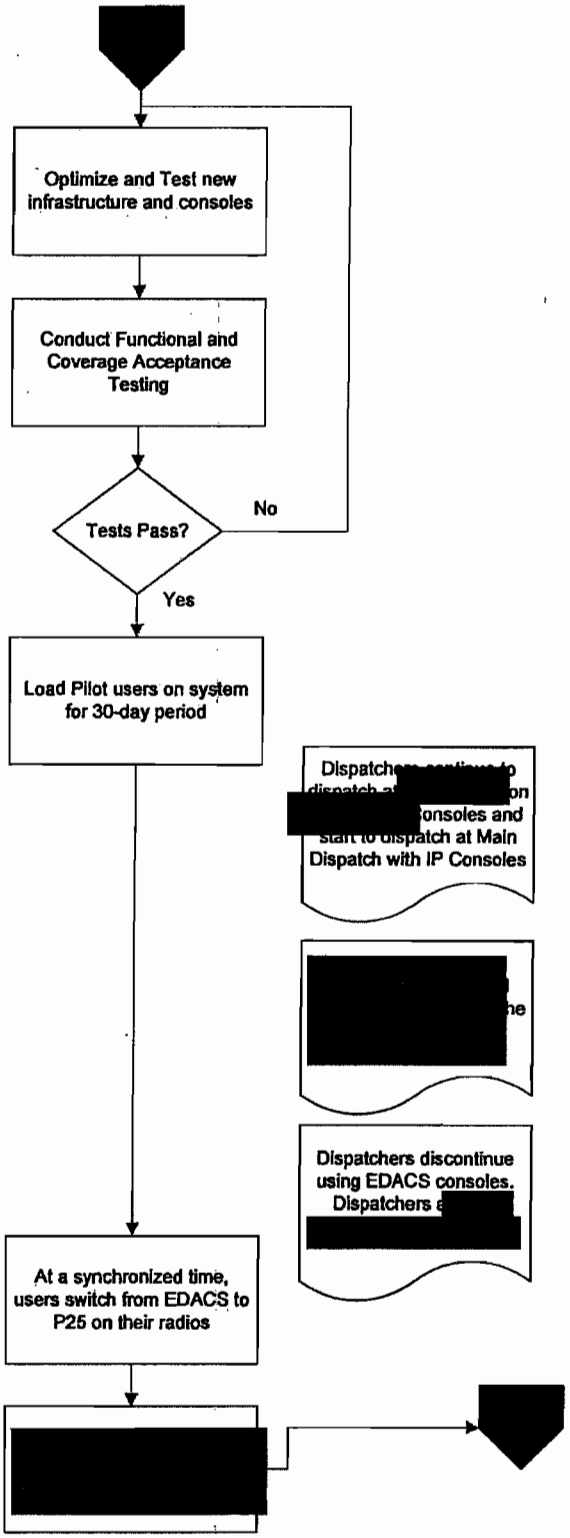

User training begins. User training will continue through implementation.
Miami-Dade brings current infrastructure up to current software revisions
Install Swing Mutual Aid Equipment. Sweep Mutual Aid System Antennas.
antennas.
Installation
system will
time. Insta
parallel op
channels w
channel, si
Install System A swing antennas at lower (intermediate) heights on the towers

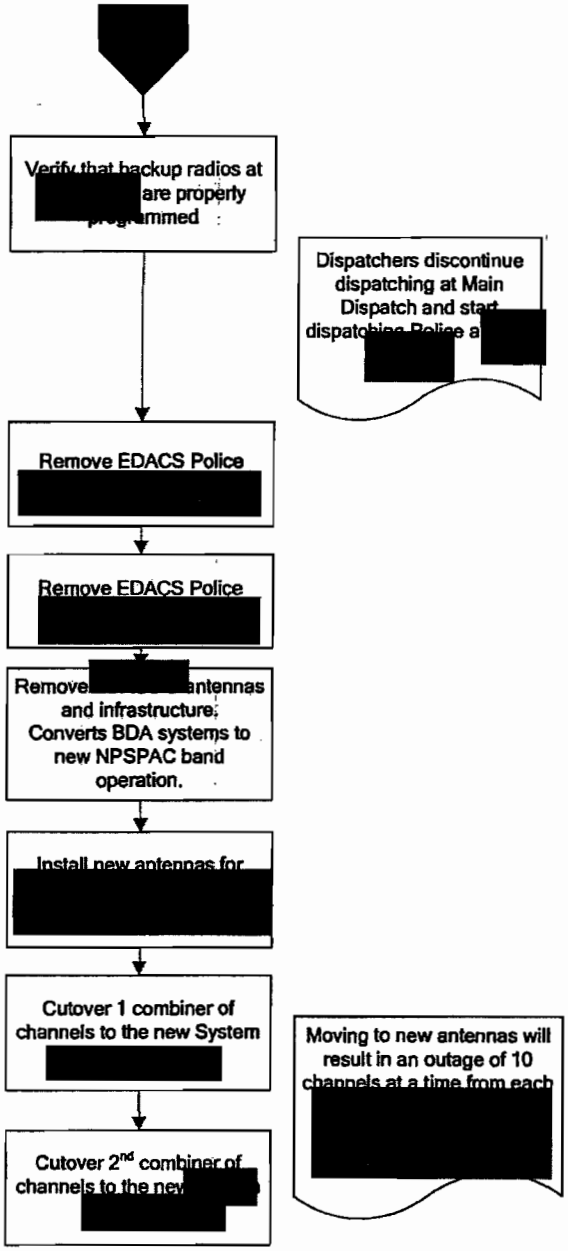

Perform Intermod Testing at [redacted] and Finalize Cutover Plan
Plan for V^IP Console outage.
Integrate [redacted] P25 infrastructure into new VIDA switch
V^IP Consoles Now Operational.
Configure new [redacted] communicate through [redacted]
Provision talk groups in EDACS IP Gateway
Install P25 Syste[redacted]
Install new P25 800 MHz in RDCS #2
Remove Existing P25 800 MHz in RDCS #1 and Deploy for County Personality Test
County begins personality testing
Install new P25 800 MHz in RDCS #1
[redacted]
[redacted]
[redacted]


Assumption: Fire Dispatchers Operating From
[redacted]
Install 2 C3 Maestro IP
[redacted]
Swap EDACS Backup Radios for P25/EDACS Backup Radios at Main Dispatch, if not already done in subscriber deployment
Optimize and Test new infrastructure and consoles
Conduct Functional and Coverage Acceptance Testing
Tests Pass?
No
Yes


Load Pilot users on system for 30-day period
EDACS Consoles and start to dispatch at Main Dispatch with IP Consoles
consoles for normal operations, and IP Consoles for 30-day operations.
Touch 1 Subscriber Reprogramming/ Deployment Must Be Complete
At a synchronized time, users switch from EDACS to P25 on their radios
continue using DACS consoles. Dispatchers at Main Dispatch continue to dispatch on Fire IP Consoles
Two Fire Consoles are converted from EDACS to C3 Maestro IP Consoles


Remov
Consol
Remove
A
Antennas in their place
Remove EDACS
Infrastructure
Antenna System.
Perform Intermod Testing at
Simulcast Sites
and Finalize Cutover Plan
em B to
rovision
Necessary talkgroups.
Assumption:
for New
urrently
operating at Light Speed
Verify that backup radios are EDACS/P25 capable and programmed correctly.


Optimize and Test new infrastructure and consoles
Conduct Functional and Coverage Acceptance Testing
Tests Pass?
No
Yes
Load Pilot users on system for 30-day period
Dispatch
onsoles and
Dispatch with IP Consoles
Dispatchers discontinue using EDACS consoles.
Dispatchers
At a synchronized time, users switch from EDACS to P25 on their radios


Verify that backup radios at [redacted] are properly [redacted]mmed
Dispatchers discontinue dispatching at Main Dispatch and start dispatching Police a[redacted]
Remove EDACS Police [redacted]
Remove EDACS Police [redacted]
Remove [redacted] antennas and infrastructure. Converts BDA systems to new NPSPAC band operation.
Install new antennas for [redacted]
Cutover 1 combiner of channels to the new System [redacted]
Moving to new antennas will result in an outage of 10 channels at a time from each [redacted]
Cutover 2nd combiner of channels to the new [redacted]

Installation

Site installation work will begin as the site preparation work is completed and in coordination with the backbone equipment delivery schedule following staging. Harris shall:

- Manufacture the proposed system design equipment as defined by the contract.
- Perform standard product verification/testing of the equipment (Factory Staging and Testing) before delivery to Miami-Dade.
- Deliver the equipment to a Harris location in the Miami-Dade area.
- Work with Miami-Dade to verify installation and grounding practices.

Harris' infrastructure installation tasks include:

- Install RF equipmen[redacted]cks as per drawings, in existing shelters or equipment rooms using Harris standard installation practices.
- Complete intra-cabinet/rack wiring.
- Hang new antennas and cabling on existing towers or buildings per Antenna Location Charts in the "Site Development Plan" and "System Descriptions." The antenna locations were chosen based on available tower space and associated antenna performance. The antennas will remain at these locations throughout the ATP and cutover and at the end of the program, Miami-Dade and Harris will decide then whether or not to relocate antennas to locations vacated by the removal of the [redacted]
- Make up RF cable jumpers (combiners and multicouplers).
- Install RF cable lightning protection.
- Ground all racks and equipment to an existing common ground inside the shelter or equipment room.
- Install routers and make connections to existing backhaul.
- Test all RF sites back to the[redacted]
- Install new consoles and test to verify proper operation for all consoles.
- Provide interoperability interfaces to agreed-upon demarcation points.

Miami-Dade shall:

- Resolve any site connectivity issues in a timely manner.
- Terminate interoperability interfaces at agreed-upon demarcation points.
- Provide support services to resolve any issues associated with the interface of the Interoperability Gateway to Miami-Dade supplied audio sources (i.e. re-programming control stations or ensuring proper operation at Miami-Dade's demarcation point).

System Optimization

Once the backbone installation is complete, Harris' System Engineer will work with the on-site technicians to optimize the system as follows:

- All levels and parameters will be set and verified at the site and [redacted] as necessary.
- IP addresses will be verified against the plan.
- Levels and parameters will be recorded for site documentation and submitted to the Miami-Dade as part of the final documentation package.
- Cross-connect information will be entered and verified as to drawings. Corrections will be made as red line corrections to the final drawing package.
- All sites will be prepared for Acceptance Testing.

Harris shall:

- Instruct the Miami-Dade team on system and site optimization.
- Provide instructions and guidelines for site setup and optimization.
- Provide detailed interface diagrams, which will assist Miami-Dade on making interoperability interfaces operate.

Miami-Dade shall:

- Provide support as necessary for interoperability interfaces, site setup, and optimization.

Acceptance Test Plan (ATP)

The System Engineer will verify that system installation and optimization is completed and ready for the acceptance test. Installation and operation of the new P25 system will be demonstrated through completion of the following Acceptance Test Procedures as defined by the contract document:

Staging/Factory Functional Test Procedure [redacted]	(SAT)	EN0011A
Fielded Functional Test Procedure [redacted]	(FAT)	EN0012A
Staging/Factory Functional Test Procedure [redacted]	(SAT)	EN0011B
Fielded Functional Test Procedure [redacted]	(FAT)	EN0012B
Mutual Aid Functional Test Procedure	(MAAT)	EN0013
Coverage Acceptance Test Procedure	(CAT)	EN0015
30 Day Operational Test Period	(30RP)	EN0016
30 Day Combined Systems Operational Test	(30DT)	EN0017
65 Building Mandatory Coverage Test	(65BT)	EN0018
Rotary Aircraft Coverage Test	(ACT)	EN0019

Upon satisfactory completion of the functional tests and coverage test, the Harris Project Manager will present documentation for system acceptance.

The field acceptance tests are broken into two elements: Functional ATPs and Coverage ATPs.

Functional ATP

The functional tests are designed to test all major features of the system. The ATP contains a short description, test methodology, and a record form for logging results and acceptance signatures for each functionality tested. The functional tests of the system will be completed after sites have been installed and optimized.

Coverage ATP

The RF Coverage Acceptance Test defines how the RF coverage tests will be conducted and the format for collected data.

Acceptance Test Responsibilities

Harris shall:

- Provide the acceptance test procedures to properly test the new P25 systems equipment.
- Prepare and program Miami-Dade owned subscriber equipment for testing.
- Perform Functional Acceptance Test and RF Coverage Acceptance Test.

Miami-Dade shall:

- Review and comment on test procedures as part of the DDR
- Provide personnel to observe/witness the Functional and Coverage Acceptance Tests.
- Sign-off test documentation at successful completion of each test.

System Acceptance [redacted] and Multisites)

Harris shall:

- Provide all test results fo[redacted]nd multisites to Miami-Dade.

Miami-Dade shall:

- Review/accept ATP results for [redacted]and multisites.
- Provide acceptance for System A and multisites.

Cutover Plan [redacted]and Multisites)

To make the various cutovers a success, careful planning must take place to ensure everything is ready, scheduled and coordinated. When Miami-Dade has completed their database and fleet-map planning and these plans have been approved, programming of the system and user equipment may begin. The time for cutovers will be selected after all subscribers have been programmed under Subscriber Touch 1 and the various systems have been installed and tested. The cutovers will usually be performed during relatively quiet periods, where any cutover disruptions will have little effect on operations. Dispatcher and user training will be scheduled to happen just before the selected cutover dates and times.

Many issues associated with cutover must be worked out, such as training, mobile installation schedules, portable radio distribution, and user availability for the cutovers to progress as rapidly as possible.

Cutover Responsibilities

Harris shall:

- Assist Miami-Dade with:
  - Cutover planning
  - Talkgroup planning
  - System database planning
  - Training plan as it pertains to the timing of the training
- Plan/schedule:
  - System Administrator Training
  - Dispatcher training
  - User subscriber training
  - System maintenance training
  - User equipment maintenance training
- Work with the Miami-Dade to establish:
  - User radio programming guides
  - User radio distribution plans
  - Radio installation schedules
  - Interoperability interfaces to be employed during cutover
  - A measurement of system latency and access time for up to ten subscriber terminals and one console, for up to forty measurement points to include simulcast, multi-site console and confirmed call types.

The Miami-Dade shall:

- Work with Harris to prepare cutover plan.
- Program the system database.
- Prepare radio user profiles and radio personalities.
- Schedule training and distribution of user radios.
- Identify a System Administrator responsible for system setup and database management, and if applicable, [redacted]
- Work with Harris to ensure that all tasks are scheduled and completed per agreed upon schedule.

System Acceptance [redacted]

Harris shall:

- Provide all test results for System B to Miami-Dade.

Miami-Dade shall:

- Review/accept ATP results fo[redacted]
- Provide acceptance fo[redacted]

Cutover Plan [redacted]

To make the various cutovers a success, careful planning must take place to ensure everything is ready, scheduled and coordinated. The time for cutovers will be selected after all subscribers have been programmed under Subscriber Touch 1 and the various systems have been installed and tested. The cutovers will usually be performed during relatively quiet periods, where any cutover disruptions will have little effect on operations. Dispatcher and user training will be scheduled to happen just before the selected cutover dates and times.

Cutover Responsibilities

Harris shall:

- Assist Miami-Dade with:
  - Cutover planning
  - Talkgroup planning
  - System database planning
  - Training plan as it pertains to the timing of the training
- Plan/schedule:
  - System Administrator Training
  - Dispatcher training
  - User training
  - System maintenance training
  - User equipment maintenance training
- Work with the Miami-Dade to establish:
  - User radio programming guides
  - User radio distribution plans
  - Radio installation schedules
  - Interoperability interfaces to be employed during cutover

Miami-Dade shall:

- Work with Harris to prepare cutover plan.

- Program the system database.
- Prepare radio user profiles and radio personalities.
- Schedule training and distribution of user radios.
- Identify a System Administrator responsible for system setup and database management, and if applicable [redacted]
- Work with Harris to ensure that all tasks are scheduled and completed per agreed upon schedule.

Final Acceptance

Once cutover is complete, the Harris Project Manager will submit the "As-Built" documentation and a letter requesting final acceptance to Miami-Dade. The signing of the final acceptance document will initiate the beginning of the warranty period. Harris' Field Service representative will provide information on Warranty Service.

Final Acceptance Responsibilities

Harris shall:

- Present final system documentation
- Provide instructions with regard to warranty and warranty repair work
- Submit Final Acceptance Letter
- Assist the County with up to two weeks of support for developing Preventive Maintenance Procedures.
- Provide County with simulcast alignment data.

Miami-Dade shall:

- Review/accept final documentation
- Sign Final Acceptance

Old Equipment Removal

Harris will remove old equipment as it pertains to infrastructure and terminal being replaced including cabling and raceways. Old equipment will be transported to a location designated by Miami-Dade.

List of Assumptions

- Harris assumes that at the point in time when [redacted] MHz P25 Phase-1 Multisite system would have already been installed under a separate SOW for the PSIC contract.
- Harris assumes that at the point in time when [redacted] MHz P25 Phase-1 Multisite system would have already been installed under a separate SOW for the PSIC contract.

Section 7 – Subscriber Programming and Installation

Introduction

Miami-Dade operates approximately [redacted] units within various agencies located throughout the County. These subscribers include mobile units, portable units, and control stations. It is anticipated approximately 24,000 total units must be replaced. The remaining units are designated for reprogramming and feature upgrading.

Due to the complexity of the Miami-Dade radio system, two radio "touches" are required under Harris' plan. Subscriber Touch 1 entails the programming of replacement radios and the reprogramming of non-replaced radios with duplicate systems for [redacted]id, the [redacted] As part of the first touch, it has been determined that Miami-Dade and Harris will be responsible respectively for programming approximately 50% of the existing radios as well as programming, deployment and installation of approximately 50% of the replaced units.

Subscriber Touch 2 entails the reprogramming of all radios with Miami-Dade responsible for approximately 75% of such effort and Harris responsible for approximately 25% of that effort. Subscriber Touch 2 is necessary to remove redundant systems from the radios, returning the radios to their pre-reconfiguration personalities with final system frequencies.

Subscriber Equipment Reconfiguration

Prior to cutover of the systems, all radios must be programmed to include the new rebanded frequency sets.

The following advisory recommendations are provided to ensure successful radio replacement and re-programming. Please view them as pre-requisites that are essential for the successful, timely, and cost-effective implementation of Miami-Dade's rebanding project.

It is assumed that Miami-Dade shall:

- Be responsible for coordinating locations to remove/install and reprogram mobile and portable radios for all replaced radios under Subscriber Touch 1 and any radios to be reprogrammed under Subscriber Touches 1 and 2.
- Be responsible for coordinating the scheduling of subscriber users to deliver radios to equipment replacement/reprogramming locations as efficiently as possible.
- Be responsible for coordinating with all agencies to develop and manage schedules for equipment installation/programming.
- Be responsible for coordinating the rescheduling of subscribers where the user does not arrive as scheduled (no-shows). Accommodating no-shows is subject to additional costs to reschedule and perform work, which may result in a change order.
- Be responsible for programming 50% of non-replaced control stations.

- Be responsible for programming and installation of 50% of replaced control stations.
- Be responsible for testing of all personalities prior to programming activities.
- Be responsible for the development of all radio personalities.
- Be responsible for inventorying and approving all radio returns to Sprint.
- Be responsible for all asset tagging and tracking as required by Miami-Dade.
- Should additional programming of the radios be required, Miami-Dade will agree to provide radios for reprogramming in the most efficient way possible, retaining responsibility for 50% of the programming.
- Be responsible for the programming and installation of all subscribers aboard fixed-wing, if any exist, and rotary aircraft.
- Be responsible for providing Harris with a vehicle inventory for mobile installations that include:
    - Make and Model of Vehicle
    - County Asset Tag
    - Existing Mobile Installed
    - Type of Installation (i.e. Front-Mount or Trunk-Mount)
    - Any Special Installation and/or Antenna Requirements

It is assumed that Harris shall:

- Provide factory data sheets for subscribers, proving that they have been factory tested and meet the published specification.
- Be responsible for storage of the approximately 24,000 replacement radios and accessories provided by Sprint-Nextel and storage of the removed equipment (radios only) pending return to Sprint-Nextel.
- Be responsible for removal, installation, and programming of 50% of replaced radios and programming of 50% of non-replaced radios.
- Be responsible for submitting a database containing at a minimum, serial number of radio, inventory tagging identification number along with the personality loaded into the radio and the name and agency of the user receiving new radio equipment for the portion of terminals Harris is responsible for programming.
- Be responsible for submitting a database containing at a minimum, the user equipment returned by each individual user for return to Sprint for the portion of terminals Harris is responsible for collecting.
- Be responsible for returning replaced radios as approved by Miami-Dade.
- Should additional programming of radios be required, Harris agrees to program radios in the most efficient way possible, retaining the responsibility for 50% of the programming.
- Provide up to four weeks of technical assistance to Miami-Dade to determine the appropriate settings for personalities in the P25 Phase 1 arena.

- Be responsible for 50% of programming of non-replaced control stations.
- Be responsible for programming and installation of replaced control stations.
- Be responsible for providing 50' of cable per control station ordered from Sprint-Nextel. The cable required will be provided in 500' spools.
- Be responsible for software upgrading any P7100, P5100 or M7100 model radio currently in inventory of Miami Dade to P25 functionality.
- Be responsible for hardware upgrading any P7100, P5100 or M7100 radios that require such an upgrade for P25 functionality.

The following is the process as defined by Miami-Dade for the reprogramming/replacement of their subscriber units:

1. **Personality Development (Miami-Dade / Harris responsibility)**

   As each personality is developed, an Excel spreadsheet of the personality is also developed and used as a tool to confirm that the personalities were developed correctly. The personality will be developed to include original and final frequency sets for all systems. This estimate also includes the checking of the Radio Template against the personality. The Radio Template will also be used for field training during deployment of the re-programmed radios.

2. **Personality Testing (Miami-Dade / Harris responsibility)**

   Standard personality testing to be defined, is required on every personality prior to programming of any radios. Harris and Miami-Dade will mutually agree on the tests to be performed and will work jointly to complete the testing.

3. **Shipment of Replacement Radios (Sprint) (Harris responsibility)**
   Once radios and the associated accessories are ordered by Sprint-Nextel, they are shipped and delivered to a warehouse facility rented by Harris for this effort. Harris must verify that every radio shipped and every accessory shipped was actually received. This entails a detailed comparison of what was shipped against what is listed as shipped in the packing slips.

4. **Inventory Procedures for Replacement Radios (Miami-Dade responsibility)**

   Miami-Dade General Services Administration (GSA) Department, Materials Management Division will dispatch two inventory clerks who will travel to Harris' storage location and begin the inventory process. The process is defined below:

   a. Each and every radio is removed from its box. The serial numbers are recorded by the inventory clerk.
   b. Each radio is then labeled with two (2) (DC) Inventory stickers. Both stickers have the same number which makes the item a property of the capital listing of Miami-Dade assets.
   c. Each radio is then engraved with the DC number that was assigned in Step b.
   d. Each radio is then returned to its original box.

5. **Mobile Installations for Replacement Radios (Joint responsibility)**

   The installation process will be mutually agreed upon, however, it is agreed that Harris and Miami-Dade will each be responsible for the installation and programming of 50% of mobile installations and programmings.

   After Harris installs each mobile radio, Miami-Dade shall inspect the installation, witness proper operation, and sign-off the installation before the vehicle is released back to Miami-Dade.

6. **Deployment of Programmed Replacement Portables (Joint responsibility)**
   The programming process will be mutually agreed upon, however, it is agreed that Harris and Miami-Dade will each be responsible for programming 50% of all portable replacement radios.

7. **Programming Non-Replacement Radios (Joint responsibility)**
   The programming process will be mutually agreed upon, however, it is agreed that Harris and Miami-Dade will each be responsible for programming 50% of all retained portable radios

Subscriber Touch 2

Miami-Dade will be responsible for programming approximately 75% of all radios associated with Subscriber Touch 2, Harris will be responsible for programming approximately 25% of the radios, which is incorporated as a touch to the subscriber units to remove the pre-rebanded frequencies from the subscriber radios.

Section 8 – P25[IP] Training

Developing the knowledge and skills of Miami-Dade personnel who will operate, manage and maintain the new radio system are critical elements in successfully launching a P25[IP] communications system. To perform these tasks, high-quality, performance-based training is required that will build and enhance personnel competence. In addition, training will enable Miami-Dade to optimally use the features and capabilities of P25[IP] to meet and exceed the specified communication requirements.

The customized training program that will be conducted for Miami-Dade is divided into four categories: System Management Training, Dispatcher Training, Radio User Training, and Maintenance Technician Training.

System Management Training

System managers have the overall responsibility for defining and maintaining the system's configurable parameters. The importance of this role has increased significantly as communication systems have become larger and more complex. The responsibilities include defining the group structure, maintaining unit and group databases, planning radio feature usage and personalities, developing operating procedures, generating reports, controlling radios (e.g., enabling and disabling units), and analyzing system performance.

Harris will conduct each of the following four courses/workshops one time at a facility provided by Miami-Dade. Maximum class size is ten students.

- P25[IP] System Administration Course (4½ days)
- P25[IP] Structuring Workshop (2 days)
- Unified Administration System Course (2 days)
- Regional Network Manager (2 days)

Dispatcher Training

Dispatch personnel are at the core of effective and efficient implementation of a radio sy[redacted] A key benefit to Miami-Dade is that dispatch personnel are already proficient operating the [redacted] n the existing EDACS system. This will facilitate the transition [redacted]. The new console uses the same [redacted] interface and the majority of dispatch functions (i.e., patch and simulselect operation) are identical. Therefore, only a one-hour session will be required to train regular and relief dispatchers and their supervisors.

While the time required for training is minimal, the payback is immense. Dispatcher Training sessions will be conducted using the installed equipment with small groups of no more than two people on an operating console. This maximizes the effectiveness of the hands-on portion of the training. Each student will receive a quick reference manual for the operation of the [redacted] Dispatch Console. These training sessions will include an overview of the new P25[IP] communications system and hands-on training using the [redacted] e focusing on the differences between the old and new consoles.

Harris will conduct up to 18 one-hour, instructor-led training sessions over three consecutive working days. These sessions will be scheduled just prior to implementation to allow participants to promptly begin using the skills learned.

Radio User Training

The importance of radio users understanding basic system operation and the operation of their portable and/or mobile radios and control stations must not be underestimated. As was the case with dispatch personnel, the transition to our P25^{IP} system will be facilitated by the radio users' experience operating on an EDACS system. Harris will provide two methods for training radio users: instructor-led train-the-trainer and web-based training.

Train-the-Trainer

Harris will conduct four-hour, train-the-trainer sessions that will include the following topics:

- An overview of the Miami-Dade P25^{IP} communications system
- A discussion on the differences between analog and digital voice
- A discussion of radio/system coverage expectations
- A demonstration of radio operation
- Hands-on practice with the radios
- A discussion of basic radio care including battery maintenance

Harris recommends that instructors have previous instructional experience and operating experience on the EDACS system. Additionally, a desire to conduct the training will be beneficial to optimize training effectiveness for end users. Harris is committed to providing model training and support materials for designated Miami-Dade instructors to use during the implementation phase.

Harris will conduct ten Radio User Training sessions over five consecutive days at a facility provided by Miami-Dade. Each session is limited to a maximum of 15 students. The train-the-trainer sessions should be scheduled approximately two-to-four weeks prior to the start of the performance period. This will allow time for the instructors to practice using the equipment as well as to hold training sessions for their "trainees." Operating equipment purchased by Miami-Dade from Harris as part of the system will be used during the training.

Web-Based Training

Harris will provide Miami-Dade with access to our web-based training solution during the transition period from EDACS to P25. Using web-based training will facilitate the migration to P25 by providing radio users with self-paced, highly interactive training just prior to cutover. Training courses on radio operation include the following learning objectives:

- Discuss the safety precautions when using the radio.
- Explain the display indicators and alert tones.
- Make and receive group calls.
- Change the selected talkgroup.
- Manually change the system.

- Make and receive individual calls, as applicable.
- Make and receive emergency calls.
- Establish a scan list and turn scan on and off.
- Lock and unlock the keypad.
- Adjust the display backlight and contrast.

Harris will customize the web-based training courses for the Police, Fire and Transit agencies based on radio personalities provided by Miami-Dade. Once a radio user registers for a course, that course will be accessible for 30 days, which allows the student to review selected sections or the entire course multiple times to reinforce the learning.

Maintenance Technician Training

Maintenance technicians will require intensive training in order to troubleshoot and perform maintenance on the P25^{IP} communications system. The maintenance training program will provide technicians with the knowledge and skills needed to conduct preventative maintenance, troubleshoot problems, and take corrective action.

Harris will conduct each of the following five courses two times at a facility provided by Miami-Dade. Miami-Dade will be responsible for providing the necessary tools and equipment to support the hands-on portion of the maintenance training. The laboratory exercises included in the maintenance training courses are best served if conducted at the customer's service shop. This facilitates access to tools, cables, connectors and other miscellaneous items needed for the training. Maximum class size is ten students.

- P25^{IP} System Maintenance Course (7 days)
- Network Operation & Maintenance Course (3 days)
- MASTR V Station Maintenance Course (3 days)
- P25^{IP} Simulcast System Maintenance Course (3 days)
- Radio Maintenance Course (4 days)

Section 9 – Warranty Support Services

Overview

Harris has the corporate experience, capabilities and resources necessary to provide a complete suite of support services for the Miami-Dade Communications System project. Harris is offering a customized Warranty Support Plan that will fully meet or exceed the needs of Miami-Dade.

To support a communication system the size of the proposed Miami-Dade system, Harris will use the services of its Miami-based Authorized Service Center (ASC), Cooper General, in addition to Harris personnel. Cooper General technicians will be trained, have the tools and test equipment necessary, and will be provisioned with the spare parts needed to support Miami-Dade's system infrastructure and user equipment during the two year warranty period.

In addition to service facilities in Miami, Harris' Technical Assistance Center (TAC), located in Lynchburg, Virginia, will provide 24 x 7 x 365 access to its technical staff of engineers and senior technicians should questions or system performance issues arise, requiring additional support beyond those provided by the local ASC. Harris also maintains two factory depot repair facilities, located in Lynchburg, Virginia and Harrisburg, Pennsylvania. These facilities will be used to augment the field service teams in Miami, when necessary, and will provide rapid equipment repairs when the necessary repairs cannot be accomplished in the field.

Warranty Services

Harris will provide a warranty for equipment supplied to Miami-Dade as further specified in Article 31 of the System Purchase Contract. Miami-Dade has stated that it intends to be self-maintained following the warranty period. Accordingly, Harris recommends that during the warranty period Miami-Dade radio service technicians accompany Harris/Cooper General service technicians, as their schedules permit, to gain familiarity, experience and knowledge of the new system to assure a seamless transition post warranty.

Service Requests, Response Times and Restoration Times

Harris will provide Miami-Dade with a toll free number, available 24 x 7 x 365, to report problems with the system and/or request service from its local ASC. Harris/Cooper General will begin troubleshooting activity within 30 minutes of receipt of the call. If permission is granted for on line system access by Miami-Dade, Harris/Cooper General will begin real time diagnostic activity and if deemed necessary, dispatch its service technicians to be on site within two hours of the reported problem to provide on site corrective action. Harris recognizes the importance of rapid response to service requests on a public safety/public service communication system and has prepared a call escalation plan that will meet the needs of Miami-Dade. The following is an example of successful escalation procedures that have been employed for critical failures on other statewide and large communication systems as part of Harris' warranty support program.

- Step 1 – Miami-Dade personnel/users of the system initiate a service request by calling the toll free number. The caller, nature of the request, etc. is logged.

- Step 2 – Harris personnel will begin the evaluation of the problem and contact the appropriate service technician should it be determined that on site support may be required. If after 30 minutes the on call technician has not responded, the second on call technician will be paged/called and the Cooper General Service Manager will be contacted. Within two hours of the initial request and upon verification that a technician is responding, the appropriate/designated Miami-Dade point of contact will be called and the remediation status reported.
- Step 3 – Within two hours of receipt of the service request, a technician will be on site to commence repair activities if the problem cannot be resolved remotely.
- Step 4 – If, after two hours, the technician has not confirmed they are on site, the Harris Regional Service Manager will be contacted by Cooper General to report the missed on site response time and to engage additional resources to resolve the service issue. The Miami-Dade designated point of contact will be notified of the situation.
- Step 5 – In the unlikely event that the service problem cannot be resolved by the on site technician, Cooper General will contact Harris' Senior Regional Service Manager for additional assistance and notify Miami-Dade's designated point of contact of the repair status.
- Step 6 – If within 24 hours of a service request, the problem has not been resolved the Harris Director of Field Operations will be contacted by Cooper General and the designated Miami-Dade point of contact will be notified of the progress made and current status of the remedial actions being taken.

Spare Parts

During the warranty period, Harris will have system critical spare parts available for use at its ASC facility in Miami. As spares are used to correct warranty failures, they will be replaced.

Appendices A to K

The Acceptance Test Procedures are included in separate files.

Appendix L – Responsibility Matrix

* *Indicates Palmetto Rail Yard only*
** *Indicates Palmetto Rail Yard and sites requiring tower modification or construction*
*** *Indicates Palmetto Rail Yard and Richmond only*

Project Task	Harris	Miami-Dade	Comments
System			
RF System (P25, Mutual Aid, Transit Data)	X		
Backhaul System (fiber, T1, Mobile Microwave {RDCSs})		X	
Backhaul System (microwave)		X	If the County exercises the Option for microwave from Harris, then this will become Harris' responsibility
Program C3 Maestro^{IP} Consoles	X	X	Harris to program consoles, County to provide console personalities
Deliver demark specs to MDC for backhaul	X		
Site locations		X	
Antenna locations	X	X	Harris to identify desired antenna locations, the County to provide the space for the antennas.
Provide outputs from FRIP	X		
Use FRIP data to complete licensing forms		X	
Frequency Coordination and Licensing		X	In conjunction with Sprint-Nextel
Desktop Control Station antennas	X		All Public Safety antenna systems will be replaced, all others re-used
Staging			
Stage RF System	X		
Conduct pre-Factory Acceptance Testing	X		
Conduct Factory Acceptance Testing (FAT)	X	X	MDC to witness
Sign-off FAT	X	X	
Logistics			
Provide ship to address	X		
Provide storage space	X		
Receive equipment	X		
Inventory equipment	X	X	
Property tag		X	
Process equipment returns	X	X	
Site Development			
Secure site location use		X*	

Project Task	Harris	Miami-Dade	Comments
Conduct site surveys	X **	X	For Harris, this is related to tower modifications, tower construction, and PRY, if required.
Ensure building space at site	X *	X	
Secure site zoning, if necessary		X	
Obtain site plots	X *	X	As required
Obtain architectural drawings		X	
Obtain PE approval	X**	X	For Harris, this is related to tower modifications, tower construction, and PRY, if required.
Secure building permits	X		
Provide access road		X	The County will be responsible for ensuring adequate access to ALL sites such that tractor trailers, cranes, etc can be used.
Clear site and grade	X **		
Provide soil boring & results study	X **	X	For Harris, this is related to tower modifications, tower construction, and PRY, if required.
Provide erosion control	X *		
Test compaction, break test	X *		
Provide shelter foundation	X *		
Provide & install ice bridge	X *		
Provide & install waveguide ladder	X *		
Provide Backhaul System Test Results (fiber, T1, Mobile Microwave {RDCSs})		X	To ensure latency, jitter and bandwidth requirements are met
Provide Backhaul System Test Results (microwave)		X	If the County exercises the Option for microwave from Harris, then this will become Harris' responsibility
Provide site compound rock/fabric	X *		
Provide & install fence		X	
Provide landscaping	X *	X	
Tag existing Telco circuits		X	
Measure or provide documentation for existing ground systems and correct, if necessary		X	
Electrical			
Provide sufficient primary electrical at site		X	
Provide H Frame and meter		X	
Provide electric from H-frame to shelter	X *	X	
Provide shelter ground at new site	X *		
Install meter base		X	

Project Task	Harris	Miami-Dade	Comments
Install/wire new UPSs	X		Installation only applies to cases where a new UPS will be furnished...where existing UPS, Harris will wire only
Install new breakers and panels for P25 System	X		
Wire AC from electric panels to cabinet /racks	X		
Provide generator and transfer panel at existing sites, except Palmetto Rail Yard and Richmond		X	
Provide generator and transfer panel at Palmetto Rail Yard and Richmond	X		
Wire generator and transfer panel for PRY and Richmond	X		
Wire generator and transfer panel except for PRY and Richmond		X	
Provide shelter AC lightning protection	X*	X	
Provide new RF line lightning protection	X		For new antenna systems associated with the P25 Phase 1 Communications System.
Ground all Harris-provided equipment per specifications	X		
Make all equipment AC power connections (per the SOW)	X		
Provide building ground point		X	For all existing shelters and buildings, the demarcation point for the grounds will be inside the shelter or building where the equipment will reside
Obtain electrical permits	X		
Towers			
Provide towers for all sites		X	
Provide tower structure analysis for existing sites	X		
Obtain FAA approval		X	If it is deemed that the towers need extensions in order to accommodate new RF system or backhaul
Obtain construction permits for tower modifications	X		If it deemed that the towers need extensions or tower foundations are inadequate to accommodate the new RF system or backhaul
Make tower or tower foundation modifications if necessary	X		Financial responsibility as outlined in the Contract
Provide FAA as-built notification		X	If it is deemed that the towers need extensions in order to accommodate the equipment

Project Task	Harris	Miami-Dade	Comments
Provide antenna side arm mounts for RF System	X		
Provide microwave dish mounts for Backhaul System		X	If the County exercises the Option for Harris to provide microwave, this will become Harris' responsibility
Install antenna systems and feed lines for new RF system	X		Does not include any microwave, fiber or any other backhaul medium work
Install tower top amplifiers	X		Tower top amplifiers will be provided for all sites except Miccosukee, Golden Beach, and the RDCSs.
Install RF lines/cables for new RF System	X		
Shelters			
Ensure space for equipment in existing shelters/buildings		X	
Provide shelter/building structural analysis		X	
Upgrade shelter/building if analysis proves the work necessary		X	
Provide adequate HVAC	X*	X	
Provide two 3-ton HVAC units at Richmond and one 4-ton at K&B	X		
Provide shelter foundation	X*	X	
Provide & install shelters	X*	X	
Generators			
Provide generator pads	X***	X	For Harris, this applies to PRY and Richmond
Provide generators	X***	X	For Harris, this applies to PRY and Richmond
Install generators and fuel lines	X***	X	For Harris, this applies to PRY and Richmond
Conduct start-up and test of generators	X***	X	For Harris, this applies to PRY and Richmond
Provide propane tank	X***	X	For Harris, this applies to PRY and Richmond
Provide standard generator alarms	X***		For Harris, this applies to PRY and Richmond
Provide fuel		X	
Installation			
Transport equipment to site	X		
Place equipment into position and secure	X		
Install cable tray, conduit or wire way	X		
Wire between cabinets/racks	X		
Make RF jumpers for combiners/multicouplers	X		
Remove old EDACS equipment and wiring, excluding AC circuits	X		

Project Task	Harris	Miami-Dade	Comments
Connect to backhaul	X		
Testing			
Optimize RF System backbone equipment operation	X		
Conduct pre-functional testing of the RF System	X		
Conduct functional ATP of the RF System	X	X	Witnessed by the County
Sign-off functional ATP of the RF System	X	X	
Conduct coverage ATP of the RF System	X	X	
Prepare coverage ATP Report	X		
Review and sign-off coverage ATP Report	X	X	
30 Operational Tests as defined in the ATP	X	X	
Optimize, test, and sign-off Backhaul System		X	Harris will not be responsible for testing of microwave (unless the County exercises the Option for Harris to provide microwave), fiber, T1, etc.
Permits			
Obtain FCC license		X	
Obtain FAA approval		X	
Obtain construction permits	X**		For Harris, this is related to any construction work requiring permits performed by Harris or its subcontractors.
Obtain building permits	X**		For Harris, this is related to any work requiring permits performed by Harris or its subcontractors.
Obtain site plots	X**		For Harris, this is related to any site work requiring this effort that is performed by Harris or its subcontractors.
Obtain architectural drawings	X**		For Harris, this is related to tower modifications, tower construction, and PRY, if required.
Obtain PE approval	X**		For Harris, this is related to any work performed by Harris or its subcontractors which require this approval.
Training			
Develop detailed training plan	X	X	
Provide System Admin Training	X		
Provide Dispatch Training	X		
Provide User Training	X		
Provide Maintenance Training	X		
Identify train-the-trainer experts		X	

Project Task	Harris	Miami-Dade	Comments
Cutover			
Develop detailed cutover plan	X	X	
Develop detailed talk group structures		X	
Develop personalities		X	
Load users in the UAS		X	
Provide Personality Testing		X	
Personality Standard Testing	X	X	
Provide Programming Locations		X	
Provide Programming Schedules	X	X	
Program Radios 50% Touch 1		X	
Program Radios 50% Touch 1	X		
Mobile Installs 50% Touch 1		X	
Mobile Installs 50% Touch 1	X		
CS Installs and Programming Touch 1 50%		X	
CS Installs and Programming Touch 1 50%	X		
Program Radios Touch 2, Approximately 75%		X	
Program Radios Touch 2, Approximately 25%	X		
Provide equipment technical manuals	X		
Provide system "As-Built" documentation	X		
Develop P25 Subscriber Unit Configurable Options Settings	X	X	Determine which features can be programmed in each P25 subscriber unit being provided
Miscellaneous			
Provide Subscriber Unit Quantities for orders to Sprint		X	
Witness and sign-off mobile installations performed by Harris		X	
Program and/or install subscribers aboard fixed-wing or rotary aircraft		X	
Provide Harris Vehicle Inventory for mobile installs		X	
Provide Accessory Quantities for orders to Sprint		X	
Inventory Used Radio Equipment for Return to Sprint	X	X	Miami-Dade approves all returns
Provide Required Power at Lightspeed (VCE)		X	
Provide Required Power at CAB for Cutover Activities (Dual Consoles)		X	
Provide Adequate Console Furniture at Dispatch Centers if Required for IP Consoles		X	
Return all applicable replaced equipment to Sprint	X	X	Miami-Dade signs off on all equipment for return

Project Task	Harris	Miami-Dade	Comments
Documentation			
Provide site equipment floor plan drawings	X		
Provide site equipment rack drawings	X		
Provide tower antenna layout drawings	X		
Provide System Optimization Procedure	X		
Provide equipment technical manuals	X		
Provide Global Bypass Configuration Change Documentation	X		
Provide Detailed Design Review Documentation	X		
Provide system block drawings	X		

EXECUTION VERSION

RADIO COMMUNICATION SYSTEM PURCHASE CONTRACT

THIS RADIO COMMUNICATION SYSTEM PURCHASE CONTRACT ("CONTRACT") IS MADE AND ENTERED INTO AS OF THIS ___ DAY OF JANUARY 2010 BY AND BETWEEN MIAMI-DADE COUNTY, A POLITICAL SUBDIVISION OF THE STATE OF FLORIDA, HAVING ITS PRINCIPAL OFFICE AT 111 N.W. 1ST STREET, MIAMI, FLORIDA 33128 (HEREINAFTER REFERRED TO AS THE "COUNTY"), AND HARRIS CORPORATION, A CORPORATION ORGANIZED AND EXISTING UNDER THE LAWS OF THE STATE OF DELAWARE, THROUGH ITS RF COMMUNICATIONS DIVISION, HAVING ITS PRINCIPAL OFFICE AT 221 JEFFERSON RIDGE PARKWAY, LYNCHBURG, VIRGINIA 24501 (HEREINAFTER REFERRED TO AS THE "CONTRACTOR").

RECITALS:

WHEREAS, pursuant to certain orders, as amended, ("Orders") issued by the Federal Communications Commission ("FCC"), certain licensees of 800 MHz frequencies used in public safety or other systems must reconfigure their systems to operate on other licensed public safety frequencies, and Nextel South Corp. ("Sprint Nextel") must provide all funds reasonably necessary to provide each such licensee reconfigured facilities that are comparable to those presently in use;

WHEREAS, pursuant to the Orders, County and Sprint Nextel have entered into a Frequency Reconfiguration and Settlement Agreement dated _____, 20__, (the "FRA"), a copy of which is attached hereto for reference purposes only as Schedule 1, pursuant to which the County has agreed to relinquish certain 800 MHz frequencies (the "Incumbent Frequencies") and reconfigure its system to certain replacement frequencies (the "Replacement Frequencies");

WHEREAS, the County owns and operates a 800 MHz EDACS trunked radio system that consists of eight (8) internal radio systems and related equipment, parts, materials, and Harris Corporation proprietary computer software (the "Existing Radio System"); and

WHEREAS, Contractor represents that M/A-COM, Inc. has sold or otherwise transferred to Contractor all of M/A-COM's rights and interest in the Existing Radio System; and

WHEREAS, County desires to engage the services of Contractor as an independent contractor to furnish goods and services to the County in order to provide the County with a reconfigured P25 Phase 1 Radio Communication System comprised of the Hardware and Software (as defined herein) (the "System"), as more specifically described in Section 3 (System Descriptions) of the Statement of Work set forth in Exhibit A; and

WHEREAS, County desires to engage the services of Contractor to furnish goods and services to the County in order to provide the required software licenses, equipment, parts, maintenance, support, and professional services; and

NOW, THEREFORE, WITNESSETH that for and in consideration of the mutual promises contained herein and other good and valuable consideration, the sufficiency and receipt of which are hereby acknowledged, it is mutually agreed between the parties as follows:

ARTICLE 1. DEFINITIONS

The following words and expressions used in this Agreement shall be construed as follows, except when it is clear from the context that another meaning is intended:

1.1 **"Effective Date of the Contract"** shall mean the date on which the Contract is signed by the County.

1.2 **"Contract Manager"** shall mean the Miami-Dade County's Director, Department of Procurement Management, or the duly authorized representative designated to manage the Contract.

1.3 **"Contractor"** shall mean the Harris Corporation, a Delaware corporation, through its RF Communications Division, with offices at 221 Jefferson Ridge Parkway, Lynchburg, Virginia 24501.

1.4 **"Day"** shall mean a calendar day or any portion thereof. If an action or obligation must be performed or completed on a day that is a holiday or a weekend day then such action, unless otherwise specified, may be performed or completed on the next business day.

1.5 **"Change Order"** shall have the meaning given in Article 13(C).

1.6 **"Project Manager"** shall mean the County's Technical Project Manager or Contractor's Senior Project Manager, or each respective party's duly authorized representative designated to manage the Project.

1.7 **"Statement of Work"** shall mean the document appended hereto as Exhibit A, which details the work to be performed by the Contractor.

1.8 **"Subcontractor"** or **"Subconsultant"** shall mean any person, entity, firm or corporation, other than the employees of the Contractor, who furnishes labor and/or materials, in connection with the Work, whether directly or indirectly, on behalf and/or under the direction of the Contractor and whether or not in privity of the Contract with the Contractor.

1.9 **"Work", "Services" "Program"**, or **"Project"** shall mean all matters and things required to be done by the Contractor in accordance with the provisions of this Contract, including but not limited to enhancements or modifications to the P25 Phase 1 Radio Communication System or associated Software in the areas of business strategy, System improvement, training, project management, systems integration, software development and other specific activities related to improving the County's Radio System, training or personnel to operate the same, modification of software, infrastructure, and related consulting activities.

1.10 **"Acceptance" or "Accepted"** shall mean acceptance of a Subsystem as set forth in Article 27 hereof.

1.11 **"Acceptance Date"** shall mean the date that a Subsystem is accepted or deemed accepted as set forth in Article 27 hereof.

1.12 **"Acceptance Tests"** shall mean the testing procedures as described in the Statement of Work and as specifically set forth in the Appendices to the Statement of Work.

1.13 **"Additional Projects," "Additional Services, " and "Additional SOW"** shall each have the meaning given in Article 48(B).

1.14 **"Contract Documents"** shall have the meaning given in Article 2.

1.15 **"County's Obligations"** shall mean the work and obligations to be performed by the County as set forth in Article 6.

1.16 **"Disclosing Party"** shall have the meaning given in Article 43.

1.17 **"Deliverables"** shall mean the standard commercial quality manuals to be furnished by the Contractor to the County pursuant to the terms set forth in the Statement of Work and this Contract.

1.18 **"Existing Radio System"** shall have the meaning given in the Recitals to this Contract.

1.19 **"Final Acceptance Date"** shall mean the date that the P25 Phase 1 Radio Communication System is accepted or deemed accepted as set forth in Article 27 hereof.

1.20 **"Final System Acceptance"** shall mean acceptance of the P25 Phase 1 Radio Communication System as a whole, as set forth in Article 27 hereof.

1.21 **"FRA"** shall have the meaning given in Paragraph 2 of the Recitals.

1.22 **"Hardware"** shall mean, collectively, Terminal Hardware and Infrastructure Hardware, as defined below.

1.23 **"Information"** shall have the meaning given in Article 43.

1.24 **"Infrastructure Hardware"** shall mean the equipment, goods, and materials to be supplied by Contractor, as further described in Section 3 (System Description) of the Statement of Work.

1.25 **"Installation Schedule"** shall mean the schedule set forth in the Statement of Work or as may otherwise be amended and mutually agreed upon by Contractor and County in writing for the delivery of the Infrastructure Hardware and Software and the performance of the Services described in the Statement of Work.

1.26 **"Milestone Payment"** shall mean an installment payment of a specified portion of the Total System Price due and payable from County to Contractor upon the completion of specific tasks more fully described in Article 14(A).

1.27 **"P25 Phase 1 Radio Communication System"** shall mean the P25 Phase 1 Radio Communication System, compliant with all the mandatory requirements of TIA-102 Phase

1 standards as defined by TSB-102A which system shall replace County's Existing Radio System infrastructure with a standardized P25 system upgradeable to the mandatory requirements of TIA-102 Phase 2 and modify certain ancillary sub-systems including but not limited to conventional, NPSPAC mutual aid equipment, leveraging County's previous investments in Contractor's VIDA network; shall include but not be limited to communications network components, such as the ISSI server, the EDACS-IP Gateways, the NetworkFirst Gateway (the only Qualified Anti-Terrorism Interoperability Technology under the Department of Homeland Security's SAFETY Act), and the P25 700 MHz and 800 MHz infrastructure purchased under the PSIC grant; and is comprised of Subsystems (defined herein) and the Infrastructure Hardware and Software to be furnished by Contractor to County pursuant to the terms set forth in this Contract.

1.28 **"Receiving Party"** shall have the meaning given in Article 43.

1.29 **"Software"** shall mean the proprietary computer software of Contractor as owned exclusively by Contractor or Contractor's suppliers, as appropriate, and as further defined in and licensed to County pursuant to the terms of the Software License Agreement.

1.30 **"Software License Agreement"** shall mean the P25 Software License Agreement set forth in Exhibit C attached hereto.

1.31 **"Statement of Work"** shall mean the description of the work to be performed by (i) The County and (ii) by the Contractor to deliver the Infrastructure Hardware, to install the P25 Phase 1 Radio Communication System, and to provide the Services, all as described in Exhibit A of this Contract.

1.32 **"Subsystem"** shall mean each of the components of the P25 Phase 1 Radio Communication System consisting of Subsystem [redacted] Subsystem [redacted] Subsystem [redacted] Subsystem [redacted], Subsystem [redacted], Subsystem [redacted], Subsystem [redacted], [redacted] Subsystem #1, [redacted] Subsystem #2, [redacted] Antenna Subsystem, and Mutual Aid Subsystems, all as further described in Article 3.

1.33 **"Taxes"** shall have the meaning given in Article 12.

1.34 **"Terminal Hardware"** shall mean mobile units, portable units, control stations and related accessories (excluding batteries) to be purchased by Sprint-Nextel from Harris Corporation for the County's use as contemplated under the FRA (defined herein).

1.35 **"Total System Price"** shall mean the aggregate price of the Infrastructure Hardware, the Software and the Services to be furnished by the Contractor to the County for the implementation of the P25 Phase 1 Radio Communication System pursuant to the terms set forth in Statement of Work and this Contract.

1.36 **"Trigger Date"** shall have the meaning given in Article 13(G)(3).

1.37 **"UAP"** shall mean the County User Access Program as further described in Article 39(A).

1.38 **"Warranty Period"** shall have the meaning given in Article 31(A).

1.39 **"HA-NSC"** shall mean High Availability-Networks Switching Center.

1.40 [redacted] shall mean the Miami-Dade County [redacted] Facility.

1.41 **"RF"** shall mean Radio Frequency.

1.42 [redacted]

1.43 [redacted]

1.44 [redacted]ommunications Control Center located at 6010 SW 87th

1.45 **"UPS"** shall mean Uninterrupted Power Supply.

1.46 **"PSIC"** shall mean Public Safety Interoperable Communications.

1.47 **"VIDA"** which is an acronym for "Voice, Interoperability, Data, and Access," shall mean the single unified network with a single system for network monitoring, routing, and switching to support the County's communications needs, including but not limited to public safety voice communications, transit data communications, and digital dispatch.

ARTICLE 2. ORDER OF PRECEDENCE

The Statement of Work and the following Exhibits are expressly incorporated herein by reference (unless otherwise provided herein) and, together with this Contract, constitute the Contract Documents. In the event of a conflict among or between the Contract Documents, the Contract shall govern and the documents shall control in the order of precedence set forth below:

1.	Exhibit A	Statement of Work.
2.	Exhibit B	Pricing Schedule
3.	Exhibit C	P25 Software License Agreement
4.	Exhibit D	P25 Software FX Agreement
5.	Exhibit E	Security Update Management (SUMS) Plus Agreement

In addition, the FRA is attached to this Contract as Schedule 1, and the EDACS FX Agreement dated November 3, 2003 (as amended by First Amendment dated as of the date hereof) as Schedule 2, but are not expressly incorporated herein by reference, nor do they constitute a Contract Document.

ARTICLE 3. SCOPE OF WORK

Contractor shall furnish, deliver and install the Infrastructure Hardware and Software for the P25 Phase 1 Radio Communication System and provide the Deliverables and Services in accordance with the terms and conditions of the Statement of Work and this Contract and in a competent and professional manner. The Contractor shall complete the work in a good and workmanlike manner to accomplish the Coverage criteria set forth in Article 30.

The functions of the Existing Radio System and the P25 Phase 1 Radio Communication System to be delivered pursuant to this Contract are set forth in the Statement of Work, at Section 3 (Design Rationale), Table A. The parties understand and agree that any functions not included in the new system features described in the Statement of Work are not included under and are outside the scope of this Contract.

As more specifically set forth in the Statement of Work, Contractor's general obligations for the P25 Phase 1 Radio Communication System consists of the following subsystems:

A. **Subsystem** Contractor will replace the existing EDACS Subsystem which is a county-wide simulcast system serving with a 20 channel P25 800 MHz simulcast system operating at The replacement System will be installed at all of the existing Subsystem sites. The Subsystem P25 simulcast control point will be installed at co-located with one side of the HA-NSC. Contractor will also include UPSs to provide backup power for the Subsystem control point and each simulcast transmit site's simulcast synchronization equipment; backup power for the RF equipment is not included.

B. **Subsystem** Contractor will replace the existing EDACS Subsystem which is a county-wide simulcast system serving with a 20 channel P25 800 MHz simulcast system operating at The replacement Subsystem will be installed at all of the existing Subsystem sites. The Subsystem P25 simulcast control point will be installed at the new co-located with one side of the HA-NSC. Contractor will also include UPSs to provide backup power for each Subsystem transmit site's simulcast synchronization equipment; backup power for the RF equipment is not included. simulcast control point equipment will utilize an existing Miami-Dade provided (building) UPS.

C. **Subsystem** Contractor will replace the existing 5-channel EDACS site, which serves Subsystem and Subsystem users that travel into coverage range of this site as well as the with a Data Capable 5-Channel 800 MHz P25 multisite using MASTR V stations. Contractor will use the Intraplex multiplexer equipment supporting Subsystem for this site. Equipment that would provide backup power is not included for Subsystem

D. **Subsystem** The Subsystem multisite is a 5-channel 800 MHz site located at that Miami-Dade uses for radio system testing and special operations. Contractor will replace the 5-channel EDACS site at the Subsystem multisite, located at and used for radio system testing and special operation, with a 5-channel P25 site using MASTR V stations. Contractor will utilize the existing Subsystem antennas and the existing Subsystem "Combiner A". The combiner labeled "Combiner B" will be replaced under the scope of the mutual aid rebanding implementation.

E. **Subsystem** Contractor will replace the 3-channel EDACS site located at with a 3-channel P25 site using MASTR V stations. Contractor will install new transmit and receive antennas at this site to support cutover and utilize the existing Intraplex Multiplexer at the site.

F. **Subsystem** Contractor will provide services to allow integration of the existing 15-channel 700 MHz P25 MASTR V multisite located at into the new VIDA backbone.

G. **Subsystem** Contractor will provide services to allow integration of the existing 5-Channel 700 MHz P25 MASTR V multisite located at into the new VIDA backbone.

H. **Subsystem #1.** Contractor will remove the 800 MHz site from the existing 10-Channel 800 MHz P25 MASTR V multisite and configure it as a stationary P25 site fed into dummy loads and not connected to the NSC, for County to utilize for testing their radio system personalities before cutover to the P25 Phase 1 Radio Communication System. A 5-Channel P25 800 MHz site with MASTR V stations will be installed in using frequencies provided by County.

I. **Subsystem #2.** Contractor will replace the 800 MHz EDACS multisite with a 5-Channel 800 MHz P25 multisite with MASTR V stations. Contractor will reuse the existing antennas, feedlines, 800 MHz combiner, multicoupler, and multiplexer.

J. Contractor will replace the splitters, filters, and circulators of the in-building antenna system on the and replace the existing duplexer with a filter network and connect the new filtering network to the existing antenna system transmission line.

K. **Mutual Aid Subsystem.** Contractor will upgrade the channel to the same GPS simulcast configuration as the new equipment. Once the upgrade of the system has been completed, Contractor will commence Mutual Aid frequency reconfiguration. Contractor will provide a combination of a temporary multicast and crosspatch techniques to maintain interoperability during reconfiguration, using equipment that may include a Convex Rebander, a VEGA Rebanding Panel, two-port combiners, and Rebanding Diplexers, as appropriate. At the outset of the Mutual Aid reconfiguration process, Contractor will add swing equipment to each Mutual Aid subsystem to establish multicast and crosspatch functionality between old and new frequency assignments. All swing equipment will be provided by Contractor for the duration of the statewide rebanding of the Mutual Aid systems.

These Subsystems are further described in Section 3 (System Description) of the Statement of Work, which is incorporated herein by reference.

ARTICLE 4. PROJECT MANAGEMENT AND PLANNING

A. **Project Team.** As further described in Section 2 (Project Team) of the Statement of Work, Contractor shall designate a Senior Project Manager who will lead the Project and act as program manager, and will serve as the County's primary point-of-contact for Contractor's project team and the official liaison between Contractor's project team and County, though the Senior Project Manager will not have signature authority. The County shall designate a Technical Project Manager to function as the single point-of-contact and official liaison between Contractor's Senior Project Manager and the County. Contractor's Senior Project Manager, County's Technical Project Manager and all other project managers appointed by either of those two persons shall constitute the Project

Management Team, which will be responsible for the obligations enumerated in Section 2 (Project Team) of the Statement of Work.

B. Major P25 Phase 1 Radio Communication System Implementation Events.

i. Project Kick-off Meeting. Within sixty (60) days from the Effective Date of the Contract, the Contractor's Senior Project Manager shall schedule a Project Kick-Off Meeting, the timing and location of which will be mutually agreed upon by Contractor and County. The objectives of this meeting include introduction of all project participants, review of the roles of the project participants, review of the overall project scope and objectives, review of the resource and scheduling requirements, review of current site status, and review of the current frequency plan.

ii. Site Visits. In preparation of the Statement of Work, the parties jointly conducted site visits to establish existing conditions, to identify work required to be accomplished at the sites, and to assign responsibility for such work. Following the Effective Date of the Contract, County shall grant Contractor access to all such sites upon reasonable notice to allow Contractor to formulate a schedule of preparatory work. The County and the Contractor shall then review the schedule of preparatory work required for each site and develop and define a requirements list. The final schedule will be mutually agreed upon by both parties and will include a timeline for completion of the preparatory work at each site. At the conclusion of the preparatory work at each site, the County and the Contractor shall inspect the various sites to determine whether the preparatory work has been satisfactorily completed according to the requirements. If there are deficiencies identified in the County's preparatory work, the County will be provided an opportunity to cure the outstanding issues within a reasonable period of time. County shall grant Contractor access to all such sites upon reasonable notice to allow Contractor to complete its inspections. If, after inspection, any preparatory work has been deemed by the Contractor to have not been completed, Contractor may suspend further performance pertaining to the site, and the time period between the inspection date and the completion of the preparatory work shall be deemed an excusable delay pursuant to Article 25 of this Contract. County shall identify and disclose to Contractor any and all problems or conditions at all sites of which County is aware that may affect the work to be performed by Contractor under this Contract.

iii. Detailed Design Review. The Detailed Design Review ("DDR") will commence at the conclusion of the Project Kick-off Meeting. During the DDR, Contractor's project managers will meet with County's project team on one or multiple occasions to review the system design, technical data, and site specific information to confirm approach on overall system design. As part of the DDR, Contractor will provide County with the documents enumerated in Section 2 (Detailed Design Review) of the Statement of Work. County shall reasonably approve the design of the P25 Phase 1 Radio Communication System, or any Subsystem, acknowledging completion of the DDR within fifteen (15) business days, after which time, the design is final, subject to minor changes as may be mutually agreed upon by the parties.

Contractor shall provide the following DDR documents six (6) months after the Effective Date of the Contract to the County for their review and approval, which approval shall not be unreasonably withheld, conditioned or delayed:

- Project Schedule, which may include the critical path method

- Preliminary Site Layout Drawings
- Shelter Floor Plan Drawings
- Rack Elevation Drawings
- System Block and Level Diagrams
- Conventional Circuits Listing
- Power and HVAC Loads
- Antenna Network Diagrams
- Site Frequency Plan (including spectrum analysis and intermodulation studies of existing and proposed frequencies at each site).
- TX Combiner Plan by Site
- Network & Microwave Requirements
- Preliminary Acceptance Test Documents

C. **Execution of the P25 Phase 1 Radio Communication System Implementation.** Contractor's project team shall integrate the Infrastructure Hardware to produce the P25 Phase 1 Radio Communication System. To the extent practical, components of the P25 Phase 1 Radio Communication System will be assembled and staged before shipping, though some equipment, which is specific to the installation of the sites, will need to directly ship to a specified location in the Miami area. Forty-five (45) days notice will be provided to County so that its representatives may attend a factory staging simulation test in the factory where components are assembled, once the components are ready. The System will be reviewed and shall be in compliance with the Factory Acceptance Test plan developed by both parties as set forth in Appendices B and C of the Statement of Work.

D. **Schedule for P25 Phase 1 Radio Communication System Implementation.** The Installation Schedule for the Project identifying the projected timeline for completing the required tasks to complete the Project is contained within the Statement of Work. Updates to the start dates and durations will be made as the information evolves and will be mutually agreed by both parties. Throughout the project, the Contractor's Senior Project Manager shall utilize schedule compression techniques and lags as a technique to integrate the tasks.

E. **P25 Phase I Radio Communication System Implementation Communications.** Contractor and County shall jointly establish a plan that defines regular meetings, reporting structure, and other communications activities, including Workshops or working sessions that may be needed throughout the Project to plan sub-tasks, including (a) DDR to communicate the final engineering design, (b) formal monthly reports to County's Technical Project Manager concerning work in progress and accomplishments, (c) quarterly on-site status meetings at which Contractor's Senior Project Manager and County's Technical Project Manager will provide updates, (d) conference calls with Contractor's and County's project teams to discuss tasks, assign responsibility, and establish schedules; (e) a joint outreach program, led by County, to manage user expectations, and (f) workshops or working sessions that may be needed throughout the Project to plan subtasks.

ARTICLE 5. AUTHORITY OF THE PROJECT MANAGERS

A. The parties hereby acknowledge and agree that each party's Project Manager will address and determine in the first instance all questions of any nature whatsoever arising out of, under, or in connection with, or in any way related to or on account of, this Contract including without limitations: questions as to the value, acceptability and fitness of the services; questions as to either party's fulfillment of its obligations under the Contract; negligence, fraud or misrepresentation before or subsequent to the Effective Date of the Contract; and claims for damages, compensation and losses.

B. If the Project Managers for each party are unable to resolve any disputes hereunder following thirty days after notice given of such dispute, each party shall appoint a senior executive to negotiate the dispute and the senior executives shall mutually agree to a third party to participate with them in a review of the dispute.

C. If the parties are unable to resolve the dispute by agreement, either party may request that the dispute be submitted to non-binding mediation by serving a written request for mediation with the other party. The mediation shall be conducted by a single mediator selected by mutual agreement of the parties. The parties agree to participate in good faith in the mediation process. In the event the dispute is not resolved by mediation, either party may pursue appropriate legal remedies. The cost for the mediation shall be split equally between the parties, and each party shall be responsible for its own costs of mediation. Venue for the mediation shall be in Miami Dade County and mediation shall, unless otherwise agreed, extend not more than one (1) day.

ARTICLE 6. COUNTY'S OBLIGATIONS – P25 PHASE 1 RADIO COMMUNICATION SYSTEM IMPLEMENTATION

The following subsections apply to the P25 Phase I Radio Communication System Implementation. For projects issued under the Contract, other than the P25 Phase I Radio Communication System Implementation, appropriate language will be negotiated and developed between the two parties.

A. **Access.** County shall provide access, at no cost to Contractor, to all owned or leased/licensed tower sites and sites of work, as described in Section 5 (Site Development) of the Statement of Work. County shall provide the Contractor access to Project Sites during working hours (or during extended hours as reasonably required) and an escort, if required by County, at no charge, with at least twenty-four hour prior notification from Contractor. County shall ensure sufficient room for construction vehicles used by Contractor. County shall issue temporary identification cards to Contractor's personnel and its authorized subcontractors, if required, for access to any of the County sites.

B. **Permits and Licenses, Site Survey, General Site Related Responsibilities, General Equipment Related Responsibilities, and Site Specific Responsibilities.** As is further defined in the Statement of Work, each party agrees to perform its respective tasks and obligations as set forth therein.

C. **Changes in Sites.** Should County add to, delete from, or modify the list of sites as detailed in Section 3 (System Descriptions) of the Statement of Work, the parties agree that such change shall require a Change Order that has been fully negotiated and executed by the County prior to commencement of the work.

D. **Site-Related Responsibilities.** As is further detailed in the Responsibility Matrix contained in Appendix L of the Statement of Work, the County shall perform the tasks and obligations assigned to the County as set forth therein.

E. **Preparatory Work on Sites.** Notwithstanding anything to the contrary contained in this Contract or the Statement of Work, the parties agree that some sites may require tower replacement or modifications, as well as related permitting and licensing work and/or physical real estate space. The parties agree that Contractor shall have primary responsibility to secure all applicable local, state and federal permits, licenses, and approvals, with the County assisting as is reasonably necessary, and County shall have primary responsibility to secure by lease, purchase or license all rights and access to additional real estate as may be required. County agrees to mitigate the need for tower replacement or modification to the extent practical, including, but not limited to, transitioning the system to pre-existing equipment and removing existing transmission dishes. In no event will the County be required to take any actions to mitigate the need for tower replacement where the result of such actions will materially affect the coverage provided by the site. The parties further agree that the cost for all related replacement, enhancements, and licensing work for additional real estate will be shared as follows:

i. The County shall have full responsibility for the first $750,000 of costs for the work;

ii. The Contractor shall have full responsibility for any costs beyond the limitation on the County; and

iii. If any tower replacements become necessary, it shall be considered an excusable delay for which the Contractor is entitled to an extension of time, pursuant to Article 25 below.

ARTICLE 7. CONTRACT TERM

The Contract Term shall run from the Effective Date of the Contract and expire at Midnight EST of the day prior to the day which is the fifth anniversary of the Effective Date of the Contract. The County, at its sole discretion, reserves the right to exercise the option to extend the term of this Contract for three (3) additional two (2) year periods upon ninety (90) days written notice to the Contractor prior to the expiration of the then current term.

The County also reserves the right to exercise a bilateral option to extend this Contract for up to one hundred-eighty (180) calendar days beyond the current Contract period or beyond any of the renewals, subject to mutual agreement between the County and the Contractor and upon approval by the Board of County Commissioners.

ARTICLE 8. INVOICES

All invoices issued by the Contractor, shall be supported by receipt bills or other documents reasonably required by the County. Invoices shall show the County's Contract number, and shall have a unique invoice number assigned by the Contractor. It is the policy of County that payment for all purchases by County agencies shall be made in a timely manner and that

interest payments be made on late payments. In accordance with Florida Statutes, Section 218.74 and Section 2-8.1.4 of the Miami-Dade County Code, the time at which payment shall be due from the County shall be forty-five days from receipt of a proper invoice. The time at which payment shall be due to small businesses shall be thirty (30) days from receipt of a proper invoice. All payments due from the County and not made within the time specified by this section shall bear interest from thirty (30) days after the due date at the rate of one percent (1%) per month on the unpaid balance. Further, proceedings to resolve disputes for payment of obligations shall be handled in accordance with Article 5 of this Contract, not later that sixty (60) days after the date on which the proper invoice was received by the County.

Invoices and associated back-up documentation shall be submitted in duplicate by the Contractor to the County as follows:

Miami-Dade Enterprise Technology Services Department
Administration Division
5680 SW 87th Avenue
Miami, FL 33173

Attn: Accounts Payable Manager
Phone: (305) 596-8316
E-mail Address: fap@miamidade.gov

The County may at any time designate a different address and/or contact person by giving written notice to the other party.

ARTICLE 9. NOTICES:

Notices and other communications between the parties shall be transmitted in writing to the parties at the addresses set forth below and shall be deemed effective upon receipt by the receiving party. Notice shall be sent by overnight or registered mail as it pertains to contract amendments, modifications, and official notices. E-mail communications shall not constitute official notice. Either party may change its address by giving notice in writing thereof to the other party.

TO COUNTY:

Miami-Dade County Enterprise Technology Services Department
Radio Communications Services Division
6010 SW 87th Avenue
Miami, FL 33173

Attn: Felix Perez
Phone: (305) 596-8098
E-mail Address: fap@miamidade.gov

WITH A COPY TO:

Miami-Dade County Enterprise Technology Services Department
Information Technology Business Office
5680 SW 87th Avenue

Miami, FL 33173

Attn: Contracts Manager

AND TO:

Miami-Dade County Department of Procurement Management
111 NW 1st Street, Suite 1300
Miami, FL 33128

Attn: Director

TO CONTRACTOR:

Harris Corporation
221 Jefferson Ridge Parkway
Lynchburg, Virginia 24501

Attn: Mr. Douglas Hernandez
E-mail Address: dherna05@harris.com

WITH A COPY TO:

Harris Corporation
7022 TPC Drive, Suite 500
Orlando, FL 32822

Attn: Danielle Marcella, Senior Project Manager
E-mail Address: dmarcell@harris.com

AND TO:

Kevin P. Joyce, Esq.
Brown Rudnick LLP
One Financial Center
Boston, MA 02110

E-mail Address: KJoyce@brownrudnick.com

ARTICLE 10. MANNER OF PERFORMANCE

A. The Contractor agrees that at all times it will employ, maintain and assign to the performance of the work hereunder a sufficient number of competent and qualified professionals and other personnel to meet the requirements to which reference is hereinafter made. Each party agrees to adjust its personnel staffing levels or to re-assign from the project or replace any its personnel if so directed upon reasonable request from the other party.

B. The Contractor warrants and represents that its personnel have the proper skill, training, background, knowledge, experience, rights, authorizations, integrity, character and licenses as necessary to perform the services described herein, in a competent and

professional manner.

C. The parties shall at all times cooperate with each other and coordinate their respective work efforts to most effectively and efficiently maintain the progress in performing the Services.

ARTICLE 11. DELIVERY, TITLE AND RISK OF LOSS

A. Contractor shall ship the Infrastructure Hardware to County on or before the dates set forth in the Installation Schedule. Partial deliveries shall be permitted. Upon receipt of delivery to the County or to a County-controlled facility, inclusive of the Golden Beach site, all risk of loss or damage shall pass to County; provided, however, that Contractor shall remain responsible until Final System Acceptance for loss or damage resulting from the willful misconduct or negligent acts or omissions of Contractor, its employees, agents, and subcontractors. Security title and right of possession without legal process of the Infrastructure Hardware sold hereunder shall remain with the Contractor until all payments hereunder (including deferred payments whether evidenced by note or otherwise) shall have been made, and the County agrees to do all acts necessary to perfect and maintain such right and security title in the Contractor. For other than deliveries made to the County, the Contractor shall retain risk of loss or damage.

B. Provided the Contractor has complied with the delivery notice provisions as set forth herein, if County fails to take delivery of any of the Infrastructure Hardware, Contractor may place such Infrastructure Hardware in storage at the place of manufacture or elsewhere. If there are additional costs that Contractor incurs as a result of the County's failure to take delivery then the Contractor may pass the additional costs back to the County.

C. The County's existing infrastructure and hardware will be handled and disposed of in accordance with the Statement of Work and be delivered to the local address identified by the County. The Existing Radio System will not be offered for trade-in.

ARTICLE 12. TAXES

The County represents that it is a tax exempt entity, and is exempt from sales, use, excise, value-added, or other similar tax applicable to the price, sale, or transfer of any products or services furnished hereunder ("Taxes"). The County agrees to pay all penalties or Taxes that may be assessed against County or against Contractor as a result of a finding that County is not tax exempt. County shall provide Contractor will prompt notice of challenge or claim made against County relating to this Contract and Taxes.

ARTICLE 13. CHANGES AND ADDITIONS

A. In the event of any change in the Infrastructure Hardware as a result of the imposition or passage after the Effective Date of the Contract of any requirements by any federal, state, or local government, an equitable adjustment in the schedule and price shall be made to reflect any added time and cost and expense of such change and the Contract shall be modified in writing accordingly.

B. County may seek to make changes in the Statement of Work or in the time or place of performance of the Services under this Contract. If any such change causes an increase or decrease in the cost of, or the time required for, performance of any part of the Work under this Contract, the parties shall make an equitable adjustment in the contract price, the performance schedule, or both. Any such adjustment in the contract price or performance schedule shall be mutually satisfactory to County and Contractor. Price increases and/or extensions of time shall not be binding upon either party unless evidenced by a modification to this Contract signed by the parties hereto. Contractor shall not be required to accomplish the agreed upon changes until a mutually agreed upon change order approved in writing by County is received by the Contractor (hereinafter, a "Change Order").

C. Notwithstanding Subsection (B) above, if the Contractor considers any work demanded of it by County to be outside the requirements of the Contract, Contractor shall request that the instruction be placed in writing and, upon receipt of, and in accordance with, such written instruction from the County, Contractor shall proceed without delay to perform the work. If the work that is the subject of the County's written instruction causes an increase or decrease in the cost of, or the time required for, performance of any part of the work under this Contract, the parties shall make an equitable adjustment in the price, the performance schedule, or both and shall execute a written modification to the Contract. Once a written proposal associated with the directed change is provided by the Contractor, the parties agree to use their best efforts to resolve the written protest by mutual agreement within a reasonable period. If the proposal is rejected, the Contractor shall file a written protest of the County's decision on within thirty (30) days after receipt of the rejection. Unless the Contractor files such written protest within thirty (30) days after County's written decision , Contractor shall be deemed to have waived its proposal and to have agreed that such work is within the scope of the Contract. Once a written protest is lodged, the parties agree to use their best efforts to resolve the written protest by mutual agreement within a reasonable period. Any failure of the parties to agree to an equitable adjustment and contract modification shall be resolved in accordance with the procedures set forth in Article 5.

D. To the extent that any of the Assumptions set forth in the Statement of Work are incorrect and such has an impact on the cost of work performed by Contractor under the Contract and/or the schedule, the parties agree that Contractor may be entitled to an equitable adjustment to the Installation Schedule, Statement of Work, and to the Total Contract Price, and a modification to the Contract shall be agreed to by the parties.

E. Although Contractor is afforded the opportunity to conduct preliminary site surveys in accordance with the Statement of Work, the parties understand and agree that, due to the timeframe allowed for those preliminary site surveys, there may be circumstances in which every detail is not known prior to Contractor's commencement of the work. In those rare instances when such circumstances have an impact on cost and/or schedule, the parties agree to work together to determine the best course of action and agree to negotiate in good faith a modification to the Contract. Notwithstanding anything to the contrary herein contained, other than the goods and services listed in the Statement of Work as Contractor's obligations, Contractor shall have no obligation to deliver goods and services not specified herein.

F. Contractor reserves the right to swap or to discontinue any product covered by this Contract, excluding Terminal Hardware, provided that Contractor agrees to make available to the County a functionally equivalent replacement product equal to or better than the product discontinued. Notwithstanding anything to the contrary herein contained, if the County desires to request (i) terminal functions and features upgrades for existing terminals or (ii) terminal functions and features beyond what is provided as part of the FRA or not included in this Contract, then County shall submit a written request to Contractor for its review and Contractor shall respond and provide County with a pricing proposal. As to Terminal Hardware, upon reasonable prior notice to County, and subject to the County's approval, which approval shall not be unreasonably withheld, conditioned or delayed but shall be subject to reasonable testing period by the County, Contractor reserves the right to propose new models of Terminal Hardware during the term of this Contract. Once a new model has been accepted by the County, the County no longer maintains a right to accept or reject the model.

G. As referenced herein above, the FRA provides that Sprint-Nextel shall deliver to the County the Terminal Hardware as purchased by Sprint-Nextel from Contractor. The parties agree that the following conditions shall apply to the Terminal Hardware:

1. Among the other Terminal Hardware listed in Schedule C to the FRA, and except as otherwise stated herein, the Contractor shall ship fourteen thousand one hundred and eighty-two (14,182) P7300 dual band (700/800 MHz) handheld portable radios ("P7300"), exclusive of the P7300 test units described below in Section 2, on the schedule as set forth in the FRA, as may be amended subject to Contractor's approval as set forth herein.

2. The parties agree that the P7300 shall meet or exceed the Contractor's standard product data sheet ("Product Data Sheet Test"), which the parties agree is a preliminary document and subject to change at the Contractor's sole discretion. The Product Data Sheet Test shall be in accordance with the Contractor's standard factory testing procedures and other associated test data at the Contractor's facility. The County will be invited to witness the standard factory testing procedures and view other associated test data at the Contractor's facility.

3. Once the P7300 unit has met the Product Data Sheet Test, then Contractor shall ship five thousand and seventy-five (5,075) P7300 units to County for use on System A as set forth in the Statement of Work.

4. Contractor shall use reasonable efforts to deliver twelve (12) P7300 test units to the County within six (6) months from the Effective Date of the Contract. The County shall have sixty (60) days from the date of receipt of the P7300 test units to conduct the P7300 radio acceptance testing ("P7300 Radio Test Plan"). The P7300 Radio Test Plan will be collaboratively created and mutually agreed upon by the parties within sixty (60) days of the Effective Date of the Contract. The P7300 Radio Test Plan shall, at a minimum, include a requirement that the P7300 meet DAQ 3.4 when operating on the County's incumbent EDACS system, as reasonably and mutually agreed between the parties. All P7300 Radio Test Plan testing of the P7300 unit will be conducted cooperatively with Contractor and County, until the parties reasonably agree that P7300 Radio Test Plan has been met, with such sixty (60) day test period resetting upon any modification to or substitution of radio units by Contractor in response to test

failures. County shall provide Contractor with reasonably detailed written notice of deficiencies in the P7300 test units observed during the P7300 Radio Test Plan performance during the sixty (60) day test period. The County's failure to approve of the P7300 within the sixty (60) day test period, absent written notice of deficiency, shall be deemed approval of the P7300 unit.

5. If the P7300 unit has not met the P7300 Radio Test Plan within seven (7) months of the Effective Date of the Contract, then within sixty (60) days of prior written request from County, Contractor shall ship nine hundred (900) P7100 radio units to be used as loaners by the County on a temporary basis until the P7300 unit passes the P7300 Radio Test Plan or the P7300 is deemed approved by County.

6. If the P7300 unit has not met the P7300 Radio Test Plan within twenty-two (22) months of the Effective Date of the Contract, then within sixty (60) days of prior written request from County, Contractor shall ship an additional nine hundred (900) P7100 radio units to be used as loaners by the County. These additional loaner P7100 units shall used by the County on a temporary basis until the P7300 unit passes the P7300 Radio Test Plan or the P7300 is deemed approved by County.

7. If the P7300 has not met the P7300 Radio Test Plan within thirty-four (34) months of the Effective Date of the Contract, then within sixty (60) days of prior written request from County, Contractor shall ship an additional nine hundred (900) P7100 radio units to be used as loaners by the County. These additional loaner P7100 units shall used by the County on a temporary basis until the P7300 unit passes the P7300 Radio Test Plan or the P7300 is deemed approved by County.

8. If the P7300 has not met the P7300 Radio Test Plan within thirty-six (36) months of the Effective Date of the Contract, then within sixty (60) days of prior written request from County, the County is entitled to receive delivery of an additional two thousand three hundred (2,300) P7100 radio units to be used by County on a temporary basis. Notwithstanding anything to the contrary herein contained, the Contractor shall have no obligation to provide more than 5,000 units of the P7100 loaner in the aggregate. In addition, if the P7300 has not met the P7300 Radio Test Plan within thirty-six (36) months of the Effective Date of the Contract, then Contractor shall substitute four thousand one hundred and seven (4,107) P7300 radio units ordered from Sprint Nextel under the FRA with four thousand one hundred and seven (4,107) P7100 radio units and shall include related accessories, which are unique or applicable only to the P7100 radio unit for these substitute P7100 units. The County shall have no right to demand that these 4,107 P7100 units be exchanged at no cost for P7300 radios.

9. Once the P7300 passes the P7300 Radio Test Plan, and provided Contractor has delivered P7100 loaners referenced above, the Contractor shall replace, or as otherwise may be mutually agreed upon by the parties, all P7100 loaner units and P7100 unique accessories within ninety (90) days of written request to County by Contractor, subject to a swap-out schedule to be mutually agreed upon. The County's failure to return timely the loaner P7100 units as agreed under the swap-out schedule shall cause the Warranty on the P7300 unit to commence as if the P7300 units had been delivered to County.

10. During the test periods referenced above, the parties agree to participate in not less than weekly product review meetings. Contractor reserves the right to make minor modifications to the P7300, and to provide a replacement dual-band hand-held unit other than the P7300 upon prior reasonable notice to the County and subject to the County's approval, which approval shall not be unreasonably withheld, conditioned, or delayed. [In the event that Contractor replaces the P7300, such new radio at a minimum shall be subject to the same Radio Test Plan as defined for the P7300 herein.]

ARTICLE 14. PAYMENT MILESTONES

A. The Total System Price for the Infrastructure Hardware, the P25 Software License Agreement and the Services required to complete the P25 Phase 1 Radio Communication System Implementation shall be in the amount of Twenty-five Million Dollars ($25,000,000) paid by the County to the Contractor as a fixed price engagement in the form of five Milestone Payments, the specifications of which are as follows:

i. First Milestone Payment

The first Milestone Payment, in the amount of three million dollars ($3,000,000.00), but shall not be payable or invoiced until 12 months following the Effective Date of the Contract.

ii. Second Milestone Payment

The second Milestone Payment, in the amount of three million dollars ($3,000,000.00) shall be due once Subsystem A has been staged and accepted by the County during testing to be conducted at Contractor's factory, but shall not be payable or invoiced until 24 months after the Effective Date of the Contract.

iii. Third Milestone Payment

The third Milestone Payment, in the amount of three million dollars ($3,000,000.00) shall be due upon notice to the County once the Contractor has completed the required work at the [redacted] and it has been inspected and accepted by the County, but shall not be payable or invoiced until 36 months after the Effective Date of the Contract.

iv. Fourth Milestone Payment

The fourth Milestone Payment, in the amount of six million, two hundred fifty thousand dollars ($6,250,000.00) shall be due once Subsystem A has been installed and has successfully completed the System Acceptance Testing and has been signed off by the County, but shall not be payable or invoiced until 48 months after the Effective Date of the Contract.

v. Fifth and Final Milestone Payment

The fifth and final Milestone Payment, in the amount of nine million, seven hundred fifty thousand dollars ($9,750,000.00) shall be due upon the County's Final Acceptance of the P25 Phase 1 Radio Communication System, but shall

not be payable or invoiced until 60 months after the Effective Date of the Contract.

Notwithstanding anything to the contrary herein contained, the Contractor's obligations hereunder are expressly subject to and conditioned upon Sprint Nextel's purchase of the Terminal Hardware from the Contractor on the County's behalf, and pursuant to the FRA. The County warrants and represents that it will not amend, modify, or cancel any term of the FRA that will affect the purchase from the Contractor or alter the Schedule set forth in the FRA or in the Statement of Work without first obtaining the written consent of the Contractor. Such consent shall not be unreasonably withheld, conditioned, or delayed. If County shall fail to obtain Contractor's written consent before amending, modifying, or cancelling the FRA as discussed above, it shall be considered an event of default pursuant to Article 36(B) for which Contractor is entitled to any and all remedies provided in this Contract, including, but not limited to, termination.

All services undertaken by the Contractor before County's approval of this Contract shall be at the Contractor's risk and expense.

The County agrees to provide to Contractor, upon its written request, such reasonable documentation to confirm that a specific work item or task has been completed, but not yet invoiced

B. **Other Amounts.** Any other amounts due to the Contractor hereunder shall be due upon the County's receipt of the Contractor's invoice and/or as stated in a Change Order mutually agreed to and signed by both parties.

C. **Travel.** With respect to travel costs and travel related expenses pertaining to Additional Services the Contractor agrees to adhere to Article 112.061 of the Florida Statutes as they pertain to out-of-pocket expenses including employee lodging, transportation, per diem, and all miscellaneous cost-and fees. The County shall not be liable for any such expenses that have not been approved in advance, in writing, by the County.

ARTICLE 15. MUTUAL OBLIGATIONS

A. This Contract, including attachments and appendixes to the Contract, shall constitute the entire agreement between the parties with respect hereto and supersedes all previous communications and representations or contracts, whether written or oral, with respect to the subject matter herein unless acknowledged in writing by the duly authorized representatives of both parties.

B. Nothing in this Contract shall be construed for the benefit, intended or otherwise, of any third party that is not a parent or subsidiary of a party or otherwise related (by virtue of ownership control or statutory control) to a party.

C. In those situations where this Contract imposes an indemnity obligation on the Contractor, the County may, at its expense, elect to participate in the defense if the County should so choose. Furthermore, the County may at its own expense defend or settle any such claims if the Contractor fails to diligently defend such claims, and thereafter seek indemnity for costs from the Contractor.

ARTICLE 16. QUALITY ASSURANCE/QUALITY ASSURANCE RECORD KEEPING

The Contractor shall maintain, and shall require that its subcontractors and suppliers maintain, complete and accurate records to substantiate compliance with the requirements set forth in the Statement of Work. The Contractor and its subcontractors and suppliers, shall retain such records, and all other documents relevant to the Services furnished under this Contract for a period of three (3) years from the expiration date of this Contract and any extension thereof.

ARTICLE 17. AUDITS

The County, or its duly authorized representatives or governmental agencies shall, until the expiration of three (3) years after the expiration of this Contract and any extension thereof, have access to and the right to examine and reproduce any of the Contractor's books, documents, papers and records and of its subcontractors and suppliers which pertain to Additional Services rendered hereunder to the County. Such records shall subsequently conform to Generally Accepted Accounting Principles requirements, as applicable, and shall only address those transactions related to this Contract. The County shall have no right to audit the Total System Price, unless non-lump sum items are hereinafter included under this Contract. The Contractor understands that that this Contract may be subject to County Ordinance No. 03-2.

ARTICLE 18. COMPLIANCE

Contractor agrees to comply with all federal, state and local laws, ordinances, codes, rules and regulations that may in any way affect the work by Contractor hereunder. Any Hardware, Professional Services, or Software furnished by the Contractor under this Contract shall comply in all material respects with federal, state and local laws and regulations, including, but not limited to, the Florida Building Code, applicable to the manufacturer, packing, sale and shipment of such Hardware or Software as of the Effective Date of the Contract and shall comply with any additional amendments thereto which may have come into effect prior to the time such Hardware, Professional Services, or Software are delivered provided that the price and, if necessary, delivery of such Hardware or Software shall be equitably adjusted to compensate the Contractor for the effect of compliance with any such Contract amendments. All construction work required hereunder shall be performed by duly licensed contractors.

County agrees that the County's Obligations shall comply with all federal, state and local laws, ordinances, codes, rules and regulations in effect as of the Effective Date of the Contract.

ARTICLE 19. ASSIGNMENT, SUCCESSORS, AND ASSIGNS

This Contract shall not be assigned by either Party without the written consent of the other Party, which shall not be unreasonably withheld, conditioned, or delayed. Notwithstanding the above, Contractor may assign this Contract, without consent, (a) in whole or in part, to an affiliate or subsidiary or (b) in the event of a change of controlling ownership interest (either directly or indirectly) in Contractor or in the event of merger, recapitalization, consolidation, other business combination or sale of all or substantially all of the assets of Contractor.

ARTICLE 20. BINDING EFFECTS

The terms, conditions, and covenants of this Contract shall inure to the benefit of and be binding upon the parties hereto and their successors and assigns. This provision shall not constitute a waiver of any conditions prohibiting or limiting assignment.

ARTICLE 21. ADVERTISING AND PUBLICATIONS

Neither party shall publish any statement, press release, or advertisement pertaining to this Contract without the prior written approval of the other party.

ARTICLE 22. NOTICE OF CLAIMS

Each party shall provide immediate written notice of any legal action or suit filed against the party which may affect the performance of the party's duties under this Contract, and prompt written notice of any claim made against the party, which may result in litigation related in any way to this Contract, or which may affect the performance of the party's duties under this Contract.

ARTICLE 23. GENERAL REPRESENTATIONS OF CONTRACTOR

A. **No Collusion.** The Contract is made without any connection with any other person making a proposal for the same purpose or other persons interested with the undersigned in the Contract and is in all respects fair and without collusion of fraud. No commission person or officer or employee of County is interested directly or indirectly in any manner whatsoever, in or in the performance of the Contract or in the supplies, work or business to which it relates or any portion of the profits thereof.

B. **No Litigation.** Except as specifically disclosed to County in writing prior to execution of the Contract, no claim, litigation, investigation or proceeding of or before any court, arbitrator or government authority is currently pending, nor to the knowledge of the Contractor, is any litigation or proceeding threatening against the Contractor or against its properties or revenues (i) which involves claims of defective design or workmanship in connection with any contract entered into by the Contractor or (ii) which, if adversely determined, would have an adverse effect on the business operations, property, financial or other conditions to the Contract.

C. **No Gratuities.** Contractor warrants that no gratuities have been offered or given (in the form of entertainment, gifts or otherwise) to any official or employee of County with a view towards securing favorable treatment in the awarding or amending of the Contract or respect to evaluation of its performance. For breach or violation of the foregoing warranties, County shall have the right to cancel any contract without liability or at its discretion, deduct from the contract value or otherwise to recover the full amount of such commission, percentage, brokerage, contingent fees, or gratuities.

D. **Conflict of Interest.** Contractor covenants that neither it nor an officer of the corporation or partner of the partnership, as the case may be, if the Contractor be a corporation or partnership, has any interests, nor shall it acquire any interests, either directly or indirectly which would conflict with any manner or degree with the performance of the work hereunder, it further covenants that, in the performance hereof, no person having such interest shall be employed by it. It is expressly understood that the breach of any of the covenants contained in this paragraph is a material breach hereof and shall entitle County to recover immediate damages, as well as all monies paid hereunder.

E. **No Conviction or Indictment.** Contractor hereby represents to the best of its knowledge neither it nor any of its personnel or shareholders have been subject to any investigation nor have any of them been convicted or indicted for commission of any crime involving misconduct, corruption, bribery, or fraud in connection with any public contract. Should any conviction or indictment be obtained or any such investigation commence prior to the expiration of the Contract, regardless of the date of the occurrence giving rise to the subject conviction or indictment, it will be disclosed in writing to County. This affidavit must be submitted to comply with Articles 287.132 and 287.133 of the Florida Statutes.

F. **Interest of Members of, or Delegates to Congress.** In accordance with 18 U.S.C. § 431, no member of, or delegates to the Congress of the United States shall be admitted to a share or part of this Contract or to any benefit arising therefrom.

G. **Conservation.** Contractor shall recognize mandatory standards and policies relating to energy efficiency which are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. § 6321 et seq.).

H. **Relation with County.** The relationship of Contractor to County is that of an independent contractor, and Contractor, in accordance with its status as an independent contractor, covenants and agrees that it will conduct itself consistent with such status, that neither it or its subcontractors nor employees or agents will hold itself (themselves) out as proclaiming to be an officer or employee of County by reason hereof, and that neither it nor its subcontractors nor the employees or agents will, by reason hereof, make any claim, demand or application to, or offer any right or privilege applicable to any employee of County.

I. **Spare Parts, Discontinued Equipment.** Contractor hereby affirms that spare parts for all Hardware (excluding Existing System hardware equipment and items) purchased under this Contract will be available for at least five (5) years following discontinuance of the product. In the event Contractor discontinues any product covered by this Contract, Contractor agrees to make available to the County a functionally equivalent replacement product, equal to or better than the product discontinued. As to spare parts for the Existing Radio System, the Contractor will use best efforts to continue to provide equipment and support for the Existing Radio System, except for products that have reached end of life or are no longer available. As to spare parts for the P7100 hand-held radio, Contractor agrees to utilize best efforts to provide spare parts for a period of ten (10) years following Contractor's issuance of an End of Life notification of the P7100.

ARTICLE 24. SUBCONTRACTING

A. Contractor may subcontract any portion of work to be performed by Contractor hereunder provided that Contractor shall be responsible for the performance and work of any such subcontractors. Nothing herein shall prohibit Contractor from subcontracting any or all of its duties and obligations hereunder. In no event shall the existence of a subcontract release or reduce the liability of the Contractor to the County for any breach in the performance of Contractor's duties.

B. Pursuant to Article 2-8.1.5 of the Code of Miami-Dade County, Contractor has filed with County a written affirmative action plan that sets forth the procedures the Contractor utilizes to assure that it does not discriminate in its employment and promotion practices and a written procurement policy that sets forth the procedures the entity utilizes to assure that it does not discriminate against minority and women-owned businesses in its own procurement of goods, supplies and services. Contractor agrees to abide by the terms of these agreements, to the maximum extent feasible, during the term of this Contract. Contractor's failure to revise its affirmative plan prior to its expiration date, as reasonably required by County, shall not constitute a default under this Contract, provided that Contractor submits the required documentation to County within thirty (30) days of notification that its affirmative action plan is expiring.

C. If the Contractor will cause any part of this Contract to be performed by a Subcontractor, the provisions of this Contract will apply to such Subcontractor and its officers, agents and employees in all respects as if it and they were employees of the Contractor; and the Contractor will not be in any manner thereby discharged from its obligations and liabilities hereunder, but will be liable hereunder for all acts and negligence of the Subcontractor, its officers, agents, and employees, as if they were employees of the Contractor. The services performed by the Subcontractor will be subject to the provisions hereof as if performed directly by the Contractor. Precautions shall be exercised at all times for the protection of persons and property. All contractors and sub-contractors shall conform to all conditions of this Contract.

D. All Subcontractors are required to protect the confidentiality of the Contractor's and County's proprietary and confidential information.

ARTICLE 25. FORCE MAJEURE AND EXCUSABLE DELAYS

A. **Force Majeure Event.** Neither party shall be liable for delays in delivery or failure to perform due directly or indirectly to Acts of God, acts (including failure to act) of any governmental authority (de jure or de facto), wars (declared or undeclared), riots, revolutions, strikes or other labor disputes, fires, floods, sabotage, nuclear incidents, earthquakes, storms, or epidemics (each a "Force Majeure Event"). The foregoing shall apply even though any of such causes might exist at the time of execution of the Contract. Upon the occurrence of a Force Majeure Event, the time period for performance of the obligation excused under this Article 25(A) shall be extended by the period of the excused delay, together with a reasonable period, to reinstate compliance with the terms of this Contract.

B. **Excusable Delays.** Notwithstanding any other provision hereof to the contrary except a Force Majeure Event, if the performance by Contractor of all or any part of this Contract, through and including completion of system testing and acceptance, is delayed or interrupted, for any reason other than the reasonable fault of the Contractor, including, but not limited to, failure by the County to perform any of its obligations pursuant to this Contract or the Statement of Work, it shall constitute an excusable delay for which Contractor is entitled to an equitable adjustment of the Installation Schedule and/or the Total System Price pursuant to the provisions contained in this Article 25. In addition, Contractor's inability to timely obtain necessary materials, items, components or services from suppliers or subcontractors shall constitute an excusable time delay for which Contractor is entitled to an equitable adjustment of the Installation Schedule only.

C. For all delays or failures not related to a Force Majeure Event but otherwise excused by this Article 25, Contractor shall as soon as practical notify County in writing and shall at the same time, or at the earliest practical date after such notice, specify the equitable adjustment in the Installation Schedule and/or the Total System Price required to reflect any increase in the cost of performance of or time required under this Contract as a result of the delay. Subject to the review process set forth below, the parties shall promptly thereafter modify this Contract in writing to reflect the equitable adjustment. Notwithstanding anything to the contrary herein contained, the provisions of this Article 25(C) shall in no event apply to County's payment obligations hereunder.

D. The period of any extension of time shall be only that which is necessary to make up the time actually lost. The County reserves the right to rescind or shorten any extension previously granted if the County subsequently determines that any information provided by the Contractor in support of its request for an extension of time was erroneous or that there has been a material change in the facts stated.

E. The County may require the Contractor to furnish such additional information or documentation, as the County shall reasonably deem necessary or helpful in considering a claim of an excusable delay.

F. Within thirty (30) days of its receipt of all information and documentation as may be required by the County, the County shall have the right to dispute any excusable delay claimed by the Contractor, or the Contractor's proposed schedule and/or price adjustments in response to such delay, by giving written notice to Contractor. Notwithstanding the foregoing, where it is not reasonably practicable for the County to decide whether or not to lodge a dispute within such thirty (30) day period, it shall, prior to the expiration of such period, advise the Contractor that it will require additional time and the approximate date upon which it expects to render its decision. Once a written dispute is lodged, the parties agree to use their best efforts to resolve the written dispute by mutual agreement within a reasonable period. Any failure of the parties to agree to a schedule and/or price adjustment shall be resolved in accordance with the procedures set forth in Article 5.

G. Since the granting of an extension of time may materially alter the scheduling plans and other actions of the County and since, with sufficient notice, the County might, if it should so elect, attempt to mitigate the effect of the delay for which an extension of time has been claimed, and since mere oral notice may cause a dispute as to the existence or substance thereof, the giving of written notice as required in Subsection (C) above shall be a condition precedent to the Contractor's rights hereunder.

H. Should any person seek a restraining order, preliminary injunction or an injunction, of which the Contractor becomes aware, which may delay the Services, the Contractor shall promptly give the County a copy of all legal papers received or prepared or received by the Contractor in connection with such action or proceeding.

I. In the event the Contractor shall be delayed concurrently by two or more of the causes contemplated in Subsections (A) and (B) above, the Contractor shall be entitled to a separate extension of time for each one of the causes. In addition, the Contractor shall not be entitled, by reason of a delay, to an extension of time for the completion of the

overall Work unless the time for completion of the overall Work is necessarily affected by the delay. Accordingly, in the event of a delay, the Contractor shall proceed continuously and diligently with the performance of the unaffected portions of the Work.

J. All references in this Article to the Contractor shall be deemed to include subcontractors and suppliers, all of whom shall be considered as agents of the Contractor.

ARTICLE 26. DUTY TO COOPERATE

The parties acknowledge and agree that there are elements of work that may be required that for various reasons are unknown at this time and/or for which responsibility to either party has not been assigned hereunder. The parties agree to work in good faith to capture any additional elements of work or obligations within the Total System Price contained herein, but also agree that neither party shall be obligated to perform elements of work not otherwise already set forth herein.

ARTICLE 27. TESTING AND ACCEPTANCE

[Note: These provisions shall apply to the Subsystems and the P25 Phase 1 Radio Communication System in total]

A. Upon completion of work by the Contractor on a given Subsystem of the P25 Phase 1 Radio Communication System and the provision of written notification thereof to County, County shall have thirty (30) calendar days to review the work performed before commencement of the Acceptance Tests. The County and the Contractor shall jointly commence the Acceptance Tests on the date specified in Contractor's notice (or other mutually agreeable date) and a representative of the Contractor and a representative of the County shall sign off on the applicable Subsystem Acceptance Certificate (a copy of which is included as part of Appendices D, E, and F of the Statement of Work) and Final System Acceptance Certificate (a copy of which is included as part of Appendix A of the Statement of Work). If the Subsystem does not fulfill the requirements of the Acceptance Tests, the Contractor shall correct the defects at no additional cost to County as soon as possible on an agreed upon schedule. Upon correction of any such defects, the Acceptance Tests for the applicable Subsystem shall be repeated in accordance with the procedures set forth in this Article. Successful completion of the Acceptance Test followed by execution of the required certificate of acceptance will initiate the Warranty Period for a given Subsystem. However, the County reserves the right to audit any given Subsystem to ensure the System is compliant with all the mandatory requirements of TIA-102 Phase 1 standards as defined by TSB-102A. Final System Acceptance shall occur when the Infrastructure Hardware and Software pertaining to the Infrastructure Hardware for the P25 Phase 1 Radio Communication System as whole have been furnished, delivered, installed and tested and the County has executed a certificate of acceptance in the form provided as part of Appendix A of the Statement of Work.

B. If County commences use of any Subsystem for its intended purpose, other than for the express purpose of training or testing as mutually agreed upon by Seller and County in writing or as set forth below, prior to Final System Acceptance, that Subsystem shall be deemed accepted by County. The use of the applicable Subsystem for its intended purpose shall be deemed to have occurred when County commences to use the Subsystem for its communications applicable to that Subsystem. The Warranty Period

for the applicable Subsystem put into use together with the associated installation Services shall be deemed to have commenced concurrently with the use of the applicable Subsystem for its intended purpose. By exception, a Subsystem shall not be deemed accepted by the County where the Contractor has failed or refused to correct identified punch-list deficiencies which have prevented the successful completion of the applicable system acceptance test and the County, with Contractor's prior approval, which approval shall not be unreasonably withheld, conditioned, or delayed, decides to use temporarily the Subsystem to address an immediate and critical emergency communications need. Once the need is satisfied, the County shall cease use of the Subsystem. In such event, the Warranty Period for the applicable Subsystem shall not be deemed to have commenced.

C. As used in the Contract, Acceptance Date shall mean and Acceptance of a particular Subsystem of the P25 Phase 1 Radio Communication System shall be deemed to occur upon the earlier of: (1) the date on which the Subsystem is deemed accepted pursuant to subsection (A) above, or (2) the date on which the Subsystem is deemed accepted pursuant to subsection (B) above.

D. As used in the Contract, Final Acceptance Date shall mean and Final Acceptance of the P25 Phase 1 Radio Communication System as a whole shall be deemed to occur when all Subsystems have been deemed accepted pursuant to either Subsection (A) above or Subsection (B) above.

E. County and the Contractor agree that in the process of completing the Acceptance Tests most, if not all, of the Acceptance Tests can be successfully completed with only a minor number of punchlist items. In such event, County and Contractor shall mutually and reasonably agree upon the punchlist items to be completed, the value of those items and that "conditional acceptance" of the Subsystem or P25 Phase 1 Radio Communication System has occurred. For the purpose of initiating the Warranty Period, satisfying the Installation Schedule requirements and the release of any retained funds (other than the value of the punchlist items) conditional acceptance shall constitute Acceptance of the Subsystem. This conditional acceptance shall not, however, release Contractor from its obligations to complete the remaining punchlist items by the dates set forth on the punchlist schedule.

F. **65 Building Mandatory Coverage Test.** As a condition to Final System Acceptance, Contractor and County shall jointly conduct the 65 Building Mandatory Coverage Test, a copy of which is included as Appendix J of the Statement of Work. In the event that one or more of the buildings included in the test fails, as defined in the Appendix J, the Contractor will expend up to an aggregate maximum amount of Two Hundred Thousand Dollars ($200,000) for any or all buildings in an attempt to remediate the building failure(s), which attempted remediation may include, but shall not be limited to, installation of bi-directional amplifiers (BDA). The Contractor, however, has no obligation to expend more than Two Hundred Thousand Dollars ($200,000) in an attempt to remediate building failures, unless directed to do so in writing by County, in which case County shall be solely responsible for the costs of attempted remediation in excess of Two Hundred Thousand Dollars ($200,000) and the Change Order provisions herein shall govern. For the purposes of absolute clarity, Contractor's obligation under this subsection shall be deemed fully satisfied once Contractor has expended Two Hundred Thousand Dollars ($200,000) on remediation efforts, regardless of whether or not those

efforts are successful, in whole or in part and once Contractor has expended Two Hundred Thousand Dollars ($200,000), Contractor shall be deemed to have passed and satisfied the 65 Building Mandatory Coverage Test for purposes of achieving Final System Acceptance.

ARTICLE 28. REVIEWING DELIVERABLES

The Contractor agrees to submit all Deliverables required to be submitted for review and approval by the County in accordance with the specific requirements in the Statement of Work, and as specified herein. The Contractor understands that the County shall have final approval on all Deliverables, which approval shall not be unreasonably withheld, conditioned, or delayed.

In reviewing the Deliverables, the Contractor understands that the County will provide the Contractor with:

i. a written notification of the County's approval, or

ii. a written notification that each Deliverable is approved subject to the Contractor providing prompt correction of a minor deficiency, or,

iii. in the case of a Deliverable that does not meet the requirements of the Contract, a written notification of the County's disapproval. The County's disapproval notification will state with reasonable detail to sufficiently advise the Contractor of the basis on which the Deliverable was determined to be unacceptable.

The County agrees that failure to provide approval or non-approval within twenty (20) days of receipt of the Deliverable from the Contractor shall constitute approval of the Deliverable, but in no event shall approval under this Article 28 be deemed to impair that County's rights under the Acceptance Test Plan.

ARTICLE 29. P25 SOFTWARE LICENSE

A. Subject to the terms and conditions of the P25 Software License Agreement attached hereto as Exhibit C, the County is granted a non-transferable perpetual license to use the Software in conjunction with the P25 Phase 1 Radio Communication System purchased under this Contractor. "Software" means the "Licensed Programs" as defined in the Software License Agreement.

B. County shall be entitled during the term of the Software License Agreement to use the Licensed Programs without disturbance. Contractor represents that the Software License Agreement is not subject or subordinate to any right of Contractor's creditors, or if such subordination exists, that the agreement or instrument creating the same provides for non disturbance of County.

C. The County shall have the right to reproduce documentation provided that any such reproduction is solely for the use of the County and that such reproduction shall be subject to the same restrictions on use and disclosure as may be contained in the Software License Agreement with respect to documentation.

D. The County reserves the right to opt in or out of the Software Support Services at any time during the term of the Agreement.

ARTICLE 30. COVERAGE

Contractor's representations concerning the distance at which usable radio signals will be transmitted and received by Infrastructure Hardware supplied hereunder are represented by coverage maps included in the Statement of Work. As set forth in the Statement of Work, Contractor's representations regarding coverage are limited to the time during which testing is conducted by Contractor, and the parties understand and agree that Contractor will have no liability for any failure to conform to the coverage maps after successful testing is completed.

During the "cutover period", as defined in Section 6 (System Cutover and Installation) of the Statement of Work, Contractor's responsibilities regarding coverage shall be limited to those responsibilities set forth in Section 6 (System Cutover and Installation) of the Statement of Work.

ARTICLE 31. WARRANTIES

A. Contractor warrants that:

(1) for a period of two (2) years beginning on the later of (i) deployment of the Terminal Hardware or (ii) twelve (12) months following the date of delivery to County, that the Terminal Hardware (excluding batteries) shall be free from defects in material and workmanship and shall conform to the Contract specifications;

(2) that for a period of one (1) year from the date of deployment the batteries shall be free from defects in material and workmanship; and

(3) for a period of twenty-four (24) months from the Acceptance Date of the Infrastructure Hardware for a specific Subsystem (hereinafter collectively referred to as the "Warranty Period"), that the Hardware and installation Services furnished by the Contractor under this Contract for each specific Subsystem shall be free from defects in material and workmanship and shall conform to the Contract specifications. Any and all claims for breach of this warranty are conclusively deemed waived unless made within the Warranty Period.

B. For purposes of this Warranty the nickel-cadmium and lithium-ion batteries supplied by Contractor shall be deemed defective if: (1) the battery capacity is less than 80% of rated capacity; or (2) the battery develops leakage. Replacement batteries shall be warranted only for the remaining unexpired portion of the Warranty Period. This warranty becomes void if: (1) the battery has been subjected to any kind of misuse, detrimental exposure, or has been involved in an accident, or (2) the battery is used in equipment or service other than the Hardware for which it is specified.

C. During the Warranty Period if any component of the Hardware or portion of the installation Services fails to meet the foregoing warranties, Contractor's sole obligation and County's exclusive remedy under this warranty shall be the correction by Contractor of the failure at Contractor's option: (1) by repairing any defective component of the Hardware, or (2) by furnishing any necessary repaired or replacement parts, or (3) by the redoing of the faulty installation. Any such failure, or the repair or replacement of the defective component or the redoing of any installation, shall not extend the Warranty

Period. Where such failure cannot be corrected by Contractor's reasonable efforts, the parties may negotiate an equitable adjustment in price. Contractor will be responsible for all charges incurred in returning defective parts to Contractor's plant and shipping repaired or replacement parts to the County. All warranty labor must be performed by an authorized service group approved by Contractor either at its place of business, for mobile or portable equipment, or at the County's location for fixed location equipment should Contractor determine that it is not feasible to return the fixed location equipment to Contractor's authorized service group.

D. Any new purchases of equipment, including radios and Additional Services which may be purchased by the County under this Contract and delivered or performed by the Contractor after Final System Acceptance of the P25 Phase 1 Radio Communication System, shall be warranted on the same terms, limitations, and exclusions as are set forth herein, except that the warranty on the equipment and Additional Services shall be for a period of twenty-four (24) months from the date of delivery of that item of equipment and the warranty on each such Additional Service shall be for a period of twelve (12) months from the date of completion of that installation service.

E. Contractor's obligations shall not apply to: (1) defects which are the result of improper storage, use, or installation performed by other than the Contractor, (2) maintenance performed by someone other than the Contractor, or repairs performed by someone other than Contractor, (3) Hardware which has been subjected to any other kind of misuse or detrimental exposure or has been involved in an accident, (4) Hardware or installations altered or repaired by any party other than the Contractor without the Contractor's prior written consent, or (5) Hardware provided or installed by any party other than the Contractor without the Contractor's prior written consent.

F. Notwithstanding the other provisions of this Article 31, Contractor's only Warranty as to radio coverage is that a given Subsystem, prior to Acceptance, shall have successfully passed the coverage tests in the Acceptance Test Plans attached as appendices to the Statement of Work.

G. THE WARRANTIES AND REMEDIES SET FORTH IN THIS ARTICLE AND IN THE SOFTWARE LICENSE AGREEMENT CONSTITUTE THE ONLY WARRANTIES WITH RESPECT TO THE HARDWARE, SOFTWARE AND SERVICES AND THE COUNTY'S EXCLUSIVE REMEDIES IN THE EVENT SUCH WARRANTIES ARE BREACHED. THEY ARE IN LIEU OF ALL OTHER WARRANTIES WHETHER WRITTEN, ORAL, EXPRESS, IMPLIED, OR STATUTORY INCLUDING, WITHOUT LIMITATION, THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL CONTRACTOR BE LIABLE FOR SPECIAL, CONSEQUENTIAL OR INDIRECT DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR REVENUES.

H. After expiration of the Warranty Period, the County will be responsible for maintenance on the P25 Phase 1 Radio Communication System. The Contractor shall define a preventive maintenance program identifying specific systems, equipment, and components requiring routine maintenance, maintenance intervals and down time requirements. The Contractor shall also provide the County with documentation regarding the required maintenance, and estimated manpower requirements for total system maintenance.

I. **Service Response.** Contractor will provide the County with a toll free number, available 24 hours per day, 365 days per year, to report problems with the P25 Phase 1 Radio Communication System and/or request service from its local Authorized Service Center (ASC). Contractor will respond to County to collect relevant information and symptoms of the problem within 30 minutes of receipt of the call. If permission is granted for on line access by the County, the Contractor will begin real time diagnostic activity and if deemed necessary, dispatch its service technicians to be on-site within two hours of the reported problem to provide on site corrective action. Contractor will develop a call escalation plan that will meet the needs of County in case of critical failures of the P25 Phase 1 Radio Communication System.

ARTICLE 32. INTERFERENCE

The P25 Phase 1 Radio Communication System coverage and performance are subject to degradation due to anomalous propagation and interference beyond the reasonable control of Contractor, including system design. Contractor shall not be responsible for degradation or disruption of service caused by operation of other radio systems, or by natural phenomena or other interference over which the Contractor has no reasonable control. In the event of a case of degradation due to interference within the Contractor's reasonable control, Contractor will provide engineering support and resolve at its expense the cause of interference.

In the event of a case of degradation due to interference by an outside party, Contractor will provide engineering support to County at County's expense to support County's efforts in resolving the interference issue with the outside party. In addition, County shall inform Contractor of any known causes of interference, which obligation shall continue throughout the term of the Contract, and shall be solely responsible to remediate all interference prior to the Effective Date of the Contract.

ARTICLE 33. INDEMNIFICATION

A. Contractor shall be responsible for and agrees to indemnify County and hold County harmless from and against all third party claims, demands and causes of action for direct damages (including reasonable legal fees) for personal injuries (including death) or damage to real property or tangible personal property, directly resulting from the willful misconduct or negligent acts or omissions of Contractor, Contractor's officers, agents, employees, or subcontractors.

B. County shall be responsible for and agrees to indemnify Contractor and hold Contractor harmless from and against all third party claims, demands and causes of action for direct damages (including reasonable legal fees) arising out of or relating to: (a) disruption to other County systems; and (b) system interference with other antennas or microwave systems and any actions or modifications performed by County or its officers, agents, employees, or subcontractors on the towers at any time. Notwithstanding the foregoing, the County's obligations under this subsection shall not exceed the limited waiver of sovereign immunity as set forth in Florida Statute Section 768.28.

ARTICLE 34. PATENTS

A. Contractor warrants that the P25 Phase 1 Radio Communication System furnished hereunder shall be delivered free of any rightful claim of any third party for infringement of any United States patent or copyright. If County notifies the Contractor promptly after the receipt of any claim that the P25 Phase 1 Radio Communication System infringes a United States patent or copyright and gives Contractor information, assistance and exclusive authority to settle and defend such claim, Contractor at its own expense shall defend, or may settle, any suit or proceeding against County so far as based on a claimed infringement which breaches this warranty. If, in any such suit arising from such claim, the continued use of the P25 Phase 1 Radio Communication System for the purpose intended is enjoined by any court of competent jurisdiction, Contractor shall, at its expense and option, either: (1) procure for County the right to continue using the P25 Phase 1 Radio Communication System, or (2) modify the P25 Phase 1 Radio Communication System so that it becomes non-infringing, or (3) replace the P25 Phase 1 Radio Communication System or portions thereof so that it becomes non-infringing, or (4) remove the P25 Phase I System and refund the purchase price (less reasonable depreciation for use). The foregoing states the entire liability of Contractor for patent or copyright infringement by the P25 Phase 1 Radio Communication System and is subject to any limitation of total liability set forth in this Contract.

B. The preceding subsection (A) shall not apply to: (1) any Subsystem of the P25 Phase 1 Radio Communication System which is manufactured to the County's design where such County design directives required a violation of a patent, or (2) the use of the P25 Phase 1 Radio Communication System in conjunction with any other apparatus or material not supplied by Contractor to the extent that such conjoined use causes the alleged infringement. As to any portion of the P25 Phase 1 Radio Communication System or use described in the preceding sentence, Contractor assumes no liability whatsoever for patent infringement.

C. THE PATENT AND COPYRIGHT WARRANTY AND INDEMNITY OBLIGATIONS RECITED ABOVE ARE IN LIEU OF ALL OTHER PATENT AND COPYRIGHT WARRANTIES AND INDEMNITIES WHATSOEVER, WHETHER ORAL, WRITTEN, EXPRESS, IMPLIED OR STATUTORY.

ARTICLE 35. INSURANCE

Contractor expressly understands and agrees that any insurance protection required by this Agreement or otherwise provided by Contractor shall in no way limit the responsibility to indemnify, keep and save harmless and defend the County or its officers, employees, agents and instrumentalities as herein provided.

In addition to any specific State or Federal insurance requirements, the Contractor shall furnish to the Vendor Assistance Section, Department of Procurement Management, 111 NW 1st Street, Suite 1300, Miami, Florida 33128-1989, Certificate(s) of Insurance which indicate that insurance coverage has been obtained which meets the requirements as outlined below:

A. Worker's Compensation Insurance for all employees of the vendor as required by Florida Statute 440.

B. Commercial General Liability Insurance including Products & Completed Operations and Pollution Liability coverage in an amount not less than $1,000,000 combined single limit

per occurrence for bodily injury and property damage. **Miami-Dade County must be shown as an additional insured with respect to this coverage.**

C. Automobile Liability Insurance covering all owned, non-owned and hired vehicles used in connection with the work, in an amount not less than $1,000,000 combined single limit per occurrence for bodily injury and property damage.

D. Professional Liability Insurance in an amount not less than $5,000,000.

All insurance policies required above shall be issued by companies authorized to do business under the laws of the State of Florida, with the following qualifications:

i. The company must be rated no less than "B" as to management, and no less than "Class V" as to financial strength, by the latest edition of Best's Insurance Guide, published by A.M. Best Company, Oldwick, New Jersey, or its equivalent, subject to the approval of the County Risk Management Division; or

ii. The company must hold a valid Florida Certificate of Authority as shown in the latest "List of All Insurance Companies Authorized or Approved to Do Business in Florida" issued by the State of Florida Department of Insurance and are members of the Florida Guaranty Fund.

Contractor will provide evidence of insurance by certificates of insurance and Contractor will also endeavor to provide for at least (30) thirty days notice of cancellation, non-renewal or material change of coverage to the County. The County contract number and the title must appear on each certificate.

The name and address of the holder of each certificate must read: **"Miami-Dade County, 111 NW 1st Street, Suite 1300, Miami, Florida 33128-1989."**

ARTICLE 36. DEFAULT AND TERMINATION

A. **Termination.** The County may terminate this Contract if an individual or corporation or other entity attempts to meet its obligations under this Contract with the County through fraud, misrepresentation or material misstatement.

i. The County may, as a further sanction, terminate or cancel any other agreement(s) that such individual or corporation or other entity has with the County and that such individual, corporation or other entity shall be responsible for all direct and indirect costs associated with such termination or cancellation, including attorney's fees.

ii. The foregoing notwithstanding, any individual, corporation or other entity which attempts to meet its obligations with the County under this Contract through fraud, misrepresentation or material misstatement may be debarred from County contracting for up to five (5) years in accordance with the County debarment procedures. The Contractor may be subject to debarment for failure to perform and all other reasons set forth in Section 10-38 of the Code of Miami-Dade County.

B. **Events of Default.** Notwithstanding the provisions in Subsection (D) below, this Contract may be terminated by the non-defaulting party if any of the following events of default occur: (1) if a party materially fails to perform or comply with this Contract or any

provision hereof; (2) if either party fails to strictly comply with the provisions of Article 43 (Confidentiality) or makes an assignment in violation of Article 19 (Assignment, Successors, and Assigns); (3) if either party becomes insolvent or bankrupt, or makes an assignment for the benefit of creditors.

C. **Effective Date of Termination.** Termination due to a material breach of the Contract shall be effective on notice. In all other cases, termination shall be effective thirty (30) days after notice of termination to the defaulting party if the defaults have not been cured within such thirty (30) day period.

D. **Remedies for County Default**. Upon termination of the Contract by the Contractor as a result of County's default, the County agrees to compensate Contractor for all work or products delivered as of the date of termination. In lieu of termination for County's failure to perform one or more of its required obligations, Contractor may, at its sole election and without any requirement to do so, perform those outstanding obligations itself and invoice County for the actual cost of performing those obligations. In such an instance, County's default shall continue until it pays Contractor the full invoiced amount. The time period between the event of default and the completion of Contractor's performance of County's obligations shall constitute an excusable delay pursuant to Article 25.

ARTICLE 37. MIAMI-DADE COUNTY OFFICE OF THE INSPECTOR GENERAL REVIEW

According to Article 2-1076 of the Code of Miami-Dade County, Miami-Dade County has established the Office of the Inspector General (IG) which may, on a random basis, perform audits, inspections, and reviews of all County or Public Health Trust contracts. This random audit is separate and distinct from any other audit by the County. To pay for the functions of the Office of the Inspector General, any and all payments to be made to the Contractor under this contract will be assessed one quarter (1/4) of one (1) percent of the total amount of the payment, to be deducted from each progress payment as the same becomes due unless, as stated in the Special Conditions, this Contract is federally or state funded where federal or state law or regulations preclude such a charge. The Contractor shall in stating its agreed process be mindful of this assessment, which will not be separately identified, calculated or adjusted in the proposal or bid form. The audit cost shall also be included in all change orders and all contract renewals and extensions.

The Miami-Dade Office of Inspector General is authorized to investigate County affairs and empowered to review past, present and proposed County and Public Health Trust programs, accounts, records, contracts and transactions. In addition, the Inspector General has the power to subpoena witnesses, administer oaths, require the production of witnesses and monitor existing projects and programs. Monitoring of an existing project or program may include a report concerning whether the project is on time, within budget and in conformance with plans, specifications and applicable law. The Inspector General shall have the power to audit, investigate, monitor, oversee, inspect and review operations, activities, performance and procurement process including but not limited to project design, scope specifications, proposal submittals, activities of the Contractor, its officers, agents and employees, lobbyists, County and Public Health Trust staff and elected officials to ensure compliance with contract specifications and to detect fraud and corruption.

Upon ten (10) days written notice, the Contractor shall make all requested records and documents available to the Inspector General for inspection and copying. The Inspector General shall have the right to inspect and copy all documents and records in the Contractor's possession, custody or control which in the Inspector General's sole judgment, pertain to performance of the Contract, including, but not limited to original estimate files, change order estimate files, worksheets, proposals and agreements from and with successful subcontractors and suppliers, all project-related correspondence, memoranda, instructions, financial documents, construction documents, (bid/proposal) and contract documents, back-change documents, all documents and records which involve cash, trade or volume discounts, insurance proceeds, rebates, or dividends received, payroll and personnel records and supporting documentation for the aforesaid documents and records.

The Contractor shall make available at its office at all reasonable times the records, materials, and other evidence regarding the acquisition and performance of this contract, for examination, audit, or reproduction, until three (3) years after final payment under this contract or for any longer period required by statute or by other clauses of this contract. In addition:

1. If this Contract is completely or partially terminated, the Contractor shall make available records relating to the work terminated until three (3) years after any resulting final termination settlement; and

2. The Contractor shall make available records relating to appeals or to litigation or the settlement of claims arising under or relating to this Contract until such appeals, litigation, or claims are finally resolved.

The provisions in this section shall apply to the Contractor, its officers, agents, employees, subcontractors and suppliers. The Contractor shall incorporate the provisions in this section in all subcontracts and all other agreements executed by the Contractor in connection with the performance of this Contract.

Nothing in this section shall impair any independent right of the County to conduct audits or investigative activities. The provisions of this Section are neither intended nor shall they be construed to impose any liability on the County by the Contractor or third parties.

Exception: The above application of one quarter (1/4) of one percent fee assessment shall not apply to the following contracts: (a) IPSIG contracts; (b) contracts for legal services; (c) contracts for financial advisory services; (d) auditing contracts; (e) facility rentals and lease agreements; (f) concessions and other rental agreements; (g) insurance contracts; (h) revenue-generating contracts; (i) contracts where an IPSIG is assigned at the time the contract is approved by the Public Health Trust; (j) professional service agreements under $1,000; (k) management agreements; (l) small purchase orders as defined in Miami-Dade County Administrative Order 3-2; (m) federal, state and local government-funded grants; (n) interlocal agreements; and (o) grant agreements granting not-for profit organizations Building Better Communities General Obligation Bond Program funds. Notwithstanding the foregoing, the Public Health Trust may authorize the inclusion of the fee assessment of one-quarter (1/4) of one percent in any exempted contract at the time of award.

Nothing contained above shall in any way limit the powers of the Inspector General to perform audits on all Public Health Trust contracts including, but not limited to, those contracts specifically exempted above.

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ARTICLE 38. GOVERNING LAW AND VENUE

The Contract shall be governed and construed in accordance with the laws of the State of Florida, without application of conflicts of law principles. The venue of any action on the Contract shall be laid in the United States District Court of the Southern District of the State of Florida or the 11th Judicial Circuit Court.

ARTICLE 39. COUNTY USER ACCESS PROGRAM (UAP)

A. **User Access Fee.** Pursuant to Miami-Dade County Budget Ordinance No. 03-192, this Agreement is subject to a user access fee under the County User Access Program ("UAP") in the amount of two percent (2%). All sales resulting from this Contract, or any Agreement resulting from this solicitation and the utilization of the County Agreement price and the terms and conditions identified herein, are subject to the two percent (2%) UAP. This fee applies to all Agreement usage whether by County Departments or by any other governmental, quasi-governmental or not-for-profit entity.

The Contractor providing goods or services under this Agreement shall invoice the Agreement price and shall accept as payment thereof the Agreement price less the 2% UAP as full and complete payment for the goods and/or services specified on the invoice. The County shall retain the 2% UAP for use by the County to help defray the cost of the procurement program. Contractor's participation in this invoice reduction portion of the UAP is mandatory.

B. **Joint Purchase.** Only those entities that have been approved by the County for participation in the County's Joint Purchase and Entity Revenue Sharing Agreement are eligible to utilize or receive County Agreement pricing and terms and conditions. The County will provide to approved entities a UAP Participant Validation Number. The Contractor must obtain the participation number from the entity prior to filling any order placed pursuant to this section. Contractor participation in this joint purchase portion of the UAP, however, is voluntary. The Contractor shall notify the ordering entity, in writing, within 3 work days of receipt of an order, of a decision to decline the order.

For all ordering entities located outside the geographical boundaries of Miami-Dade County, the Contractor shall be entitled to ship goods on an "FOB Destination, Prepaid and Charged Back" basis. This allowance shall only be made when expressly authorized by a representative of the ordering entity prior to shipping the goods.

The County shall have no liability to the Contractor for the cost of any purchase made by an ordering entity under the UAP and shall not be deemed to be a party thereto. All orders shall be placed directly by the ordering entity with the Contractor and shall be paid by the ordering entity less the 2% UAP.

C. **Contractor Compliance.** If a Contractor fails to comply with this Article, that Contractor may be considered in default by the County in accordance with this Agreement.

ARTICLE 40. ANNUAL APPROPRIATION

The County's performance and obligation to pay under this Contract is contingent upon an annual appropriation by the Board of County Commissioners. Cancellation will not cause any

penalty or expense to the County, except as to the portions of payments agreed upon and for which funds have been appropriated and budgeted. Service/Maintenance can be cancelled at any time that the Contractor is notified in writing, at least thirty (30) days prior to cancellation. There will be no early termination charges from the Contractor for canceling service/maintenance during the year.

ARTICLE 41. SEVERABILITY

If any provision of this Contract shall be held by a court of competent jurisdiction to be illegal, invalid or unenforceable, the remaining provisions shall remain in full force and effect.

ARTICLE 42. LIMITATION OF LIABILITY

A. Except for Contractor's liability to third parties for its willful misconduct or negligent acts or omissions as more particularly described in Article 33, the total liability of the Contractor, including its subcontractors or suppliers, for all claims of any kind for any loss or damage, whether in contract, warranty, tort (including negligence or infringement), strict liability or otherwise, arising out of, connected with, or resulting from the performance or non-performance of this Contract or from the manufacture, sale, delivery, installation, technical direction of installation, resale, repair, replacement, licensing or use of any Hardware, Software or the furnishing of any Service, shall in no event shall it exceed the Total System Price. Except as to title, any such liability shall terminate upon the expiration of the Warranty Period.

B. IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE OR INFRINGEMENT), STRICT LIABILITY OR OTHERWISE, SHALL CONTRACTOR, OR ITS SUBCONTRACTORS OR SUPPLIERS, BE LIABLE FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, INDIRECT OR EXEMPLARY DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR REVENUES, LOSS OF USE OF THE HARDWARE OR ANY OTHER EQUIPMENT, COST OF CAPITAL, COST OF SUBSTITUTE GOODS, FACILITIES, SERVICES OR DOWNTIME COSTS.

C. Any action for any claim of any kind for any loss or damages arising out of, connected with, or resulting from the performance, non-performance or breach of the Contract, or from the manufacture, sale, delivery, installation, technical direction of installation, resale, repair, replacement, licensing or use of any Hardware, Software or the furnishing of any Services, shall be commenced within one (1) year after the cause of action accrued or it shall be deemed waived or barred.

D. The provisions of this Article 42 shall apply notwithstanding any other provisions of this Contract or any other agreement.

E. The provisions of this Article 42 shall survive the expiration or termination of this Contract.

ARTICLE 43. CONFIDENTIALITY

A. During the term of this Contract, it is anticipated that one party (hereafter the "Disclosing Party") may disclose to the other party (hereafter the "Receiving Party") information

which the Disclosing Party considers proprietary and confidential. Accordingly, with respect to any specifications, drawings, sketches, models, samples, tools, technical information, confidential business information or data, in written or other tangible form which: (1) has been designated in writing by the Disclosing Party as confidential or proprietary, or (2) is of the type that the Receiving Party customarily treats as confidential or proprietary, and which is furnished by the Disclosing Party to the Receiving Party in contemplation of or under this Contract (hereinafter "Information"), the Receiving Party shall, except as may be required by the Florida Public Records Act and the Florida Government in the Sunshine Law, for a period of ten (10) years after the effective date of this Contract, treat such Information as confidential information with the same degree of care as the Receiving Party affords to confidential information of its own of a similar nature and shall not reproduce any such Information, in whole or in part, except as specifically authorized in writing by the Disclosing Party.

B. The provisions of the preceding subsection shall not apply to any Information which:

i. is or shall become publicly available without breach of this Article 43, on the part of the Receiving Party;

ii. is already known by the Receiving Party prior to receipt from the Disclosing Party;

iii. is independently developed by the Receiving Party;

iv. is rightfully obtained by the Receiving Party from third parties without restriction; or

v. is required to be disclosed by appropriate governmental or judicial order provided that Receiving Party gives Disclosing Party prior written notice of such order and assists Disclosing Party in taking reasonable actions to restrict such order.

C. The provisions of this Article 43 shall survive the expiration or termination of this Contract.

D. The confidentiality obligations of this Article 43 shall not apply to Software, the confidentiality and other rights and obligations with respect to which are set forth in the Software License Agreement.

E. The County agrees to provide Contractor with immediate notice of all requests made for copies of specifications, drawings, sketches, models, samples, tools, technical information, confidential business information or data related to this Contract.

ARTICLE 44. AMENDMENTS

A. No modification, supplement, amendment, or other change to this Contract shall be binding on either party unless set forth in a writing signed by both the County and a duly authorized party on behalf of Contractor.

B. Changes in or modifications, termination or discharge of the Contract, in any form whatsoever, shall not be valid or enforceable unless in writing and signed by the party to be charged therewith or its duly authorized representative and by County; provided, however, that any change in or modification, termination or discharge of the Contract expressly provided for shall be effective as so provided.

ARTICLE 45. ADDITIONAL HARDWARE AND SERVICES PURCHASES

Beginning on the Effective Date of the Contract, the County may make purchases of additional items from Contractor on an as needed, when needed basis based on the following terms and conditions:

A. County shall have the right to make purchases of additional equipment from Contractor's catalog, which is available through the website listed in Exhibit B, Pricing Schedule. Contractor shall provide additional equipment and services to the County at a discount of no less than twenty-five percent (25%) of their then standard list prices, which may be updated from time to time but no less than annually. The warranty terms for said purchases shall be in accordance with Article 31 above.

a. **Quantity Discounts.** The Contractor may offer additional discounts for one time delivery of large single orders. The County reserves the right to negotiate additional price concessions on quantity purchases of any products offered under this Contract.

b. **Trade-In.** County may trade-in equipment when making additional purchases from the Contractor under this Contract. A trade-in credit may be negotiated between the County and the Contractor where applicable and subject to mutual agreement.

B. The parties anticipate that from time to time they will be in contact regarding the County's needs for assistance on clearly defined additional projects ("Additional Projects") in the areas of business strategy, business integration, business process improvement, training, management development, project management, computer programming, systems integration, data processing, software development and other specific activities related to improving the County's P25 radio systems, training or personnel to operate the same, creation or modification of software, and related consulting activities ("Additional Services"). Prior to the commencement of Additional Services for any Additional Projects, including emergency response services, beyond the initial scope of this Contract, the County and the Contractor shall mutually agree upon the terms, pricing, and conditions required to complete an additional Statement of Work ("Additional SOW") for the specific Additional Projects or Additional Services that shall define in detail the work to be performed. After the Additional SOW has been accepted a detailed requirements and detailed design document shall be submitted illustrating the complete terms including the Additional SOW, proposed Additional Project staffing, anticipated Additional Project schedule, and other information relevant to the Additional Project. Each Additional SOW executed hereunder shall automatically incorporate the terms and conditions of this Contract.

C. Price for the P25 FX software and the twenty-five percent (25%) discount shall remain firm and fixed for the term of the Contract as defined in Exhibit B "Pricing Schedule", including any option or extension periods; however, the Contractor may offer incentive discounts to the County at any time during the Contract term, including any renewal or extension thereof.

i. **Equitable Adjustment.** The parties shall make an equitable adjustment in the Contract terms or pricing if pricing or availability of supply is affected by extreme and unforeseen volatility in the marketplace, that is, by circumstances that satisfy all the following criteria: (1) the volatility is due to causes reasonably beyond the Contractor's control, (2) the volatility affects the marketplace or industry, not just the particular Contractor's source of supply, (3) the effect on pricing or availability of supply is substantial, and (4) the volatility so affects the Contractor that continued performance of the Contract would result in a substantial loss.

D. The rights granted under this Article shall terminate as of the date of termination of this Contract.

ARTICLE 46. VENDOR REGISTRATION AND FORMS/CONFLICT OF INTEREST

A. Vendor Registration.

The Contractor shall be a registered vendor with the County – Department of Procurement Management, for the duration of this Contract. In becoming a Registered Vendor with Miami-Dade County, the Contractor confirms its knowledge of and commitment to comply with the following:

1. ***Miami-Dade County Ownership Disclosure Affidavit***
(Section 2-8.1 of the County Code)

2. ***Miami-Dade County Employment Disclosure Affidavit*** *(Section 2.8-1(d)(2) of the County Code)*

3. ***Miami-Dade Employment Drug-free Workplace Certification***
(Section 2-8.1.2(b) of the County Code)

4. ***Miami-Dade Disability and Nondiscrimination Affidavit***
(Section 2-8.1.5 of the County Code*)*

5. ***Miami-Dade County Debarment Disclosure Affidavit***
(Section 10.38 of the County Code)

6. ***Miami-Dade County Vendor Obligation to County Affidavit***
(Section 2-8.1 of the County Code)

7. ***Miami-Dade County Code of Business Ethics Affidavit***
(Section 2-8.1(i) and 2-11(b)(1) of the County Code through (6) and (9) of the County Code and Section 2-11.1(c) of the County Code)

8. ***Miami-Dade County Family Leave Affidavit***
(Article V of Chapter 11 of the County Code)

9. ***Miami-Dade County Living Wage Affidavit***
(Section 2-8.9 of the County Code)

10. ***Miami-Dade County Domestic Leave and Reporting Affidavit***
(Article 8, Section 11A-60 11A-67 of the County Code)

11. ***Subcontracting Practices***
(Ordinance 97-35)

12. ***Subcontractor /Supplier Listing***
(Section 2-8.8 of the County Code)

13. ***Environmentally Acceptable Packaging***
(Resolution R-738-92)

14. ***W-9 and 8109 Forms***
(as required by the Internal Revenue Service)

15. ***FEIN Number or Social Security Number***
In order to establish a file, the Contractor's Federal Employer Identification Number (FEIN) must be provided. If no FEIN exists, the Social Security Number of the owner or individual must be provided. This number becomes Contractor's "County Vendor Number". To comply with Section 119.071(5) of the Florida Statutes relating to the collection of an individual's Social Security Number, be aware that the County requests the Social Security Number for the following purposes:

- Identification of individual account records
- To make payments to individual/Contractor for goods and services provided to Miami-Dade County
- Tax reporting purposes
- To provide a unique identifier in the vendor database that may be used for searching and sorting departmental records

16. ***Office of the Inspector General***
(Section 2-1076 of the County Code)

17. ***Small Business Enterprises***
The County endeavors to obtain the participation of all small business enterprises pursuant to Sections 2-8.2, 2-8.2.3 and 2-8.2.4 of the County Code and Title 49 of the Code of Federal Regulations.

18. ***Antitrust Laws***
By acceptance of any contract, the Contractor agrees to comply with all antitrust laws of the United States and the State of Florida.

B. **Conflict of Interest.** Section 2-11.1(d) of the Code of Miami-Dade County as amended by Miami-Dade County Ordinance 00-1, requires any county employee or any member of the employee's immediate family who has a controlling financial interest, direct or indirect, with Miami-Dade County or any person or agency acting for Miami-Dade County from competing or applying for any such contract as it pertains to this solicitation, must first request a conflict of interest opinion from the County's Ethic Commission prior to their or their immediate family member's entering into any contract or transacting any business through a firm, corporation, partnership or business entity in which the employee or any member of the employee's immediate family has a controlling financial interest, direct or indirect, with Miami-Dade County or any person or agency acting for Miami-Dade County and that any such contract, agreement or business engagement entered in violation of this subsection, as amended, shall render this Agreement voidable. For additional information, Contractor may contact the Ethics Commission hotline at (305) 579-2593.

ARTICLE 47. WAIVER

No term of this Contract may be waived except in a writing signed by the party waiving enforcement. No term of this Contract shall be deemed to be waived by reason of any failure to previously enforce such term.

ARTICLE 48. HEADINGS

The heading of the various articles and sections of the Contract are for convenience and ease of reference only, and shall not be construed to define, limit, augment or describe the scope, context, or intent of the Contract or any part or parts of the Contract.

ARTICLE 49. ENTIRE AGREEMENT

A. The Contract Documents, and the EDACS FX Agreement, as amended by the First Amendment dated as of the date hereof, contain all terms and conditions agreed upon by the parties hereto, and no other agreement, oral or otherwise, regarding the subject matter of the agreement shall be deemed to exist or to bind any of the parties hereto, or to vary any of the terms contained herein.

B. CONTRACTOR DOES NOT ASSUME ANY OBLIGATIONS OR LIABILITIES IN CONNECTION WITH THE SALE OF THE P25 PHASE 1 RADIO COMMUNICATION SYSTEM OTHER THAN THOSE EXPRESSLY STATED IN THIS CONTRACT AND DOES NOT AUTHORIZE ANY PERSON (INCLUDING CONTRACTOR'S MANUFACTURER'S REPRESENTATIVES AND SALES AGENTS) TO ASSUME FOR THE CONTRACTOR ANY OTHER OBLIGATIONS OR LIABILITIES.

ARTICLE 50. OPTIONAL P25 SYSTEM COMPONENTS AND SUBSYSTEMS

During the term of this Contract, including any extensions or renewals exercised in the sole discretion of the County, the County reserves the right to purchase as an option P25 System Components and Subsystems. This includes but is not limited to a microwave system to support the P25 infrastructure; and an OpenSky subsystem to support the data and voice communication requirements for the County's transit system. Should the County choose to exercise this option it will be considered an Additional Project and will have a separate

Statement of Work detailing the work to be performed and the associated price as described in Article 45 (B) above.

ARTICLE 51. EXISTING RADIO SYSTEM TECHNICAL SUPPORT AND MAINTENANCE

During the initial term of the Contract, the County and the Contractor shall be bound by the EDACS FX Agreement effective as of November 6, 2003, incorporated by reference as Schedule 2, as amended by First Amendment dated as of the date hereof. The County agrees to continue to maintain the EDACS FX software pursuant to the agreement and shall pay on an annual basis according to Exhibit B "Pricing Schedule".

BALANCE OF PAGE INTENTIONALLY LEFT BLANK

IN WITNESS WHEREOF, the parties have executed this Agreement effective as of the Contract date herein set forth below.

CONTRACTOR	**Miami-Dade County**
By: _____	By: _____
Name: _____	Name: _____
Title: _____	Title: _____
Date: _____	Date: _____
	Attest: _____ Clerk of the Board
Corporate Seal	Approved as to form and legal sufficiency _____ Assistant County Attorney

#1691785v11

INDEX OF DEFINED TERMS

	"Acceptance Date" shall mean the date that a Subsystem is accepted or deemed accepted as set forth in Article 27 hereof. 27C, 31A
	"Acceptance Tests" shall mean the testing procedures as described in the Statement of Work and as specifically set forth in the Appendices to the Statement of Work. 4B, 4C, 14A, 27A, 27E, 28, 29F
	"Acceptance" or "Accepted" shall mean acceptance of a Subsystem as set forth in Article 27 hereof. 13B, 14A, 27, 31H
	"Additional Projects", "Additional Services", and "Additional SOW" shall each have the meaning given in Article 48(B). 14C, 17, 31D, 45B, 50
	[redacted] of the 3G, 3K
	"Change Order" shall have the meaning given in Article 13(C). 6C, 13C, 14B, 37
	"Contract Documents" shall have the meaning given in Article 2. 2
	"Contract Manager" shall mean the Miami-Dade County's Director, Department of Procurement Management, or the duly authorized representative designated to manage the Contract. None
	"Contractor" shall mean the Harris Corporation, a Delaware corporation, through its RF Communications Division, with offices at 221 Jefferson Ridge Parkway, Lynchburg, Virginia 24501. Passim
	"County's Obligations" shall mean the work and obligations to be performed by the County as set forth in Article 6. 6, 18, 36
	"Day" shall mean a calendar day or any portion thereof. 4Bi, 4Biii, 4C, 5B, 5C, 7, 8, 13B, 13G2, 13G3, 13G4, 24B, 25E, 27A, 28, 31I, 35, 36C, 37, 39B, 40

	"Deliverables" shall mean the standard commercial quality manuals to be furnished by the Contractor to the County pursuant to the terms set forth in the Statement of Work and this Contract. 3, 28
	"Detailed Design Review" or **"DDR"** 4Biii, 4E
	"Disclosing Party" shall have the meaning given in Article 43. 43A, 43B
	"Effective Date of the Contract" shall mean the date on which the Contract is signed by the County. 4Bi, 4Bii, 4Biii, 5A, 7, 13A, 13G2, 13G3, 14A, 18, 32, 43A
	"Existing Radio System" shall have the meaning given in the Recitals to this Contract. 3
	"Final Acceptance Date" shall mean the date that the P25 Phase 1 Radio Communication System is accepted or deemed accepted as set forth in Article 27 hereof. 27D
	"Final System Acceptance" shall mean acceptance of the P25 Phase 1 Radio Communication System as a whole, as set forth in Article 27 hereof. 11A, 27A, 27B, 31D
	"FRA" shall have the meaning given in Paragraph 2 of the Recitals. 2, 13F, 13G, 14A
	"HA-NSC" shall mean High Availability-Networks Switching Center 3A, 3B
	"Hardware" shall mean, collectively, Terminal Hardware and Infrastructure Hardware, as defined below. 11C, 18, 23I, 31B, 31C, 31E, 31G, 42A, 42B, 42C
	"Information" shall have the meaning given in Article 43. 43A, 43B
	"Infrastructure Hardware" shall mean the equipment, goods, and materials to be supplied by Contractor, as further described in Section 3 (System Description) of the Statement of Work. 3, 4C, 11A, 11B, 13A, 14A, 27A, 30, 31A

	"Installation Schedule" shall mean the schedule set forth in the Statement of Work or as may otherwise be amended and mutually agreed upon by Contractor and County in writing for the delivery of the Infrastructure Hardware and Software and the performance of the Services described in the Statement of Work. 4D, 11A
	[redacted] 3B
	"Milestone Payment" shall mean an installment payment of a specified portion of the Total System Price due and payable from County to Contractor upon the completion of specific tasks more fully described in Article 14(A). 14A
	"P25 Phase 1 Radio Communication System" shall mean the P25 Phase 1 Radio Communication System, which system shall replace County's existing EDACS infrastructure with a standardized P25 system and modify certain ancillary sub-systems including but not limited to conventional, NPSPAC mutual aid equipment, leveraging County's previous investments in Contractor's VIDA network; shall include but not be limited to communications network components, such as the ISSI server, the EDACS-IP Gateways, the NetworkFirst Gateway (the only Qualified Anti-Terrorism Interoperability Technology under the Department of Homeland Security's SAFETY Act), and the P25 700 MHz and 800 MHz infrastructure purchased under the PSIC grant; and is comprised of Subsystems (defined herein) and the Infrastructure Hardware and Software to be furnished by Contractor to County pursuant to the terms set forth in this Contract. 3, 4Biii, 4C, 4D, 4E, 6, 14A, 27A, 27C, 27D, 27E, 29A, 31D, 31H, 31I, 32, 34A, 34B, 49B
	"Project Manager" shall mean the County's Technical Project Manager or Contractor's Senior Project Manager, or each respective party's duly authorized representative designated to manage the Project. 4A, 4D, 4E, 5A, 5B, 44A
	"PSIC" shall mean Public Safety Interoperable Communications.
	"RDCS" shall mean Rapid Deployable Communication System. 3I, 3J
	"Receiving Party" shall have the meaning given in Article 43. 43A, 43B
	"RF" shall mean Radio Frequency 3A, 3B
	"Software License Agreement" shall mean the System Software License Agreement set forth in Exhibit C attached hereto. 14A, 29A, 29B, 29C, 42D

	"Software" shall mean the proprietary computer software of Contractor as owned exclusively by Contractor or Contractor's suppliers, as appropriate, and as further defined in and licensed to County pursuant to the terms of the Software License Agreement. 3,18, 27A, 29A, 29D, 42A, 42C, 42D
	"Statement of Work" shall mean the description of the work to be performed by (i) The County and (ii) by the Contractor to deliver the Infrastructure Hardware, to install the P25 Phase 1 Radio Communication System, and to provide the Services, all as described in Exhibit A of this Contract. Passim
	"Subcontractor" or **"Subconsultant"** shall mean any person, entity, firm or corporation, other than the employees of the Contractor, who furnishes labor and/or materials, in connection with the Work, whether directly or indirectly, on behalf and/or under the direction of the Contractor and whether or not in privity of the Contract with the Contractor. 6A, 11A, 16A, 17A, 23H, 24A, 24C, 24D, 25I, 33A, 33B, 37, 42A, 42B
	"Subsystem" shall mean each of the components of the P25 Phase 1 Radio Communication System consisting of Subsystem [redacted], Subsystem [redacted], Subsystem [redacted], Subsystem [redacted] Subsystem [redacted] Subsystem [redacted], Subsystem [redacted] Subsystem #1, [redacted] Subsystem #2, [redacted] and Mutual Aid Subsystems, all as further described in Article 3. 3, 4Biii, 14A, 27A, 27B, 27C, 27D, 27E, 31A, 31F, 34B, 50
	"Taxes" shall have the meaning given in Article 12. 12
	[redacted] 3A, 3E
	"Terminal Hardware" shall mean mobile units, portable units, control stations and related accessories (excluding batteries) to be purchased by Sprint-Nextel from Harris Corporation for the County's use as contemplated under the FRA (defined herein). 13F, 13G, 14A, 31A
	"Total System Price" shall mean the aggregate price of the Infrastructure Hardware, the Software and the Services to be furnished by the Contractor to the County for the implementation of the P25 Phase 1 Radio Communication System pursuant to the terms set forth in Statement of Work and this Contract. 14A, 17, 26, 38D
	"Trigger Date" shall have the meaning given in Article 13(G)(3). 13G3, 13G4, 13G5

	"UAP" shall mean the County User Access Program as further described in Article 39(A). 39A, 39B
	"UPS" shall mean Uninterrupted Power Supply. 3A, 3B
	"VIDA" "which is an acronym for "Voice, Interoperability, Data, and Access," shall mean the single unified network with a single system for network monitoring, routing, and switching to support the County's communications needs, including but not limited to public safety voice communications, transit data communications, and digital dispatch. 3G, 3H
	"Warranty Period" shall have the meaning given in Article 31(A). 27A, 27B, 27E, 31A, 31B, 31C, 31H, 42A
	"Work", "Services "Program", or **"Project"** shall mean all matters and things required to be done by the Contractor in accordance with the provisions of this Contract, including but not limited to enhancements or modifications to the P25 Phase 1 Radio Communication System or associated Software in the areas of business strategy, System improvement, training, project management, systems integration, software development and other specific activities related to improving the County's Radio System, training or personnel to operate the same, modification of software, infrastructure, and related consulting activities.

EXHIBIT A – STATEMENT OF WORK

SOW Table of Contents

1 – Scope

2 – Project Management Plan

3 – System Descriptions

3.1 – P25 Voice System Description

3.2 – Mutual Aid System Description

Attachment A – P25 Drawings

Attachment B – Coverage Maps

Attachment C – Mutual Aid Drawings

Attachment D – Channelization Requirements

4 – Staging

5 – Site Development

6 – System Cutover and Installation

7 – Subscriber Programming and Installation

8 – P25^{IP} Training

9 – Warranty Support Services

Appendices –Acceptance Test Procedures

Appendix A – System Acceptance and Test Plan for P25 Trunking System

Appendix B – Staging/Factory Functional Test Procedures for P25 Simulcast System A

Appendix C – Staging/Factory Functional Test Procedures for P25 Simulcast System B

Appendix D – Fielded Functional Test Procedures for P25 Simulcast System A

Appendix E – Fielded Functional Test Procedures for P25 Simulcast System B

Appendix F – Functional Test Procedures for Mutual Aid System

Appendix G – Coverage Acceptance Test Procedures for P25 Systems A, B, and C

Appendix H – 30 Day Operational Test Period

Appendix I – 30 Day Combined Systems Operational Test

Appendix J – 65 Building Mandatory Testing

Appendix K – Aircraft Coverage Test

Appendix L – Responsibility Matrix

Appendix M – Preliminary Project Schedule

Section 1 – Scope

This Statement of Work (SOW) outlines the provision of equipment and services to be incorporated in the System Purchase Contract between Harris Corporation, RF Communications Division (Harris) and Miami-Dade County (Miami-Dade). The objective of this document is to define the major tasks and the responsible party for each task throughout the project. Where possible, this document makes reference to equipment and/or activities where interdependencies are required for successful project execution.

This document is organized into sections that describe the program elements, the system components and description, and the key project phases. A draft project schedule is also included in order to define the timeframe in which the implementation is planned.

Section 2 – Project Management Plan

Introduction

This project management plan defines how the Miami-Dade Rebanding project is planned, executed, monitored, controlled and closed. This project plan includes tasks performed by Harris. However, the Miami-Dade Rebanding Project is truly a partnership between Miami-Dade and Harris, with each party being responsible for tasks. Harris' progress depends on the successful completion of the tasks that are the responsibility of Miami-Dade. This plan addresses Harris' performance during the life of this project. The following areas will be discussed:

- Project Team
- Planning
- Major Program Events
- Execution
- Schedule
- Controlling and Monitoring
- Communications
- Change Order Process
- Risk Management
- Quality
- Safety

Project Team

A Harris Senior Project Manager will lead this project and will be Miami-Dade's single point of contact for the Harris project team. The Senior Project Manager will define the need for and supplement with additional project managers, as necessary, throughout the project.

Miami-Dade will be required to assign a Technical Project Manager to function as the single point-of-contact and official liaison between Harris' Senior Project Manager and Miami-Dade. Harris' Senior Project Manager will direct all communications concerning the project and associated work scopes to the Miami-Dade Technical Project Manager.

All official communications regarding the project will be between Miami-Dade's Technical Project Manager and Harris' Senior Project Manager. Any other supporting Project Managers will report to the Senior Project Manager and take on responsibilities assigned by the Senior Project Manager.

The project management team is responsible for:

- Developing schedules, monitoring progress and taking the action(s) needed to ensure that schedules are met.
- Ensuring the progress and quality of work performed.

- The successful implementation of the project and fulfillment of contractual obligations.
- Overall project cost and processing of any contract change orders.
- Regular project status reporting to the Miami-Dade team to include items such as project progress, issues reporting, proposed issue resolution, and schedule updates.

Harris will assign a system engineering team with full technical responsibility for the radio system design. This team will be led by a Senior System Engineer and will report to the Senior Project Manager and will be responsible for:

- Configuring Harris standard products and various vendor products into an operational system as defined in the deliverables.
- Participating in all design review meetings and providing technical support to the Senior Project Manager.
- Conducting the Acceptance Test Plan.
- Providing technical support to Technical Publications for provision of technical, as-builts, and manuals for the system.

Planning

This is a large, complex project that will need to be divided into sub-tasks. The Senior Project Manager and the Miami-Dade team, in a joint effort, must integrate both organizations' tasks into a complete project plan. Significant sub-tasks for Harris include items such as:

- Infrastructure System Design and Installation
- Subscriber Equipment – shared task with Miami-Dade
- Cutover – shared task with Miami-Dade
- Test Plans – shared task with Miami-Dade
- Subscriber Programming – shared task with Miami-Dade

Further detail regarding these sub-tasks is captured in the relevant sections of this SOW.

Infrastructure System Design and Installation

The Senior System Engineer will finalize the system design and prepare the design documents. Refer to Sections 3, 4, and 5 regarding details on system design and installation.

Subscriber Equipment

Programming and distribution of the subscriber equipment is a shared task between Miami-Dade and Harris. The specific tasks for Harris and the quantity of radios that are programmed by Harris are defined in Section 7 - Subscriber Programming and Installation Plan.

Cutover

Cutover methodology is discussed in Section 6 – System Cutover and Installation.

Test Plans

Test Plans are located in the appendices section of this SOW. Scheduling for these tests will be mutually agreed upon between Harris and Miami-Dade.

Subscriber Programming

Subscriber programming is an integrated task between Miami-Dade and Harris. Miami-Dade will be responsible for writing and testing all of the radio personalities. Harris and Miami-Dade will share the task of final subscriber programming. Details are provided in Section 7 – Subscriber Programming and Installation Plan.

Major Program Events

Project Kickoff and Site Audit

The Harris Senior Project Manager will initiate the project with a Project Kick-off Meeting. The timing of this meeting will be mutually agreed upon between Harris and Miami-Dade. The objectives of this meeting include:

- Introduction of all project participants
- Review of the roles of the project participants
- Review of the overall project scope and objectives
- Review of the resource and scheduling requirements
- Review of current site status
- Review of the current frequency plan

Site visits will be conducted following the kickoff meeting.

Detailed Design Review (DDR)

After the kickoff meeting, Harris will meet with Miami-Dade's project team to review the system design, technical data, site-specific information, and to achieve written agreement on the overall system design.

Harris will provide the following documents to Miami-Dade for their review and approval:

- Project Schedule
- Preliminary Site Layout Drawings
- Shelter Floor Plan Drawings
- Rack Elevation Drawings
- System Block and Level Diagrams
- Conventional Circuits Listing
- Power and HVAC Loads
- Antenna Network Diagrams

- Site Frequency Plan (including spectrum analysis and intermodulation studies of existing and proposed frequencies at each site).
- TX Combiner Plan by Site
- Network & Microwave Requirements
- Preliminary Acceptance Test Documents
- Miami-Dade P25 Mandatory Requirements and Options Compliance Matrix
- Change Management Plan

Harris will identify by location what equipment will require re-locating or moving by Miami-Dade.

Within fifteen business days after the DDR has been performed Miami-Dade will sign-off on the system design to acknowledge completion of the DDR. After DDR performance signatures are received Harris will schedule all factory orders in order to meet the approved project schedule.

This phase is considered complete when all documentation associated with this phase have been delivered to Miami-Dade and signed by the designated representative from Miami-Dade.

Furthermore, it is understood that all sites and frequencies must be finalized at least 30 calendar days before the final DDR meeting can be conducted. This is necessary for Harris to properly prepare for the final DDR. Miami-Dade and Harris may mutually agree to conduct multiple preliminary DDRs, as needed, in order to promote open communications and to make risk-based decisions that may be necessary for the overall benefit of the program.

Order Processing and Manufacturing

After the Detailed Design Review, Harris will process orders for equipment and start the equipment manufacturing process.

Execution

The Senior Project Manager and the Harris project team will direct the activities necessary for the successful execution of the project. Following the final design approval, Harris will proceed to load equipment into the Harris system for procurement and manufacturing. The project team integrates the materials and equipment to produce the system(s). The simulcast and multisite systems will be assembled in the Harris factory and staged before shipping. Equipment, which is specific to the installation of the sites, will ship to a designated location in the Miami area.

Schedule

The schedule identifies the Harris and Miami-Dade projected timeline for completing the required project tasks .Updates to the start dates and durations will be made as the information is known and the project evolves. Throughout the project, the Senior Project Manager will utilize schedule compression techniques such as leads and lags in order to integrate tasks more efficiently and effectively. For executive overviews, the Senior Project Manager may use a technique such as precedence diagramming to show major milestones and the interdependency between milestones. Milestones are used to portray significant events in the schedule.

Harris is providing a preliminary Project Schedule at the end of this section.

Controlling and Monitoring

Harris has internal processes associated with initiating, planning, executing, monitoring/controlling, and closing a project. These processes cover broad areas to include procurement, technical, managerial, etc. For this project, there are many processes that will need Miami-Dade participation.

Communications

Communication is an essential aspect of this project. Harris and Miami-Dade will establish a plan that defines regular meetings, reporting structure, and other communications activities. The purpose is to help ensure that all project stakeholders and team members receive the information they need in a timely manner. Activities include:

- Workshops or working sessions that may be needed throughout the project to plan sub-tasks.
- Final Design Review to communicate the final engineering design.
- Formal communication to Miami-Dade's Technical Project Manager that include monthly reports concerning accomplishments and work-in-progress.
- Quarterly on-site status meetings that will be scheduled with Miami-Dade's Technical Project Manager. Harris' Senior Project Manager and Miami-Dade's Technical Project Manager will provide the updates.
- Conference calls will be held with Harris' project team and Miami-Dade's project team. The purpose of these calls will be to discuss tasks, assign responsibility, and establish schedules.
- A joint outreach program, led by Miami-Dade, will be established to manage user expectations.

Change Order Process

During the course of this project, contract modifications may arise to accommodate changes in scope. Either party may request changes within the general scope of the contract. Changes are initiated via a Change Order Process as described in the System Purchase Contract.

Risk Management

Harris follows the Project Management Institute (PMI) and Project Management Body of Knowledge (PMBOK) methodology when assessing risk. To understand the risks and how to minimize their impact, Harris' methodology is to identify the project's critical evolutions, identify the risks associated with those evolutions, perform a risk analysis of the work elements, identify critical parameters for the successful completion for the work scope, and apply risk mitigating tools to manage the risks commensurate with consequences and likelihood.

It will be the responsibility of all project stakeholders including Harris' Senior Program Manager and implementation team, and Miami-Dade's project team to:

- Identify potential risk
- Analyze, evaluate and rate the risk

- Identify the options
- Create the best risk mitigation plan

As part of regularly scheduled status meetings, the Senior Program Manager will review the status of risk mitigation efforts and review assessments for any new risk items. Harris' Project Management Team, along with Miami-Dade, will proactively mitigate the impact of risk in order to keep the project on track.

Quality

Harris' Quality Assurance Organization "Customer Advocacy and Business Excellence Organization" (CABE) has overall responsibility for quality associated with this project. It fulfills this responsibility through direct oversight of product and service realization activities, and by partnering with the Harris Project Team and Subcontractor Organizations.

Safety

Harris is cognizant of the importance of safety on projects. We require all employees to understand the procedures for reporting a work-related injury or illness, the difference in correct and unsafe/unhealthy work conditions or practices, and that everyone complies with safe work practices. Documentation of applicable safety laws and OSHA regulations are posted, and all work complies with applicable Federal laws and regulations.

Closing

During the project closing, records will be updated and/or prepared to reflect the final results. Harris will provide as-built drawings to Miami-Dade in Auto-CAD format. Miami-Dade and Harris will sign off on completion, agreeing that project closing has been completed. Immediately following system acceptance, frequencies will be available for return to Sprint-Nextel.

Preliminary Project Schedule

A preliminary project schedule is included in Appendix M.

Section 3 – System Description

Introduction

The primary objective of this SOW is to reband Miami-Dade's Communications System. Harris will perform the required system reconfiguration by replacing Miami-Dade's existing EDACS infrastructure with a standardized P25 system and modifying certain ancillary sub-systems including conventional, NPSPAC mutual aid equipment. The rebanded system will leverage Miami-Dade's previous investments in the Harris VIDA (Voice, Interoperability, Data and Access), a network that unifies. Included are communications network components, such as the ISSI server, the EDACS-IP Gateways, the NetworkFirst Gateway (the only Qualified Anti-Terrorism Interoperability Technology under the Department of Homeland Security's SAFETY Act), and the P25 700 MHz and 800 MHz infrastructure purchased under the PSIC grant.

Design Rationale

Harris has leveraged as much of existing Miami-Dade assets as possible, to keep costs of site development low for Miami-Dade and to ensure the availability of site locations for the proposed system. As a result, the P25 Phase 1 network utilizes the same site locations as the existing EDACS infrastructure. The general approach is to replace or upgrade existing EDACS infrastructure to P25 infrastructure. This includes all of the existing RF sites, the dispatch locations, and the subscriber units. Additionally, Harris has included design improvements beyond the capabilities of the existing system, as detailed in the coverage design.

While many of the components and subsystems of the P25 system are software upgradable to P25 Phase 2, the scope of this project does not include P25 Phase 2.

Table A denotes the existing Miami-Dade EDACS components and the replacement sub-systems and equipment.

Table A - EDACS System Replacements

System Name	Existing System	Replacement System
EDACS Backbone		
System A		

System Name	Existing System	Replacement System
	[redacted]	
System B	[redacted]	
System C	[redacted]	
System D		
System E		
System F		
System G		
RDCS #1		
RDCS #2		

Section 3.1 – P25 System Description

This section describes the new Miami-Dade P25 System. Additional relevant sections of the SOW for the P25 System are:

- Attachment A (System Block Diagrams) – System Block Diagrams
- Attachment A (P25 Rack Drawings) – Rack up Drawings of Proposed Equipment
- Section 6 (Cutover and Installation Plan) – Detailed Installation and Cutover Plan

VIDA Backbone

VIDA is an acronym for Voice, Interoperability, Data, and Access; but more than that, it represents a single unified network to support the County's communications needs, whether they are Public Safety voice communications, Transit Data Communications, or digital dispatch they are supported under the Harris VIDA network with a single system for network monitoring, routing, and switching.

Harris will install a new VIDA network to support the new P25 systems and integrate several pieces of existing Miami-Dade equipment into the VIDA network. The VIDA network will include the network switching equipment, alarm monitoring, and system management capabilities.

[redacted]

Additionally, Harris will integrate [redacted]

Harris will utilize Miami-Dade's existing EDACS IP Gateways to facilitate the cutover from the existing EDACS systems to the new P25 systems. The EDACS IP Gateways' operations require that Miami-Dade identify specific talkgroups that must be passed between the systems. [redacted]

Harris will integrate [redacted]

SOW. One ISSI server can talk to multiple agencies; each external agency will need its own ISSI server. The talkpath limit is 200 concurrent calls per ISSI.

The Regional VIDA Manager contains an activity warehouse tool, which is a database used for searching historical system call activity. Regular system operations require managing the activity warehouse. It will be Miami-Dade's responsibility to manage this tool.

Table B - VIDA Network Equipment

Site	Existing Equipment (Reused)	New Equipment
[redacted]	[redacted]	[redacted]
[redacted]		[redacted]

Information Assurance

Harris recognizes the importance of Information Assurance (network and computer security) for the successful deployment o[redacted] Harris will provide baseline security services including authorized login to different system components including radios, network switch, management system, and networking equipment. Harris has many years of experience working with customers to harden network security and will work with the County to address their security concerns. Harris applies industry best practices and 'Defense in Depth' to create a layered security approach that includes technical and procedural elements. In this context, 'Defense in Depth' is the application of multiple computer security techniques in products from multiple vendors to mitigate the risk of any one defense being compromised or circumvented. This security solution is modeled after systems provided for the Department of Defense.

Note: This quote includes all acquired VIDA network equipment supporting the new P25 Phase 1 Communications System as described in this SOW. Any existing County hardware that is reused such as logging recorders, administration terminals, firewall, etc. is not included.

Harris will provide the following system security elements:

- **System Lockdown** – [redacted] system components, including the servers, the workstations, and the network routers. These controls include removing unused services and daemons, removing unnecessary rights from user and service logins, configuring secured web browsers, utilize secured remote administration tools, and applying the latest third party security patches.
- **Centralized Security Server** – Harris will provid[redacted]
- **Encrypted Communication Links** - By default, using [redacted] enable use of this protection.
- **Perimeter Firewalls** - [redacted]
- **Anti-Virus** [redacted] server and w[redacted] and in computer memory. Computer users can manually scan hard drives or setup the antivirus to automatically "scan on access." Generally, antivirus software is setup to fix files that contain known viruses and quarantine files it cannot fix. The software recognizes known viruses and suspicious code based upon an underlying database of antivirus signatures. Since new computer viruses are constantly encountered, antivirus software needs regular signature updates.

Software FX

A comprehensive software maintenance program has been included as an option that provides semi-annual upgrades to Harris developed software applications. These software upgrades include enhancements to the existing software baseline, corrections to issues, and the ability to purchase and enable newly developed licensed features. Software FX is purchased on an annual or multi-year basis. Harris will provide FX under the current EDACS FX agreement through year 5 at a fixed price as defined in Exhibit B to the SPC.

SUMSplus

To help prevent existing vulnerabilities from being exploited, it is important to regularly patch IT infrastructure. However, patch application can sometimes negatively affect the performance of critical communications LMR systems. For example, a patch might update the TCP/IP stack and affect packet fragmentation. Testing security patches in a controlled environment prior to production rollout is a best practice. The solution is to have Harris conduct the testing in their Lynchburg, Virginia engineering facility. The Security Update Management Service (SUMS), which is offered in a variety of selections, is the complete answer. The security patches and anti-virus signatures provided by SUMS are tested using the most current versions of Harris application software.

SUMS*plus* is an automated software distribution service provides third-party security related patches and anti-virus signatures applicable to the VIDA Network on a quarterly basis. SUMS*plus* automates distribution to the components within the VIDA Network using the SUMS*plus* Automatic Server. SUMS*plus* also provides the additional service of posting timely assessments of vulnerabilities that affect the VIDA Network. On behalf of SUMS*plus* subscribers, Harris will obtain, evaluate, and deliver security related remediation to third-party software applicable to the VIDA Network. These remediations may include security related patches to operating systems, databases, web servers, web browsers, and antivirus signatures. SUMSplus is purchased on an annual or multi-year basis as an additional charge to go with an FX subscription. SUMS Plus pricing for year 5 and the subsequent optional terms has been defined as part of Exhibit B to the SPC.

System A

System A is a [redacted] system will be [redacted]

Table C - System A Equipment by Site

Site	Configuration	Equipment
[redacted]	System [redacted]	[redacted]
	System [redacted]	
	System [redacted]	
	System [redacted]	
	System [redacted]	

Site	Configuration	Equipment
[redacted]	System [redacted]	[redacted]
	System [redacted]	
	System [redacted]	

Site	Configuration	Equipment
[redacted]	System [redacted] Site	[redacted]
	System [redacted] Site	

System [redacted]

System [redacted]

[redacted]

The System [redacted]
capable of [redacted]
Programmin [redacted]
subscriber te [redacted]

The System [redacted]
point. The s [redacted]
this critical s [redacted]
The [redacted]

Table D - System B Equipment by Site

Site	Configuration	Equipment
[redacted]	System [redacted]	[redacted]
	System [redacted]	

Site	Configuration	Equipment
[redacted]		[redacted]
	Systen	
	Systen	
	System	
	System	

Site	Configuration	Equipment
[redacted]	[redacted]	[redacted]

Site	Configuration	Equipment
		[redacted]

System [redacted]

The System [redacted] travel into [redacted] EDACS site [redacted] stations. H[redacted]

[redacted]

System [redacted]

The System [redacted] system testi[redacted] P25 site usi[redacted]

[redacted]

System [redacted]

[redacted]

System [redacted]

System [redacted]
provide services to allow i [redacted]

System [redacted]

System [redacted]
will provide services to allow integration of this site into the [redacted]

RDCS #1

The Rapid Deployable Communications System (RDCS) #1 is an [redacted]
will be installed in [redacted]
existing antennas, f [redacted]
consists of: [redacted]

RDCS #2

The Rapid Deployable Communications System #2 is an [redacted]

Other Sub-Systems

Jail Systems [redacted] Since this frequency does not require rebanding, Harris has not planned any infrastructure work at these facilities.

System

new filtering network to the existing antenna system transmission line. This modification of the

Harris will configur

Global

When a network or other type of failure occurs and the system enters into bypass. When this occurs

Harris will configure
nd the r

disable a site or place the site into the bypass mode. When the decision has been reached that the site should be placed into bypass mode, this computer will indicate to both the site and the simulcast The MASTR V stations will begin operating in their pre-set

Harris will
places the C
antennas.

When the fault that has
indicate that
Harris will
the simulcast antennas o

Harris will work with Miami-Dade
the o be finalized at the

Harris will provide guidance and documentation, along with up to two weeks of engineering time, to [redacted]

Harris will provide the County a list of [redacted] arris will also perform Power Failure testing exercising the [redacted] Plan.

Logging Recorder

Harris will [redacted] located at [redacted] operations [redacted] algorithms. [redacted]

Dispatch

Harris will replace [redacted] of the [redacted]

In the EDACS system architecture. [redacted] systems will be able to access talk [redacted] will allow more functionality with Miami-Dade's existing fallback plan for System B. It will enable [redacted]

The VIDA Console Exchange (VCE) is [redacted] Miami-Dade has purchased for the [redacted] architecture. The VCE is configured as [redacted] located by site as shown [redacted]

Table E - Dispatch Console Equipment Locations

Site	Equipment	Description
[redacted]	[redacted]	[redacted]
[redacted]		Fire and Transit

Fire and Transit Consoles

- [redacted]
- Feature Licenses Kit
- 17" Touchscreen Monitor
- Three Button Trackball Mouse
- Two Speakers (Select and Unselect)
- Dual Footswitch

- Desktop Microphone (Transit Only)
- Call Director Kit
- Dual Headset Jack

[redacted] ***Consoles***

- [redacted] Console Computer
- [redacted]
- Feature Licenses Kit
- 17" Touchscreen Monitor
- Three Button Trackball Mouse
- Two Speakers (Select and Unselect)
- Dual Footswitch
- Desktop Microphone [redacted]
- Dual Headset Jack

[redacted] ***Consoles***

- [redacted]
- [redacted]
- Feature Licenses Kit
- Three Button Trackball Mouse
- Two Speakers (Select and Unselect)
- USB Port to Headset Adaptor

Harris will also [redacted]
a single key pre[redacted]

Backhaul

Harris will leverage Miami-Dade's [redacted]
exercise [redacted]
Commun[redacted]
requirem[redacted] quirements for Harris to fully implement the network.

Remote Access

Miami-Dade will [redacted]
remote support. [redacted]

[redacted]

addition, at any [redacted] addresses) a[redacted] resses, and [redacted]

Leased T1s [redacted]

Miami-Dade will need to supply to Harris [redacted] the following specifications:

- [redacted]

Bandwidth Requirements

Table F - P25 Network Bandwidth Requirements [redacted]

Site	Site Type	Microwave Requirements	Fiber Requirements
[redacted]			

Site	Site Type	Microwave Requirements	Fiber Requirements
[redacted]			

Please refer to Attachment D of the system description for further information on the backhaul bandwidth requirements.

Equipment Summary by Site

Table G [redacted] at that site.

Table G - Equipment Summary

Name	Location	System equipment
[redacted]		

Name	Location	System equipment
[redacted]		

Coverage

Harris has leveraged [redacted] system when compared to the existing systems. [redacted]

In order to facilitate system cutover, the new Systen [redacted]

Harris has provided [redacted] Systems B and will [redacted] plans. Harris has provided copies of the coverage test plans for System [redacted] of this SOW. [redacted] talk-out limite [redacted] being able to communicate back. The site parameters and settings that [redacted] talk-out limited will be presented to the County as part of the DDR.

No coverage testing is proposed for the other systems.

It is agreed to by the parties that the test plans incorporated into this Statement of Work are preliminary in nature, including the noise floor, and are subject to finalization as part of the DDR as mutually agreed to by both parties.

Table H and I describe the antennas on a site by site basis needed for proposed coverage.

Table H - System A Interim Antenna Configurations

Site Name	Transmit Antenna Model	Transmit Antenna Height	Receive Antenna Model	Receive Antenna Height	Azimuth
[redacted]					

Site Name	Transmit Antenna Model	Transmit Antenna Height	Receive Antenna Model	Receive Antenna Height	Azimuth
[redacted]					

Table I - System B and Final System A Antenna Configurations

Site Name	Transmit Antenna Model	Transmit Antenna Height	Receive Antenna Model	Receive Antenna Height	Azimuth
[redacted]					

Note: Certain conditions such as tower loading analysis and interference analyses may cause alternate antenna heights and/or antenna selection to change.

Frequency Planning

Harris has examined Miami-Dade's frequencies and will utilize the frequency plan developed by RCC Consultants during the rebanding planning so as to minimize the chances for intermodulation products. This plan involves swapping several transit channels with Systems A and B channels, specifically swap Bus Channel 1 with System A channel 4, swap Mover Channel 1 with System A Channel 6, and swap Rail Channel 1 with System B Channel 9.

Combining Plan

The following tables depict the P25 Systems combiner configurations.

Table J - System [redacted]

Frequency	Name	FCC Channel # 90.613
[redacted]	[redacted]	

Table K - System [redacted]

Frequency	Name	FCC Channel # 90.613
[redacted]	[redacted]	

Table L - System [redacted]

Frequency	Name	FCC Channel # 90.613
[redacted]		

Table M - System [redacted]

Frequency	Name	FCC Channel # 90.613
[redacted]		

Table N - System [redacted]

Frequency	Name	FCC Channel # 90.613
[redacted]		

Table O - Syster[redacted]

Name	Frequency	FCC Channel # 90.613
[redacted]		

Table P - System [redacted]

System D Combiner B	Frequency	FCC Channel # 90.613
[redacted]		

The System[redacted]RF infrastructure will not be modified so the combiner configurations will remain the same. The RDCS[redacted]

Intermodulation Studies

During the rebanding planning, RCC performed an extensive intermodulation study and determined that a theoretical possibility exists for intermodulation to occur, which may result in self interference when operating the new and old NPSPAC frequencies at a si[redacted]t sites [redacted]d and new [redacted] or the [redacted]potentially occur during a cutover process from the [redacted]he theoretical possibility is significantly reduced once the old channels have been turned off. However, the possibility of self interference during the cutover process can not be ignored. Harris has proposed an intermodulation mitigation plan included below in this System Description. This plan will be performed prior to system cutover to determine the best approach to the turning down of old channels and turning up of new channels in the simulcast systems.

Harris has taken several steps with its design and cutover approach intended to mitigate intermodulation. Harris will use low PIM products where available as standard products from our vendors. Harris will use DIN connectors where needed and practical to do so. DIN connectors are subject to availability within the industry for antennas but we will strive to deploy DIN-equipped antennas. However, Harris will avoid the use of between-series adapters for the sake of providing a

DIN connector on a transmission line. Harris has planned the [redacted] cutover to include significant vertical separation between the old and new NPSPAC channels at all of [redacted]

In the discussion that follows, the following references will be used.

- [redacted] - refers to existing systems operating on the non-rebanded channels
- [redacted] refers to new systems operating on the rebanded channels

Note that the discussion that follows refers primarily to those sites where it is not possible to achieve vertical separation between transmit and receive antennas on an antenna mounting structure – in other words, [redacted]

In the rebanding of the Miami Dade communications system, Harris proposes to use a procedure whereby [redacted] be built and put into service. To ensure continuity of service, this New [redacted] fully tested and "burned in" (in accordance with an agreed upon test and burn-in procedure). During this transition period [redacted] will remain in operation serving their respective user bases, while the [redacted] is being commissioned. Ideally, one would like to fully activate the [redacted] and perform all test procedures in accordance with the test and burn-in plan. Under this ideal condition, migration of users from the [redacted] system would be a relatively straightforward procedure.

One aspect of planning for use of this implementation procedure has been the performance of a frequency compatibility study – an Intermod Analysis. Such intermod studies have been performed by both RCC and Harris; both reaching the same conclusion – that there is the mathematical possibility for the generation of 5th and 7th order intermod products resulting from the combination of the new and old channels falling on an old receive channel (for the [redacted] portion of the implementation). The potential for the creation of intermod products appears to be pervasive and has the potential for impacting all operating channels. The sheer number of intermod "hits" revealed in these studies leads one to the conclusion that there are no (sub)sets of channels that could be used that would avoid the problem altogether – at least from the mathematical perspective.

That having been said, one cannot state with certainty that the mathematical possibility of occurrence will result in an actual intermod event. As various reports have noted, intermod products can be generated in both the system equipment (where the RF mixing would occur), and in external sources in close proximity to the site. Considerable concern has been raised about the condition of the catwalks and other structures atop the [redacted] where it has been noted that these structures exhibit extensive rusting. Such a condition is known to support the generation of intermodulation products. However, one cannot state with certainty whether such products will be generated, and if they will be of such a level that will degrade performance on the receive channel in question.

To re-emphasize, showing that a mathematical possibility exists that such an intermodulation product could occur does not necessarily ensure the certainty that the problem will occur. If it could be shown that intermod products did not in fact exist, then one could proceed with the ideal implementation plan that allowed both [redacted] system to be simultaneously active. Implementation of the [redacted] n such a fashion would, from an overall implementation, testing and cutover perspective, mitigate many of the legitimate concerns expressed by Miami-Dade.

In order to empirically determine the presence of intermod products at levels that would impact system performance, Harris proposes to perform testing in the following manner at those sites where the problem has the greatest potential of occurrence [redacted]

- Install the complete set of hardware for [redacted]
- Using the previously performed intermod studies for [redacted] (the active systems under consideration) as a guide, activate on a case-by-case basis the [redacted] channel that may play a role in the generation of a particular intermod product, and examine the receive channel predicted by the study where the intermod is expected to occur. Note that to perform this empirical analysis, one would be required to only remove one channel at a time from active service of the impacted system; this channel being inactive only for that period of time while the evaluation is being performed.
- Proceed methodically through all possible combinations of channels predicted by the intermod study, noting where intermod has (or hasn't) occurred.
- Using the results of this procedure, develop an appropriate test and cutover plan.
- Employ similar methodology for the [redacted] system has been decommissioned.

In proceeding in this proposed manner, one will have empirically determined either the presence of intermod products on particular channels, or ideally, the lack thereof. If the latter, one would be able to proceed with confidence in a much simpler test and cutover plan. If the former, one will have specific knowledge of the extent of the problem, and be able to plan accordingly, formulating a test and cutover plan that, to the greatest degree possible, addresses such concerns as those related to the testing of a complete system, and migration of users to the [redacted] Of course, similar procedures and comments would apply to the migration of users to th[redacted]

Licensing

Proposed coverage and the coverage guarantees are all contingent on being able to license the frequencies as proposed.

NPSPAC frequency licensing in the State of Florida has to be submitted to the frequency coordinator with a report generated by the [redacted] Within the [redacted] each frequency is input along with site locations, antenna patterns, and power levels. The tool analyzes each frequency to determine if it will cause co-channel and/or adjacent channel interference to other previously licensed systems. In a simulcast system, since each channel must transmit the same ERP at a site, the most ERP limited frequency in the system sets the limits of the system as a whole. Additionally, the [redacted] contained within [redacted] political boundary, in this case, Miami-Dade County. Exceptions are made for contours extending over the ocean as there is no potential interferer over this area.

Harris has reviewed the [redacted] for all of the proposed frequencies to determine the most limited channels of Miami-Dade and has designed coverage to be contained by the extents of these contours. Additionally, Harris has ensured that the [redacted] are contained within a [redacted] Miami-Dade. Harris will work with Miami-Dade to run [redacted] eports for each of the Miami-Dade frequencies for licensing the P25 Network. Miami-Dade is responsible

for frequency coordination fees, submitting the [redacted] completing the FCC license applications, and submitting the applications to the frequency coordinator.

Assumptions

- [redacted] own in drawing: SL-A81659 dated 06-28- [redacted] This Statement of Work assumes the microwave network as depicted in SL-A81659 is in place prior to installation of the P25 Phase 1 Communications System.
- Should Miami-Dade procure a Microwave Network different in design from SL-A81659 that is not part of an option to purchase under this Contract, the integration of the P25 Phase 1 Communication System Scope of Work will change. This change will necessitate a change order which must be mutually agreed to by both Parties.
- Should Miami-Dade procure a Microwave Network by exercising the Option offered under this Contract, any changes necessitated by that Network will be handled as part of the Option to Purchase.
- Miami-Dade will provide [redacted], excluding the [redacted] systems. Should a [redacted] the Network, Equipment and Route Redundancy described in this Statement of Work may change.
- Miami-Dade will provide microwave connectivity from [redacted] two p[redacted] If Miami-Dade decides not to implement the additional two [redacted] from [redacted] this will result in a less than optimal network design for redundancy.
- Miami-Dade will provide [redacted]
- Miami-Dade shall notify Harris if they wish to exercise the Microwave Network Option offered under this Contract no later than sixty (60) days prior to the DDR Meeting.
- The existing System [redacted] are fully functional and in good working order. If antenna systems are not acceptable, Miami-Dade will correct the problem(s).
- The [redacted] will be operational during the cutover of this system. Refer to Section 6, System Cutover and Installation.
- Coverage guarantees are contingent on antenna mounting position feasibility and space availability. It is known today that [redacted] do not have sufficient structural capacity to facilitate the installation of additional antenna systems. The process of addressing these deficiencies is detailed in the Contract and Harris is in the process of conducting structural analysis on all the planned towers for both [redacted]
- Intermodulation products will not cause detrimental effects to the new or [redacted] nd [redacted] Intermodulation analysis shows that a potential does exist for 2-channel, 5th-order, on frequency hits to occur on the old [redacted] base station receive frequencies and for 2-channel, 7th-order, on frequency hits to occur on the new [redacted] ation receive frequencies. The potential 5th order hits are a result of new [redacted] channels mixing with old [redacted] hannels or with new mutual

aid channels mixing with old mutual aid channels. The potential 7th order hits are the result of new mutual aid channels mixing with old mutual aid channels. The use of [redacted] Bypass antennas for mutual aid transmitters is used to mitigate this at all tower sites as well as the placement of intermediate [redacted] and old [redacted] At locations where vertical separation is not possible [redacted] and intermodulation products cause self interference, old and or new mutual aid channels may be disabled on the transmit or receive side to minimize self interference on a temporary basis during Cutover. New P25 channels may need to be turned up while turning down old EDACS channels.

- The cutover process will be a phased approach as described in the cutover and installation section.
- The Phase 1 P25 Communication System configuration as depicted in the RAPTR project reports and associated coverage maps can be licensed. Harris has completed a [redacted] analysis of the P25 Phase 1 Communication System Configuration which meets the requirements of the [redacted] Plan.
- The [redacted] is in good working order.
- The PSIC grant project will be implemented before equipment deployment begins under this SOW.
- [redacted] consoles will be upgraded from [redacted] using Miami-Dade provided equipment delivered by Harris with the [redacted].
- Each console uses an average of one unique conventional interface at a time at each dispatch location, or less. This has been used to determine the bandwidth requirements for console locations.
- A single [redacted] This has been used to determine bandwidth required to console locations.
- [redacted] will not operate from [redacted] equipment installation and will move from [redacted].
- Police dispatchers will not operate from [redacted] dispatch equipment installation, and will move from [redacted] in cutover to facilitate upgrades to the [redacted]
- Known existing in-building repeater systems [redacted] do not operate on frequencies that require rebanding. Harris has not included in its Statement of Work the retuning or replacement of any in-building repeater systems.
- One of the RDCS may be deployed at the [redacted] site as an intermod mitigation device, if needed. The need for the RDCS at the [redacted] will be determined at DDR.
- The [redacted] from the duplexer to the fifth floor is broad enough to allow the transmission of old and new NPSPAC channels. Prior to DDR, the parties will jointly review [redacted] to determine its ability to allow for transmission of both old and new NPSPAC Channels.
- [redacted] when communicating with consoles. This is used to calculate console location bandwidth requirements.

- Miami-Dade will provide the necessary staff to aid in the cutover process.
- The [redacted] System will be deployed as a [redacted] If [redacted] chooses a non-VIDA system platform, the consoles and console support equipment in this system description for transit are not applicable.

Section 3.2 – Mutual Aid System Description

Note: This is a preliminary plan that will be further refined before DDR.

Existing Mutual Aid System Configurations

Miami-Dade operates three Mutual Aid channels within the County [redacted] These channels serve interagency communications between the County and other and other local government and State. The Mutual Aid equipment at each site operates through its own transmit antenna, [redacted] The Mutual Aid equipment shares receive antenna systems with [redacted] where it has its own receive antenna. The configurations of these Mutual Aid channels are briefly described below.

[redacted]

The [redacted] channel is configured as a conventional simulcast system with a County-wide service area. The channel currently is using Miami-Dade's NEC multiplexer shelves. [redacted] channel is deployed are identified in Table Q.

[redacted] is deployed in both voted and non-voted configurations. [redacted] the central areas of Miami-Dade and can be enabled either at the [redacted] or at the [redacted], when needed, in a non-voted configuration. When the [redacted] site is enabled, [redacted] is disabled elsewhere. Sites where the [redacted] channel is deployed are identified in Table Q.

[redacted]

[redacted] is currently implemented as a voted system, similar [redacted] Miami-Dade is currently contracted with Harris to replace the [redacted] as a part of the PSIC grant. The new [redacted] will be configured as a conventional simulcast system using GPS reference clocks for timing. This deployment will not require the reliance on the obsolete NEC multiplexer that [redacted] uses today. Harris has assumed that the new [redacted] system will be deployed and that the [redacted] system will be removed during this implementation of the PSIC grant. Sites where the [redacted] channel is deployed are identified in Table Q. The following table indicates Mutual Aid RF infrastructure by site.

Table Q - Mutual Aid RF Infrastructure by Site

Site name	Latitude	Longitude	MA-TAC equipment	Receive Antenna
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Mutual Aid Reconfiguration Steps

Due to space limitations within many of the [redacted] simulcast remote transmit sites, the Mutual Aid equipment reconfiguration will begin before deployment of the new P25 system infrastructure. This is a preliminary plan that will be further refined before DDR.

As one of the first steps in the process, Harris will upgrade the [redacted] channel to the same GPS simulcast configuration as the new [redacted] equipment. This will be accomplished by using replacement stations that are later models than currently in use by Miami-Dade, and that have been taken from a previous rebanding project. Miami-Dade's existing antenna systems and RF cabling will be used for this reconfiguration (no new antenna system equipment will be supplied). Empty rack space within the [redacted] simulcast rack will be used to locate the [redacted] equipment. The [redacted] simulcast equipment will be utilized as common equipment and shared between the upgraded [redacted] The existing [redacted] equipment cabinet will be removed from the site to create additional space for the [redacted] simulcast

equipment, except at the Airport site, where the existing [redacted] station will be removed from the existing rack.
Once the upgrade of the [redacted] system has been completed, Mutual Aid frequency reconfiguration may begin. The exact timing of this reconfiguration is contingent on the deployment of other [redacted]

Harris will utilize the simulcast bypass antennas at each tower site to facilitate deployment of swing transmit equipment on the old NPSPAC Mutual Aid channels. These antennas were chosen because of the vertical isolation that they will provide between the old and new channels' transmitters; this vertical separation aids in minimizing the possibility of intermodulation self-interference. Two site locations do not support vertical isolation between channels, [redacted] (both rooftop antenna sites). At these sites, testing will be conducted to analyze the actual intermodulation conditions. If it is determined that these sites do not allow operation of both old and new NPSPAC Mutual Aid channels, then the new channels will be brought into operation at these sites in receive-only configurations and the old channels will continue to be accessible with mobile coverage within the county until the conclusion of parallel operations of old and new channels. The new Mutual Aid frequencies will be deployed on the existing [redacted] bypass antennas and the [redacted] receive antennas. The new System A receive antenna multicoupler will be used for input into the Mutual Aid receiver at sites that are shared with the P25 simulcast system after it has been deployed. The [redacted] multicoupler will be used for input into the Mutual Aid receiver located at [redacted]

For Miami-Dade Mutual Aid, Harris proposes a combination of a temporary multicast and crosspatch techniques to maintain interoperability during reconfiguration. Equipment that will be used during the reconfiguration process includes; [redacted] two-port combiners, and Rebanding Diplexers. This specialized equipment will be deployed as appropriate to the system under reconfiguration. The Convex Rebanders will be used at all Mutual Aid simulcast and voted sites. At the [redacted] will be utilized. Two-port combiners and Rebanding Diplexers will be used to attach the parallel Mutual Aid transmitters to the existing [redacted] bypass antennas.

During reconfiguration, it will be possible for users to access a particular Mutual Aid channel either on its original frequency assignment or its new frequency assignment. Operation is preserved whereby dispatchers transmit simultaneously to users on original and reconfigured channel assignments. Users may transmit on either assignment and be heard by the dispatcher and all users regardless of frequency assignment received.

The following table shows the existing and proposed Mutual Aid TAC channels.

Table R - Mutual Aid Channels

Name	Existing		Replacement	
	Tx	Rx	Tx	Rx
[redacted]				

Non-Voted [redacted]

Step 1. Verify re-programmed user radios contain both new and old frequency sets.

Step 2. Verify swing MASTR III base is tuned to the ol[redacted] channel.

Step 3. Install swing MASTR III base station with SOR, IM Suppression Panel, Duplexer, and Antenna System [redacted]

Step 4. Install Vega Rebanding Panel, but only interface to the swing MASTR III base station at [redacted]t this time (4-wire audio and SOR).

Step 5. Choose a date for transition initiation.

Step 6. Disable existing MA-TAC 3 base station at [redacted] and power on swing MASTR III operating on old frequency assignment.

Step 7. Install IM Suppression Panel between existin[redacted] transmitter and Duplexer.

Step 8. Reconfigure existing [redacted] MASTR III station and Duplexer at [redacted] Install SOR Relay Kit.

Step 9. Remove existing [redacted] base station at [redacted] from leased line equipment (4-wire audio) and reconnect to Vega Rebanding Panel. Also connect base station SOR to Vega Rebanding Panel. Connect Vega Rebanding Panel to 4-wire audio leased line equipment port assigned to [redacted]

Step 10. Reactivate existing MASTR III station a[redacted] now retuned for operation on new [redacted] equency assignment. System now operates as back-to-back repeater system on old and new channel assignments for [redacted]

Mutual Aid Swing Equipment

In order to provide seamless interoperability between the old and new frequency assignments during the reconfiguration period, Harris proposes additional equipment which includes multicast and crosspatch equipment as well as parallel base stations and/or auxiliary receivers at each of the nine Mutual Aid sites. The existing Miami-Dade Mutual Aid stations will continue to be used and will be the stations that remain operational upon completion of channel reconfiguration.

At the outset of the Mutual Aid reconfiguration process, Harris will add swing equipment to each Mutual Aid sub-system to establish multicast and crosspatch functionality between old and new frequency assignments. All swing equipment will be provided by Harris for the duration of the statewide rebanding of the Mutual Aid systems. The County's existing and replacement base stations will be retuned to new frequency assignments while the swing base stations will be tuned to operate on old frequency assignments. On a site-by-site basis, the following table delineates the existing equipment components of the various Mutual Aid sub-systems along with replacement and swing equipment. Many of the components are common among sub-systems.

	EXISTING EQUIPMENT	SWING / REPLACEMENT EQUIPMENT	RATIONALE
SITE: [redacted]			
[redacted]			
Rack	-	-	Share existing Rack
SITE: [redacted]			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	[redacted]
CTCSS Filter Assembly	(1) 188D6825G1 for [redacted] (1) Spectracom Model 1118-2 for [redacted]	(1) Spectracom Model 1118-2 for [redacted]	[redacted]
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	DB8062F2-B	DB8062F2-B	Replace existing combiner with pre-tuned DB8062F2-B for new NPSPAC channels. Use old combiner to combine swing equipment.

	Existing Equipment	Swing / Replacement Equipment	Rationale
Rebanding Diplexer	-	Rebanding Diplexer	The diplexer allows combining of the swing equipment onto the [redacted] Bypass antenna.
SITE [redacted]			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	[redacted]
CTCSS Filter Assembly	(1) 188D6825G1 for [redacted] (1) Spectracom Model 1118-2 for [redacted]	(1) Spectracom Model 1118-2 for [redacted]	Module used to generate CTCSS tone on simulcast station. No module needed for existing [redacted] dule required to upgrade [redacted] Existing modules can be used for both existing stations and swing stations.
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	DB8062F2-B	DB8062F2-B	Replace existing combiner with pre-tuned DB8062F2-B for new NPSPAC channels. Use old combiner to combine swing equipment.
Rebanding Diplexer	-	Rebanding Diplexer	The diplexer allows combining of the swing equipment onto the System A Bypass antenna.
SITE [redacted]			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	Retune existing MASTR III Stations for [redacted] new frequency assignments. Add swing MASTR III stations tuned to old channel assignments on [redacted] and [redacted] for back-to-back repeater operation. Add replacemen[redacted] MASTR III.

	Existing Equipment	Swing / Replacement Equipment	Rationale
Auxiliary Receivers	(1) MASTR III	(1) MASTR III 800MHz Repeater, TX Disabled	Retune existing [redacted] MASTR III Auxiliary Receiver and place on new System A multicoupler. Temporarily add swing MASTR III Repeater on old frequency assignment and place on new System A multicoupler.
CTCSS Filter Assembly	(1) 188D6825G1 for [redacted] (1) Spectracom Model 1118-2 for [redacted]	(1) Spectracom Model 1118-2 for [redacted]	Module used to generate CTCSS tone on simulcast station. No [redacted] module needed for existing [redacted] ule required to upgrade [redacted] Existing modules can be used for both existing stations and swing stations.
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	DB8062F2-B	DB8062F2-B	Replace existing combiner with pre-tuned DB8062F2-B for new NPSPAC channels. Use old combiner to combine swing equipment.
Rebanding Diplexer	-	Rebanding Diplexer	The diplexer allows combining of the swing equipment onto th[redacted] Bypass antenna.
SITE: [redacted]			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	Retune existing MASTR III Stations for [redacted] new frequency assignments. Add swing MASTR III stations tuned to old channel assignments on [redacted] for back-to-back repeater operation. Add replacement [redacted] MASTR III.
CTCSS Filter Assembly	(1) 188D6825G1 for [redacted] (1) Spectracom Model 1118-2 for [redacted]	(1) Spectracom Model 1118-2 for [redacted]	Module used to generate CTCSS tone on simulcast station. No module needed for existing [redacted] One module required to upgrade [redacted] Existing modules can be used for both existing stations and swing stations.

	Existing Equipment	Swing / Replacement Equipment	Rationale
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	DB8062F2-B	DB8062F2-B	Combine swing equipment transmitters
Rebanding Diplexer	-	Rebanding Diplexer	The diplexer allows combining of the swing equipment onto the [redacted] bypass antenna.
SITE [redacted]			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	Retune existing MASTR III Stations fo[redacted]o new frequency assignments. Add swing MASTR III stations tuned to old channel assignments on [redacted]r back-to-back repeater operation. Add replacement [redacted] MASTR III.
CTCSS Filter Assembly	(1) 188D6825G1 for [redacted] (1) Spectracom Model 1118-2 for [redacted]	(1) Spectracom Model 1118-2 for [redacted] One module required to upgrade [redacted] Existing modules can be used for both existing stations and swing stations.	Module used to generate CTCSS tone on simulcast station. No [redacted] module needed for existing [redacted]C
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	DB8062F2-B	DB8062F2-B	Combine swing equipment transmitters
Rebanding Diplexer	-	Rebanding Diplexer	The diplexer allows combining of the swing equipment onto the [redacted] bypass antenna.
SITE: AIRPORT			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	Retune existing MASTR III Stations for [redacted] to new frequency

	Existing Equipment	Swing / Replacement Equipment	Rationale
			assignments. Add swing MASTR III stations tuned to old channel assignments on [redacted] back-to-back repeater operation. Add replacement [redacted] MASTR III.
CTCSS Filter Assembly	(1) 188D6825G1 for MA-TAC 2 (1) Spectracom Model 1118-2 for [redacted]	(1) Spectracom Model 1118-2 for [redacted]	Module used to generate CTCSS tone on simulcast station. No module needed for existing [redacted] One module required to upgrade [redacted] Existing modules can be used for both existing stations and swing stations.
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	DB8062F2-B	DB8062F2-B	Combine swing equipment transmitters
Rebanding Diplexer	-	Rebanding Diplexer	The diplexer allows combining of the swing equipment onto the [redacted] bypass antenna.
SITE: [redacted]			
Repeater Stations	(2) MASTR III	(3) MASTR III Stations	Retune existing MASTR III Stations for [redacted] to new frequency assignments. Add swing MASTR III stations tuned to old channel assignments on [redacted] or back-to-back repeater operation. Add replacement [redacted] MASTR III.
Auxiliary Receivers	(1) MASTR III	(1) MASTR III 800MHz Repeater, TX Disabled	Retune existing [redacted] MASTR III Auxiliary Receiver and place on System A multicoupler. Temporarily add swing MASTR III Repeater on old frequency assignment and place on [redacted] multicoupler.
CTCSS Filter Assembly	(1) 188D6825G1 for [redacted]	(1) Spectracom Model 1118-2 for [redacted]	Module used to generate CTCSS tone on simulcast station. No module needed for existing [redacted] One module required to upgrade

	Existing Equipment	Swing / Replacement Equipment	Rationale
	(1) Spectracom Model 1118-2 for [redacted]		[redacted] Existing modules can be used for both existing stations and swing stations.
Convex Rebander	-	(1) 2244A	Required for parallel system operation.
Combiner	(2) DB8062H5	(1) DB8062F6-B	Use [redacted] Replacement Combiner [redacted] for swing equipment. System D combiner must be replaced prior to installing Mutual Aid Swing Equipment. See combiner plan in table below.
SITE: [redacted]			
Repeater Station	(1) MASTR III	(1) MASTR III Station	Retune existing MASTR III Station for [redacted] to new frequency assignment. Add swing MASTR III station tuned to old channel assignment for back-to-back repeater operation
SOR Relay Kit	-	(2) SXSU3D	Required for parallel system operation.
Duplexer	(1) TBD	(1) (1) TBD	Required for parallel system operation.
IM Suppression Panel	-	(2) TBD	Required to mitigate intermodulation interference during parallel system operation.
Antenna System	(1) TBD	(1) TBD	Required for parallel system operation.
Vega Rebanding Panel	-	(1)SYS000010000	Required for parallel system operation.
Rack	-	(1) 69 IN	Required to house swing equipment.

Table S - Syster[redacted]

Port	Channel ID	Frequency
1	[redacted]	
2		
3		
4		
5		

Table T - [redacted]stalled With P25 Infrastructure)

Port	Channel ID	Frequency
1	[redacted]	5
2		5
3		5
4		5
5		5
6		5

Mutual Aid Reconfiguration Assumptions

The following assumptions were made in this Mutual Aid Reconfiguration segment of the P25 upgrade proposal.

- Coverage maps will be provided as part of the DDR for informational purposes.
- The new [redacted]imulcast System will be deployed prior to reconfiguration of Mutual Aid as part of the PSIC grant.
- Miami-Dade will provide the full T1 (from the Mutual Aid Control Point to each Mutual Aid Simulcast Site) that will be implemented for the [redacted]deployment under the PSIC grant for shared [redacted]on the same simulcast infrastructure and for th[redacted]Backhaul will be identified by Miami-Dade as part of the DDR.
- Miami-Dade will provide the [redacted]simulcast synchronization and control point equipment supplied under the PSIC grant for use in the [redacted]system upgrade and for th[redacted]dio backhaul.
- The new P25 Phase 1 Communication System A antennas and multicouplers will be installed prior to the final (rebanded) reconfiguration of the Mutual Aid equipment. The Mutual Aid

talk-in coverage will be contingent on the location of these antennas on the appropriate towers.

- Miami-Dade will allow the [redacted] Bypass antennas to be utilized for the Mutual Aid swing equipment operating on the new frequencies until the conclusion of Mutual Aid system rebanding.
- Intermodulation products will not cause detrimental effects to the new or old NPSPAC Mutual Aid channels at the [redacted]. Intermodulation analysis shows that a potential does exist for 2-channel, 5th-order, on frequency hits to occur on the old [redacted] and [redacted] base station receive frequencies and for 2-channel, 7th-order, on frequency hits to occur on the new MA-TAC 2 and MA-TAC 4 base station receive frequencies. The potential 5th-order hits are a result of new System A channels mixing with old [redacted] or old [redacted] channels or with new Mutual Aid channels mixing with old Mutual Aid channels. The potential 7th-order hits are the result of new Mutual Aid channels mixing with old Mutual Aid channels. The use of [redacted] Bypass antennas for Mutual Aid transmitters is used to mitigate this at all tower sites. At locations where vertical separation is not possible ([redacted]) and intermodulation products cause self interference, old and or new Mutual Aid channels may be disabled on the transmit or receive side to minimize self interference. The disabling of these channels will result in a decrease of Mutual Aid coverage around that site throughout the duration of Mutual Aid rebanding. Every effort will be made to minimize the channels disabled.
- All currently used Mutual Aid antenna systems are in good working order and do not require replacement. As a result, final coverage is expected to be comparable to existing coverage and no coverage tests will be performed on the Mutual Aid Systems.
- Any additions to the Mutual Aid System beyond what is described in this Statement of Work are not covered and would require a change order to this Contract.

Drawings

The drawing package is included in Attachment A.

Section 4 – Staging

Staging

Staging is the organization, assembly, and test of an assembled system under controlled factory conditions. The Miami-Dade P25 systems will be assembled for staging at the Harris Customer Integration Center (CIC) in Forest, Virginia. Once the Design Review has been approved, Harris proceeds to place orders for the materials required to configure the Miami-Dade system. As orders are processed, preparations are made to stage equipment in accordance with the project schedule.

As described in Article 4(C) of the Contract, advance notice will be provided to Miami-Dade so they may attend a formal acceptance test in the factory when the system is ready.

Staging/Factory Functional Test Procedure

Refer to the Appendices for review of the Staging/Factory Functional Test Plan.

Section 5 – Site Development

Harris' Program Managers will review each fixed network equipment site, make assessments for scheduling required work, and drive site development.

Site Access

Miami-Dade shall:

- Provide free and open access to all owned or leased sites of work, as defined below. Access must be available 24 hours a day during the course of this project to the extent that Miami-Dade requires such access.
- Be responsible for ensuring adequate access is provided at all sites such that tractor trailers, cranes, etc. have adequate room to perform required work.
- Provide escort at no charge, if escorts are required at any particular site. The availability of such escort shall not be unreasonably withheld.
- Issue temporary identification cards to Harris personnel and its authorized subcontractors, if required, for access to Miami-Dade or any of the sites.

Site Permits & Licensing

Harris shall:

- Obtain and complete the necessary forms for building and construction permits required for Harris to perform any new site construction or electrical work cited in the "Site Details" section of this document that may require a permit.
- Harris shall obtain all permits as required for site modifications as identified in the attached Responsibility Matrix.

Miami-Dade shall:

- Obtain all FCC licenses, necessary for this project.
- Provide support for any permits needed by Harris.
- Be responsible for the coordination, acquisition, application fees, and licensing of all frequencies and any necessary licensing modifications for frequencies used in this system design, including all requisite fees. Miami Dade will need to obtain necessary 800 MHz licenses to operate within any regulatory ERP limits that may be imposed. Such tasks may require coordination with Sprint Nextel. Miami Dade shall be responsible for any interface with Sprint Nextel on these items.

Site Material Procurement

After the final Detailed Design Review approval and written notice to proceed is received from Miami-Dade, Harris will order vendor materials required for the sites for those items identified to be a Harris responsibility (antennas, associated cables, combiners and receive multicouplers, etc.). Shipments will be coordinated with the vendors and based on the project schedule to ensure availability of parts as they are needed on site.

Site Location Changes

Harris assumes that only the sites listed in this document will be used. If any sites change, this could impact design, coverage, schedule and overall performance of the system. Site locations must be known before the final Detailed Design Review can be conducted. All changes in sites will be considered a change in scope and will require an analysis to determine the effect on cost, design, coverage, schedule and overall performance of the system. Any scope changes will likely incur delays in the schedule. Change Orders may be necessary with any site changes and will be evaluated on a case-by-case basis in accordance with the change order process within the contract.

General Responsibilities

The following statements define the respective general responsibilities of Harris and Miami-Dade in their contract to provide the equipment outlined in this proposal. Miami-Dade is responsible for the purchase and installation of all civil equipment such as towers, shelters, AC power sources, HVAC, generators, floor space, and links between equipment locations (microwave, fiber, leased lines, T1, LAN, etc.), with the exception o[redacted]unless otherwise noted in this document as a Harris responsibility or mutually agreed upon in the Contract.

Harris and Miami-Dade will conduct a detailed site survey to 1) determine the best location for antenna placement and how the cables will be run down the existing towers, and 2) determine the best location for the new racks of equipment in the existing equipment rooms/shelters. Harris will provide its rack space and floorplan requirements, and Miami-Dade will take the actions necessary to provide for the necessary rack space.

Harris shall provide the following services and equipment:

- A Senior Program Manager to work with Miami-Dade for project implementation and deployment of the system
- A Senior Systems Engineer who will be responsible for design and testing of the new systems
- Equipment and installation services as described within this document
- Provide any information needed to properly prepare the site to handle new equipment
- Provide engineering services to define site AC/DC power loads, BTU calculations, and site connectivity requirements for the site
- Provide as-built drawings as required for final site layout
- Connec[redacted]o the new network alarm reporting tool, per site.

- Provide project documentation as defined at the DDR.

Miami-Dade shall provide the following services:

- Assign a Technical Project Manager to represent Miami-Dade on all radio system details. The Miami-Dade Technical Project Manager will be the primary point-of-contact for Harris and its implementation team.
- Identify the efforts required by the Miami-Dade team and ensure they are completed per the project schedule.
- Work with Harris' Project Manager to incorporate Miami-Dade's tasks into the overall project schedule as the project schedule will highlight interdependencies.
- Participate in all scheduled Project Review meetings.
- Review and administer change control procedures that may be needed.
- Provide timely responses to issues related to project progress.
- Act as the program liaison to any third party site owners.
- Approve and release payments in a timely manner for project deliverables.

Towers & Antennas

Miami-Dade shall:

- Be responsible for the first $750,000 in cost associated with tower strengthening or tower replacement as the tower analysis dictates.
- Ensure towers have adequate cable ladders so that Harris' antenna crew can properly secure new coaxial cable runs for new antennas.

Harris shall:

- Install antennas and transmission lines per the antenna charts located in this SOW's Section 3 – System Description
- Obtain the necessary construction permits for any tower or tower foundation modifications required
- Be responsible for costs above the first $750,000 as provided by Miami-Dade associated with tower strengthening or tower replacement as the tower analyses provided by Harris dictate.

Equipment Rooms / Shelters

Miami-Dade shall:

- Provide adequate floor space for the new backbone equipment in [redacted] a new shelter, an equipment room, or rooftop with the exception o[redacted]
- Ensure shelters, or equipment rooms have adequate RF cable entry ports (except as specifically noted in this SOW) with copper buss plates at the end of each shelter or room facing the tower.

- Ensure shelters, or equipment rooms have a cable bridge at each site which will connect the shelter to the tower, except as noted for the new [redacted] The purpose of the cable bridge is to support and protect the coaxial runs.
- Ensure existing HVAC facilities in existing shelters or equipment rooms will support the proposed equipment BTUs as outlined below unless otherwise noted in this SOW.
- Ensure shelters, or equipment rooms have adequate lighting.
- Provide adequate security including fences and access controls.

Harris shall:

- Remove decommissioned equipment and wiring once each sub-system has been cutover and accepted.

Electrical Power / Emergency Power:

Miami-Dade shall:

- Be responsible to assure sufficient primary electrical power is available to power all existing equipment as well as new equipment inside each shelter or building and within 25 feet of where Harris will install the new equipment. Power required at each site for new equipment is detailed below by site. For Palmetto Rail Yard, Miami-Dade shall provide power to an H-frame within 25 feet of the proposed shelter location.
- Be responsible for all power usage costs during both the construction/installation effort and on an ongoing basis.
- Ensure all shelters, equipment rooms and dispatch locations have adequate electrical power (per the site requirements provided in the System Description) to support the proposed equipment and ensure proper operation of the current design and future needs.
- Provide electrical power within 4-6 feet of where Harris will install new console equipment.
- Provide emergency generators and automatic transfer switches (ATS) at each site to provide backup electrical power in the event of commercial power failure. Emergency generators and ATSs must have adequate capacity to handle the radio equipment load (new equipment plus existing equipment) and the HVAC unless otherwise noted in this SOW.
- Provide an automatic transfer panel to switch the primary power from commercial to generator as needed at each site unless otherwise noted in this SOW.
- Provide the generator fuel tank, except as noted for Palmetto Rail Yard or as otherwise noted in this SOW.
- Provide the generator fuel at each site as required..

Harris shall:

- Connect the equipment it installs to the electrical power/emergency power provided by Miami-Dade or UPS installed by Harris.
- Provide dedicated power panels with 20 amp breakers and dedicated twist-lock receptacles for each new cabinet it installs (as noted below).
- Provide protected power via UPSs and maintenance by-pass switches where noted below.

Grounding

For all grounding standards, Harris follows guidelines that have been prepared to improve personal safety and to prevent equipment damage. Harris procedure "Site Grounding and Lightning Protection" AE/LZT 123 4618/1 exceeds the NEC and local codes.

Harris' grounding system design goal for every site is a measurable five (5) ohms or less resistance between any connected point on the ground bus and earth ground. Harris assumes that soil conditions local to the RF site are typical, conducive to good grounding systems and the RF site geography can receive a standard grounding system. Where these conditions do not exist, or a five (5) ohms resistance cannot reasonably be obtained, Harris can recommend to Miami-Dade the most cost effective grounding solution possible any site that may need additional grounding. There may be an additional fee for this service that can be incorporated via the change order process.

Miami-Dade is responsible for the grounding system at all sites (except for the [redacted] site as noted below where Harris will install a new shelter, generator and fuel tank), **that includes:**

- A halo ground system which provides adequate ground for the tower, shelter, ice bridge, RF entry port, generator, fuel tank and fencing in accordance with general practices, local codes and Harris' grounding procedure or equivalent.
- Provide a single point ground demarcation point inside equipment rooms, shelters, or rooftop structures. The ground system should be in the form of a #2-awg stranded copper wire ring attached to standoffs approximately eight (8) feet above the floor.
- Measure the ground system, or provide documentation to ensure the resistance path to ground is five (5) ohms or less impedance, correct deficiencies found, and report the results to Harris.
- Lightning/grounding protection on each existing feed line entering equipment room.
- Lightning/grounding protection for all existing telephone circuits.

Harris shall:

- Provide grounding for each antenna coax cable run every fifty feet that Harris installs.
- Terminate the coaxial cable run at the RF cable entry port provided by Miami-Dade.
- Provide Poly-phasor lightning protection devices for each new cable run that Harris installs at the RF cable entry copper ground buss (provided by Miami-Dade) location.
- Attach any new equipment installed to the Master Ground Bar (MGB) or point designated by the space owner. Harris should verify that this ground connection point has been properly installed and meets the Harris standard listed above. In the event that the ground connection point is not adequate, Miami-Dade will be responsible for correcting the deficiencies.
- Provide grounding to all new equipment and appropriate interface blocks that Harris installs.
- Ensure all new shelters provided by Harris will come pre-wired per our grounding standard.

Connectivity:

Miami-Dade shall:

- Provide adequate connectivity links in accordance with requirements identified at the Detailed Design Review.
- Bring properly-leveled, conventional audio inputs to a demarcation point within the interoperability gateway equipment room for all conventional interfaces required. Further determination of requirements shall be discussed at the Detailed Design Review.
- Provide all required network connectivity between the Network Switching Center (NSC), RF site, Dispatch Center, and interoperability stations to meet requirements provided by Harris. Connectivity shall be tested for bandwidth, latency and jitter and the results provided to Harris prior to installation of the P25 Phase 1 Communications System. If the County exercises the Option for microwave from Harris, this requirement only applies to non-microwave backhaul.

Site Details

This section outlines the Harris and Miami-Dade responsibilities as it pertains to installation of physical facilities at the RF transmitter sites. Harris has performed preliminary site surveys and has determined and included/priced the following civils requirements as necessary for the installation of the proposed design.

[redacted]

Miami-Dade shall:

- Provide power and floor space for [redacted] Site Equipment, [redacted] The necessary floor space will be defined at the Detailed Design Review.
- Provide floor space for UPS equipment.

Harris shall:

- Instal[redacted] and the [redacted]
- Install permanent and swing antennas (interim [redacted] antennas) with coaxial cable and sweep lines.
- Remove replaced antennas and lines.
- Provide and install an RF cable entry port.
- Install overhead cable tray (if required)
- Install UPSs with 2-hour runtime and by-pass switches for the Simulcast Synchronous Equipment, [redacted]
- Install power panels.

- Install power circuits for [redacted] MASTR-V Base Stations, Simulcast Synchronous Equipment, [redacted] from power panels to equipment racks and equip with twist-lock receptacles. Cleanup area after installation is complete.
- Install UPSs with 15-minutes runtime and by-pass switches for the [redacted] base stations at the conclusion of the removal of old [redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.

Expected Site Power and BTU Requirements

[redacted]	Watts	BTUs
[redacted]	14,620	43,060
[redacted]	14,620	43,060
[redacted]	3,900	11,601
[redacted]	2,284	7,793
[redacted]	2,200	7,506
[redacted]	698	1,699
[redacted]		3,186
[redacted]		10,614
[redacted]		2,124
[redacted]	7,860	26,818
Total	46,182	157,461

[redacted]

Miami-Dade shall:

- Provide power and floor space for the [redacted] and the [redacted] The necessary floor space will be defined at the Detailed Design Review.

Harris shall:

- Install the [redacted] Point racks [redacted]
- Install UPSs with 2-hour runtime and by-pass switches for the [redacted]
- Install power panels.
- Install power circuits from power panels to equipment racks and equip with twist-lock receptacles.
- Cleanup area after installation is complete.
- Install overhead cable tray (if required)

Expected Site Power and BTU Requirements

	Watts	BTUs
[redacted]	1,410	4,811
	2,200	7,506
Total	3,610	12,317

[redacted]

Miami-Dade shall:

- Provide power and floor space for [redacted] Site Equipment. The necessary floor space will be defined at the Detailed Design Review.
- Provide floor space for UPS equipment.
- Provide floor space and power in the transit dispatch area for the VCE.

Harris shall:

- Install [redacted] Site Equipment racks.
- Install antennas with coaxial cable on the roof catwalk and sweep lines.
- Install in-building filter network to interface to existing in-building antenna
- Remove replaced antennas and lines.
- Install an RF cable entry port.
- Install UPSs with a 2-hour runtime and by-pass switches for the Simulcast Synchronous Equipment.
- Install power panels.
- Install overhead cable tray (if required)
- Install power circuits from power panels to equipment racks and equip with twist-lock receptacles.
- Install UPSs with 15-minutes runtime and by-pass switches for the [redacted] base stations at the conclusion of the removal of old [redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

	Watts	BTUs
[redacted]	14,620	43,060
	14,620	43,060
	10,991	32,383
	698	1,699
		2,124
		10,614
Total	40,929	132,940

[redacted]

Miami-Dade shall:

- Be responsible for removing workbench.
- Remove unused control station rack.
- Provide power and floor space for [redacted] Site Equipment. The necessary floor space will be defined at the Detailed Design Review.
- Provide floor space for UPS equipment.

Harris shall:

- Install [redacted] Site Equipment racks.
- Install permanent and swing antennas with coaxial cable lines and sweep lines.
- Remove replaced antennas and lines.
- Install an RF cable entry port
- Install UPSs with 2-hour runtime and by-pass Switches for the Simulcast Synchronous Equipment.
- Install power panels.
- Install overhead cable tray (if required)
- Install power circuits from power panel to equipment racks and equip with twist-lock receptacles.
- Install UPSs with 15-minutes runtime and by-pass switches for the [redacted] stations at the conclusion of the removal of old [redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

[redacted]	Watts	BTUs
[redacted]	14,620	43,060
[redacted]	14,620	43,060
[redacted]	698	1,699
[redacted]		2,124
[redacted]		10,614
Total	29,938	100,557

[redacted]

Miami-Dade shall:

- Be responsible for relocating the existing workbench.
- Ensure that the site is dry and free from water penetration
- Provide power and floor space for [redacted] equipment. The necessary floor space will be defined at the Detailed Design Review.
- Provide floor space for UPS equipment.

Harris shall:

- Install [redacted] Site Equipment racks.
- Install permanent and swing antennas with coaxial cable line on 50' tower located on roof and sweep lines.
- Remove replaced antennas and lines.
- Install an RF cable entry port.
- Install overhead cable tray (if required)
- Install UPSs with 2-hour runtime and by-pass switches for the Simulcast Synchronous Equipment.
- Install power panels.
- Install power circuits from power panel to equipment racks and equip with twist-lock receptacles.
- Install UPSs with 15-minutes runtime and by-pass switches for the [redacted] stations at the conclusion of the removal of old [redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Replace two 2-ton HVAC units with two 3-ton HVAC units.
- Remove the current 60kW generator and replace it with a 75 kW generator.
- Install a new generator automatic transfer switch.
- Install two (2) 1000 gallon LP tanks.

- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

	Watts	BTUs
[redacted]	14,620	43,060
	14,620	43,060
	698	1,699
		10,614
		2,124
Total	29,938	100,557

[redacted]

Miami-Dade shall:

- Provide power and floor space for [redacted] Equipment. The necessary floor space will be defined at the Detailed Design Review.
- Provide floor space for UPS equipment.

Harris shall:

- Install [redacted] Site Equipment racks.
- Install permanent and swing antennas and permanent and swing antennas with coaxial cable line and sweep lines.
- Remove replaced antennas and lines.
- Install UPSs with 2-hour runtime and by-pass switches for the Simulcast Synchronous Equipment.
- Install power panels.
- Install power circuits from power panel to equipment racks and equip with twist-lock receptacles.
- Install UPSs with 15-minutes runtime and by-pass switches for the [redacted] stations at the conclusion of the removal of old [redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Install a new 4-ton HVAC unit.
- Install overhead cable tray (if required)
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

	Watts	BTUs
[redacted]	14,620	43,060
	14,620	43,060
	698	1,699
		2,124
		10,614
Total	29,938	100.557

[redacted]

Miami-Dade shall:

- Provide power and floor space for [redacted] Site Equipment. The necessary floor space will be defined at the Detailed [redacted].
- Provide floor space for UPS equipment.

Harris shall:

- Install [redacted] Site Equipment racks.
- Install antennas with coaxial cable and sweep lines.
- Remove replaced antennas and lines.
- Install an RF cable entry port.
- Install overhead cable tray (if required)
- Install UPSs with 2-hour runtime and by-pass switches for the Simulcast Synchronous Equipment.
- Install power panels.
- Install power circuits from power panels to equipment racks and equip with twist-lock receptacles.
- Install UPSs with 15-minutes runtime and by-pass switches for the [redacted] base stations at the conclusion of the removal of old [redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

[redacted]	Watts	BTUs
[redacted]	14,620	43,060
[redacted]	14,620	43,060
[redacted]	698	1,699
[redacted]		2,124
[redacted]		10,614
Total	29,938	100,557

[redacted]

Miami-Dade shall:

- Remove metal opposite the side of the tower from existing shelter.
- Provide/update site drawings to reflect location of new shelter.
- Verify hazardous materials are not present where construction is planned.
- Provide first fill-up of propane gas for LP tank(s).

Harris shall:

- Perform geotechnical analysis for new shelter location.
- Provide new shelter installation permits.
- Provide silt fencing during construction.
- Install weed barrier & gravel 3' around perimeter of the new shelter.
- Install a new concrete shelter foundation, emergency generator foundation, and LP tank foundation (includes soils analysis for permitting).
- Install a new one-room 12' x 40' shelter to adequately handle the load including four 5 ton HVAC units.
- Install cable ice bridge between the new shelter and existing tower.
- Install Tower Cable Ladder.
- Install new primary power service with surge protection from Miami-Dade demark to new shelter.
- Install an 75 KW emergency generator and automatic transfer switch (ATS)
- Install two (2) 1000 gallon LP tanks
- Install shelter, generator and LP tank grounds and tie back to existing tower ground ring.
- Install UPSs with 2-hour runtime and by-pass switches for the Simulcast Synchronous Equipment.
- Install Systems A and B Site Equipment racks.
- Move mutual aid equipment from old shelter to new shelter (does not include relocation of any other existing equipment from old shelter to new shelter).

- Install permanent and swing antennas with coaxial cable line and sweep lines.
- If the County exercises the Option for Harris to provide microwave network, Harris will install the new microwave equipment in the new shelter.
- Remove replaced antennas and lines.
- Install UPSs with 15-minutes runtime and by-pass switches for th[redacted] base stations at the conclusion of the removal of old[redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Install an L-shaped concrete wall around the new site generator.
- Install a U-shaped concrete wall around up to three new site LP-tanks.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

[redacted]	Watts	BTUs
	14,620	43,060
	14,620	43,060
	698	1,699
		2,124
		10,614
Total	29,938	100,557

[redacted]

Miami-Dade shall:

- Provide power and floor space for [redacted]ux Receive Site Equipment. The necessary floor space will be defined at the Detailed Design Review.

Harris shall:

- Instal[redacted]ux Receive Site Equipment racks.
- Install antennas with coaxial cable line and sweep lines.
- Remove replaced antennas and lines.
- Install overhead cable tray (if required)
- Install Site Common Equipment UPS
- Install power panel(s).
- Install power circuits from power panels to equipment racks and equip with twist-lock receptacles.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

		Watts	BTUs
[redacted]		1,536	5,241
		1,536	5,241
	Total	3,072	10,482

Palm Springs

Miami-Dade shall:

- Provide power and floor space fo[redacted] Aux Receive Site Equipment. The necessary floor space will be defined at the Detailed Design Review.

Harris shall:

- Instal[redacted] Aux Receive Site Equipment racks.
- Install a side-arm bracket and antennas with coaxial cable line and sweep lines.
- Remove replaced antennas and lines.
- Install power panel(s).
- Install overhead cable tray (if required)
- Install Site Common Equipment UPS
- Install power circuits from power panel(s) to equipment racks and equip with twist-lock receptacles.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

		Watts	BTUs
[redacted]		1,536	5,241
		1,536	5,241
	Total	3,072	10,482

[redacted]

Miami-Dade shall:

- Provide power and floor space for [redacted] Site Equipment. The necessary floor space will be defined at the Detailed Design Review.
- Provide cable tray and power circuits to the new equipment racks.
- Provide the UPS (supplied by Harris under the PSIC project) and wire in under the PSIC scope of work.

Harris shall:

- Instal[redacted] Equipment racks.
- Install antennas with coaxial cable line and sweep lines.

- Install overhead cable tray (if required)
- Remove replaced antennas and lines.
- Cleanup area after installation is complete

Expected Site Power and BTU Requirements

	Watts	BTUs
[redacted]	4,041	12,082
[redacted]	3,926	11,690
Total	7,967	23,772

[redacted]

Miami-Dade shall:

- Provide power and floor space fo[redacted] Site Equipment. The necessary floor space will be defined at the Detailed Design Review.
- Provide a second A/C unit to assure adequate site redundancy as recommended by Harris.

Harris shall:

- Install racks of [redacted] Site Equipment.
- Install cable entry port and cable tray.
- Install power panel(s).
- Install overhead cable tray (if required)
- Install power circuits from power panel(s) to equipment racks and equip with twist-lock receptacles.
- Install UPSs with 15-minutes runtime [redacted] switches for the [redacted] base stations at the conclusion of the removal of old [redacted] equipment. The installation of the UPSs will result in down-time for the site for the installation and testing of the UPSs. The installation and schedule will be coordinated between Harris and the County to choose optimal times.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

	Watts	BTUs
[redacted]	2,646	8,005
[redacted]		2,124
Total	2,646	10,129

Console Locations

Miami-Dade shall:

- Provide power and space for the [redacted] VIDA Console Exchanges, Site Routers and Switches. The necessary floor space will be defined at the Detailed Design Review.

- [redacted] cabling between the [redacted] area and the RF equipment room.

Harris shall:

- [redacted] VIDA Console Exchanges, Site Routers and Switches as defined at Detailed Design Review.
- Cleanup area after installation is complete.

Expected Site Power and BTU Requirements

[redacted]

[redacted]	Watts	BTUs
[redacted]	2,833	9,666
[redacted]	18,300	62,430
[redacted]	1,252	4,272
Total	22,385	76,368

[redacted]

[redacted]	Watts	BTUs
[redacted]	2,833	9,666
[redacted]	7,320	24,972
Total	10,153	34,638

[redacted]

[redacted]	Watts	BTUs
[redacted]	610	2,081
Total	610	2,081

[redacted]

[redacted]	Watts	BTUs
[redacted]	610	2,081
Total	610	2,081

[redacted]

[redacted]	Watts	BTUs
[redacted]	610	2,081
Total	610	2,081

[redacted]

[redacted]	Watts	BTUs
[redacted]	1,220	4,162
Total	1,220	4,162

[redacted]

[redacted]	Watts	BTUs
[redacted]	610	2,081
Total	610	2,081

[redacted]

[redacted]	Watts	BTUs
[redacted]	2,833	9,666
[redacted]	11,590	39,539
[redacted]	1,252	4,272
[redacted]otal	15,675	53,477

Assumptions

Should any assumptions stated above or within this section on the part of Harris be incorrect, correction of said assumptions would lead to a Change Order as outlined in the contract between Harris and Miami-Dade.

Harris makes the following assumptions:

- Only the sites listed in this document at the time of this submittal will be used.
- All Back-up Control Stations and mobiles with power supplies acting as control stations will either be re-programmed or replaced using existing power, space and antenna systems. Any deficiencies found in the above will be remedied by Miami-Dade.

Section 6 – System Cutover and Installation

Introduction

This Installation and Cutover Plan describes the installation tasks required to properly install and cutover the new Miami-Dade P25 Phase 1 LMR Trunking and Simulcast/Multisite Communications System. Successful completion of the Acceptance Test Plans will constitute final customer acceptance of the Miami-Dade P25 LMR Trunking System and certify that it is completely installed and fully operational.

Components of the cutover to a new P25 Phase-1 Communications System consist of:

- Integrate all P25 equipment listed in the system description, unless otherwise noted, into the new VIDA switch.
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

- [redacted]

The key elements of installation and cutover are:

- Installation
- Functional testing
- Coverage testing
- Customer Acceptance
- System Cutover
- Old Equipment Removal

System Cutover

Rebanding and Cutover Methodology

[redacted]

For interoperability, Miami-Dade has [redacted] As described in the system description, [redacted] will first be upgraded to a GPS simulcast configuration. The Mutual Aid system design describes the replacement of some of the repeaters to consolidate equipment allowing for additional space for [redacted] imulcast. For rebanding, back-to-back repeaters will be installed. The use of back-to-back repeaters will permit continued use of the existing NPSPAC mutual aid frequencies and the new frequencies. The stations will be tuned such that the stations designated to remain subsequent to rebanding will operate on the new rebanded frequencies and the swing (temporary) repeaters will operate on the existing mutual aid NPSPAC frequencies. The Convex or VEGA rebanding panels will provide the functionality required for parallel operation of two channels. Once installed and functional, users working through either old or new channel assignments would be heard by all parties. During subscriber programming Touch 1, Miami-Dade will prepare radio personalities with both the old and new mutual aid frequencies. During Touch 2, the old mutual aid frequencies will be removed. At some time in the future when all interoperability users are on the new mutual aid frequencies, the swing repeaters will be removed.

[redacted]

To reband System A from its existing NPSPAC frequencies to the new NPSPAC frequencies, a new parallel P25 Simulcast System A will be installed. Prior to cutting over to the parallel system, all users will have radios programmed to operate on the existing and new rebanded frequencies. To keep the existing systems operational, the existing antennas must remain on their present tower locations.

New swing antennas will be installed at specified available positions with consideration of the associated performance. The [redacted] will be connected to and provisioned on the new VIDA network via the existing NetworkFirst Gateway. This system will [redacted]

EDACS [redacted]

To reban[redacted]s, a new parallel P25 Simulcast system will be installed. As with [redacted] all users will already have their radios programmed with the new NPSPAC frequencies during subscriber programming Touch 1. Harris will use the new antennas installed on the tower as part of the County's microwave replacement project at that site. This system will communicate with the remainder of the Miami-Dade network through the VIDA switch. Testing will be performed and the users will move to the P25 system by selecting the new system/group in the radio. Once all the users have migrated to the new P25 simulcast system with the new NPSPAC frequencies, the EDACS [redacted] will be removed. During Touch 2, the old frequencies will be removed from the radios. Rebanding will be complete at this point [redacted]

EDACS [redacted]

[redacted] will be replaced with new P25 systems. To move the users from the current EDACS systems to P25, the P25 systems will be installed in parallel. Existing antenna systems for EDACS [redacted] will be reused. Neither system requires frequency changes for rebanding.

P25 [redacted]

P25 700 MHz Multisite [redacted] will be integrated into the new Miami-Dade VIDA network.

Dispatch for [redacted]

Currently, Miami-Dade Transit users are dispatched on [redacted] operational today, it is assumed that [redacted] will be operational at the time this installation is implemented. There is one (1) console at ETSD currently used on [redacted]. To transition the dispatchers from the EDACS [redacted] to the parallel P25 [redacted] consoles will be installed in parallel a[redacted] In addition, one (1) parallel C3 Maestro™ console will be installed at ETSD. At [redacted] will be removed and two (2) C3 Maestro^{IP} consoles will be installed. During Subscriber Touch 1, all backup radios would have been reprogrammed with existing and new frequencies and so should the [redacted] have an event that requires the use of backup radios, the radios will provide the backup capability on both the EDACS systems and the P25 systems.

At the point that Miami-Dade starts to migrate users on to the new system, dispatch will occur on both the EDACS and P25 consoles. For Fire, this means Miami-Dade will require dispatchers at two locations, [redacted] When all users have completely migrated to the

new P25 systems, Fire dispatchers will continue to dispatch from [redacted] and Fire dispatchers at [redacted] The two (2) Fire consoles [redacted] will then be converted from EDACS to C3 Maestro^{IP} consoles after which, dispatchers can return to [redacted] At [redacted] the dispatchers will continue to use the C3 Maestro^{IP} [redacted] and discontinue using the EDACS consoles. The EDACS consoles can then be removed a[redacted]nd ETSD.

P25 [redacted]

To reband [redacted] from the existing NPSPAC frequencies to the new NPSPAC frequencies, a new parallel P25 Simulcast system will be installed with the new rebanded frequencies. During Subscriber Touch 1, the user radios will have already been programmed to operate on [redacted] existing and new rebanded frequencies. The removal of the EDACS Simulcast System A will provide floor space at the sites for the new P25 Simulcast System and new [redacted] antennas will be installed in the locations where the EDACS [redacted] antennas were removed. This system will be communicating with the remainder of the Miami-Dade network through the VIDA switch and [redacted] Testing will be performed after which the users will move to the new P25 system by selecting the new system/group in the radio. Once all the users have migrated to the new P25 system, the [redacted] can be powered down and removed (including the antenna systems).

Dispatch for [redacted]

Currently, [redacted] While today [redacted] is operational, it is assumed [redacted] this project is being implemented. Similar to the Fire dispatch transition at [redacted] During Subscriber Touch 1, all backup radios would have been reprogrammed with existing and new frequencies and so should the dispatchers a[redacted] have an event that requires the use of backup radios, the radios will provide the backup capability on both the EDACS systems and the P25 systems. [redacted] console will also be installed.

At the point that Miami-Dade starts to migrate the users, dispatch will occur using both the EDACS consoles and the P25^{IP} consoles. For Police, this means Miami-Dade [redacted] When all the users have completely migrated to the new P25 systems, Police dispatchers will continue to dispatch from [redacted] will discontinue dispatching. [redacted] at [redacted] will then be converted from EDACS to [redacted] Upon completion of the conversion, dispatchers can return to [redacted] At TCC, the dispatcher will continue to use the C3 [redacted] onsoles and discontinue using the EDACS consoles. The EDACS consoles can then be removed.

Miami-Dade Install and Cutover Diagram

This plan assumes that the transit system will be on a VIDA platform. If the transit system is rebanded through another system architecture, all referenced to transit consoles are not applicable.

User training begins. User training will continue through implementation.

Miami-Dade brings current infrastructure up to current software revisions

[redacted]

Install Swing Mutual Aid Equipment. Sweep Mutual Aid System Antennas.

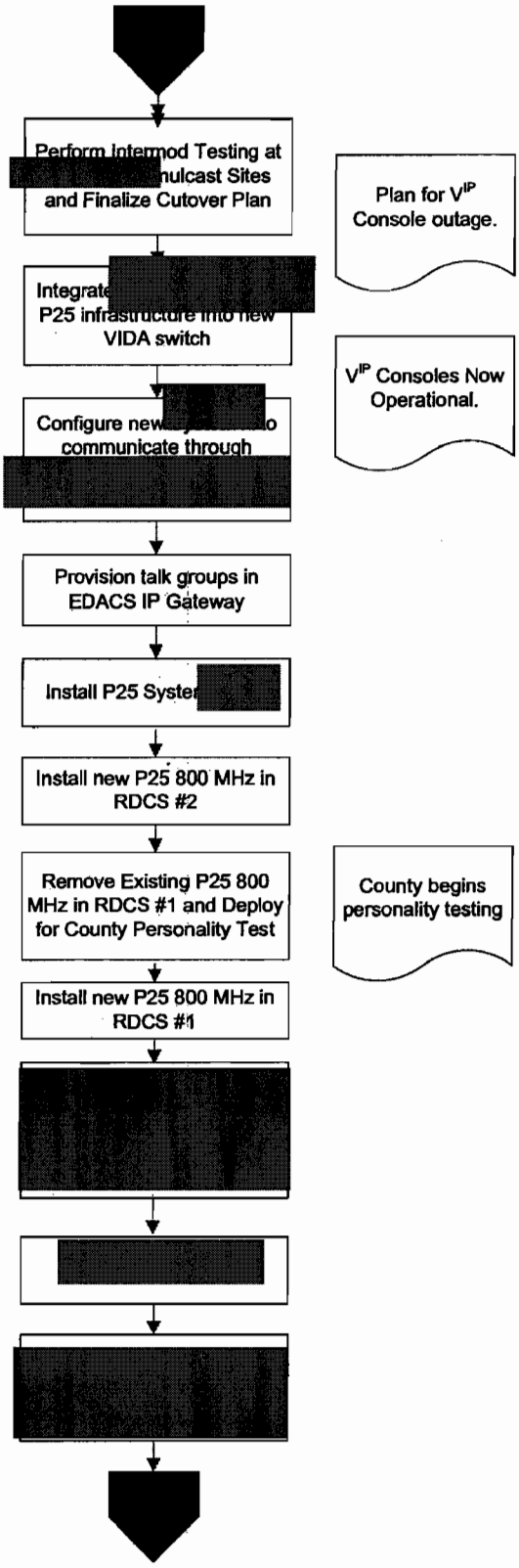
[redacted]

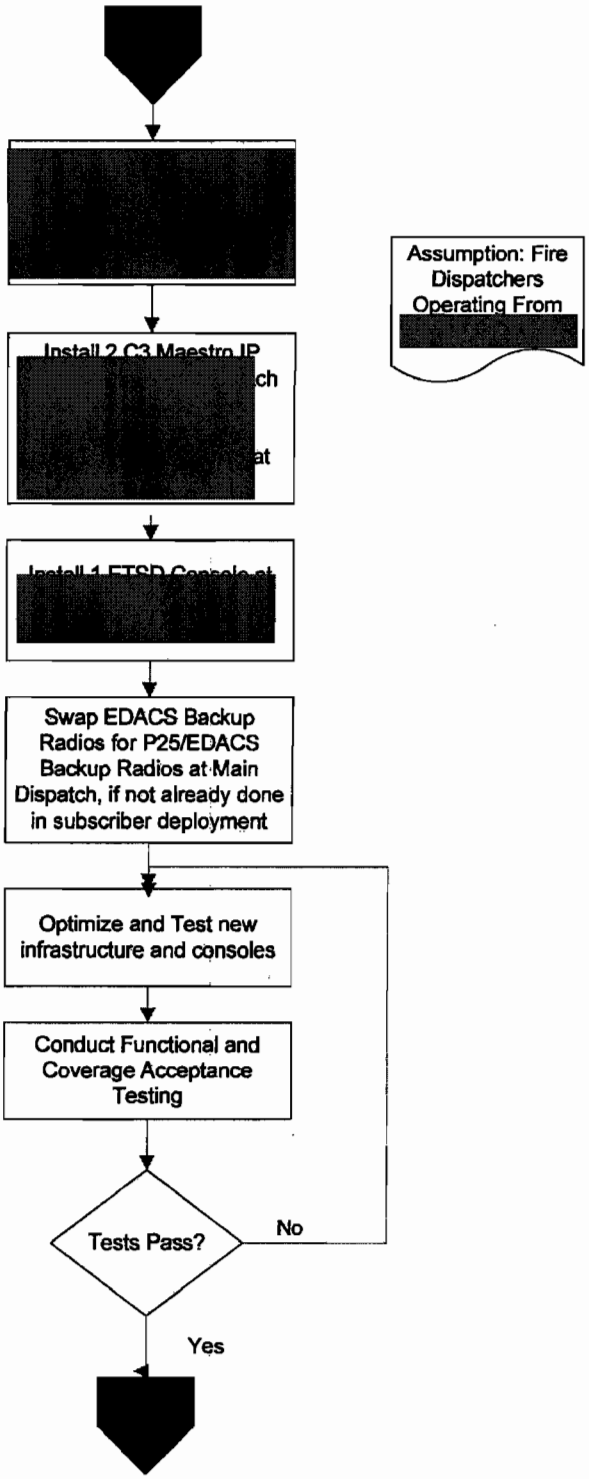
[redacted]
s
operating on existing MA antennas.

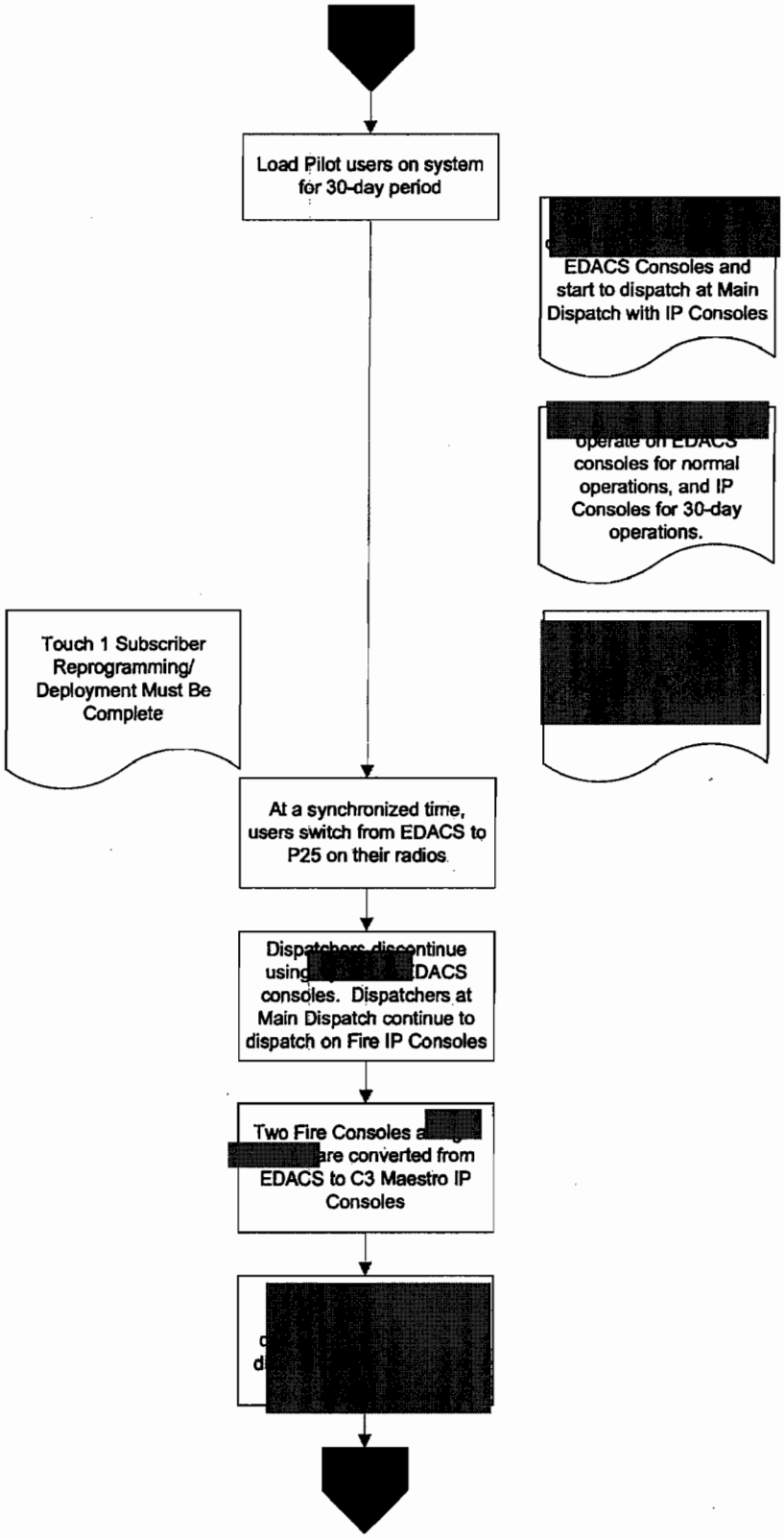
Installation
system will
time. Insta
parallel op
channels w
channel, si

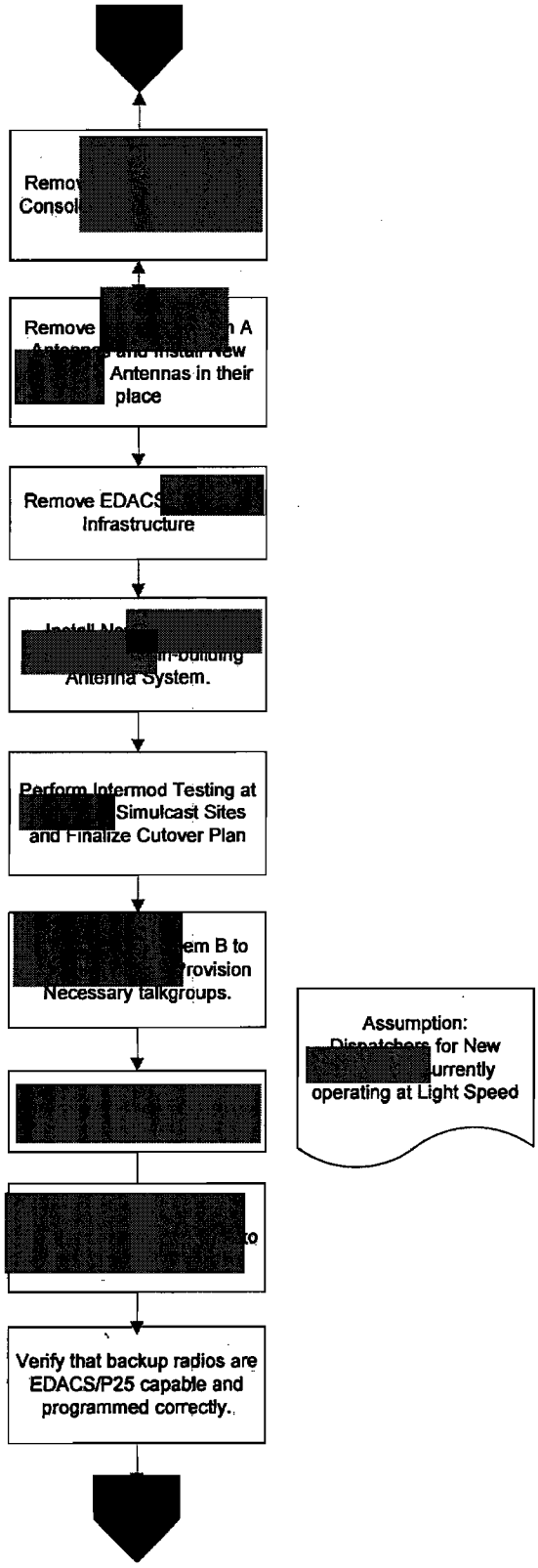
Install System A swing antennas at lower (intermediate) heights on the towers

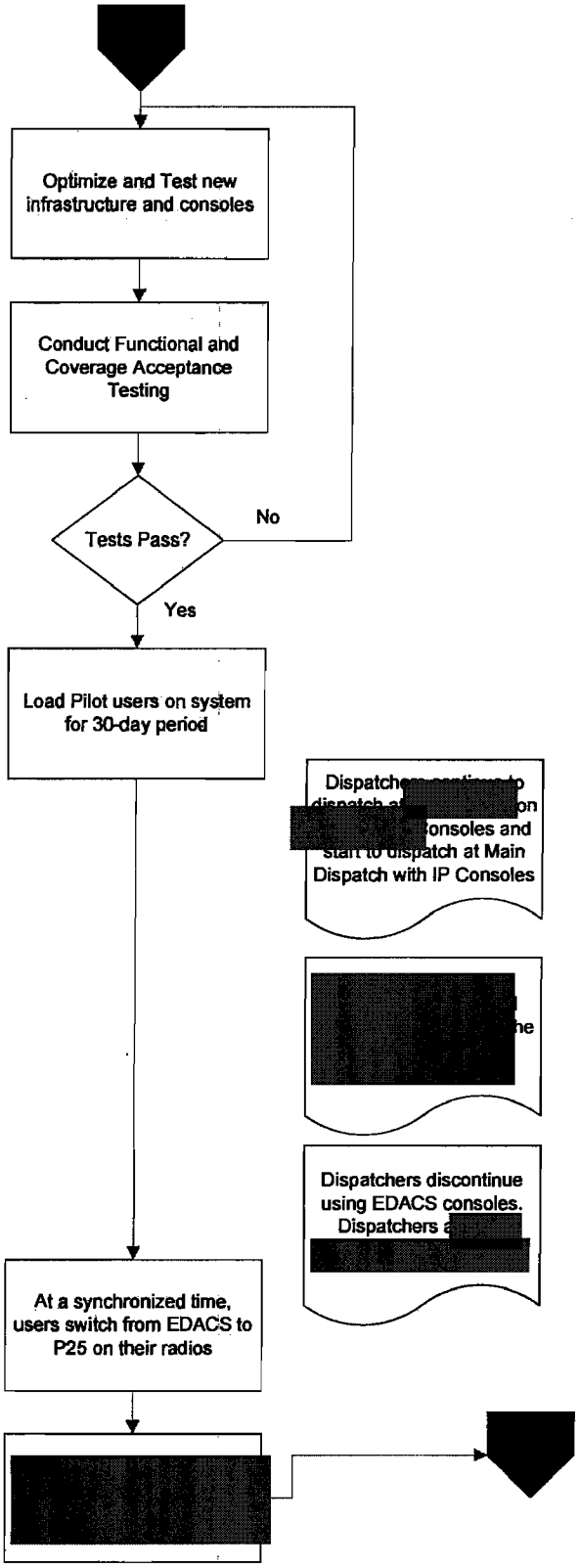
[redacted]

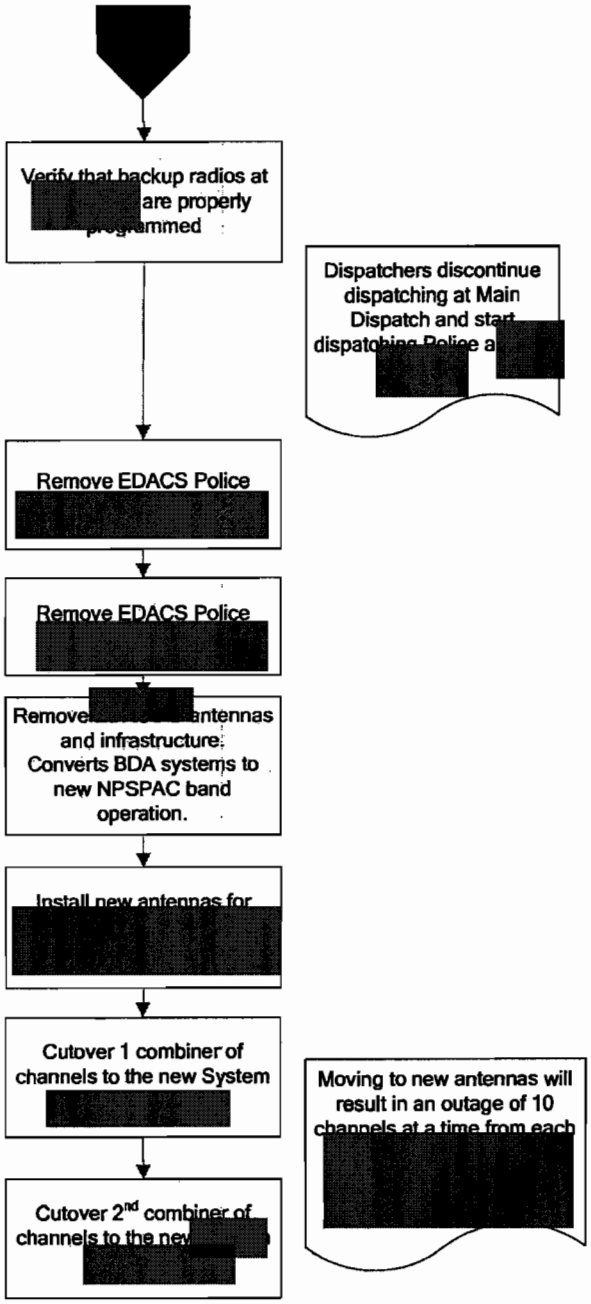

Perform Intermod Testing at [redacted] nulcast Sites and Finalize Cutover Plan
Plan for V^IP Console outage.
Integrate [redacted] P25 infrastructure into new VIDA switch
V^IP Consoles Now Operational.
Configure new [redacted] o communicate through [redacted]
Provision talk groups in EDACS IP Gateway
Install P25 Syste[redacted]
Install new P25 800 MHz in RDCS #2
Remove Existing P25 800 MHz in RDCS #1 and Deploy for County Personality Test
County begins personality testing
Install new P25 800 MHz in RDCS #1
[redacted]
[redacted]
[redacted]


[redacted]
Assumption: Fire Dispatchers Operating From [redacted]
Install 2 C3 Maestro IP [redacted]
Install 1 ETSD Console at [redacted]
Swap EDACS Backup Radios for P25/EDACS Backup Radios at Main Dispatch, if not already done in subscriber deployment
Optimize and Test new infrastructure and consoles
Conduct Functional and Coverage Acceptance Testing
Tests Pass?
No
Yes
[redacted]


Load Pilot users on system for 30-day period
EDACS Consoles and start to dispatch at Main Dispatch with IP Consoles
consoles for normal operations, and IP Consoles for 30-day operations.
Touch 1 Subscriber Reprogramming/ Deployment Must Be Complete
At a synchronized time, users switch from EDACS to P25 on their radios.
consoles. Dispatchers at Main Dispatch continue to dispatch on Fire IP Consoles
Two Fire Consoles
are converted from EDACS to C3 Maestro IP Consoles


Remo
Consol
Remove
n A
Antennas in their
place
Remove EDACS
Infrastructure
Antenna System.
Perform Intermod Testing at
Simulcast Sites
and Finalize Cutover Plan
em B to
rovision
Necessary talkgroups.
Assumption:
for New
urrently
operating at Light Speed
to
Verify that backup radios are
EDACS/P25 capable and
programmed correctly.


Optimize and Test new infrastructure and consoles
Conduct Functional and Coverage Acceptance Testing
Tests Pass?
No
Yes
Load Pilot users on system for 30-day period
Dispatch
on
onsoles and
Dispatch at Main Dispatch with IP Consoles
Dispatchers discontinue using EDACS consoles.
Dispatchers
At a synchronized time, users switch from EDACS to P25 on their radios


Verify that backup radios at [redacted] are properly programmed
Dispatchers discontinue dispatching at Main Dispatch and start dispatching Police a[redacted]
Remove EDACS Police [redacted]
Remove EDACS Police [redacted]
Remove [redacted] antennas and infrastructure. Converts BDA systems to new NPSPAC band operation.
Install new antennas for [redacted]
Cutover 1 combiner of channels to the new System [redacted]
Moving to new antennas will result in an outage of 10 channels at a time from each [redacted]
Cutover 2nd combiner of channels to the new [redacted]

Installation

Site installation work will begin as the site preparation work is completed and in coordination with the backbone equipment delivery schedule following staging. Harris shall:

- Manufacture the proposed system design equipment as defined by the contract.
- Perform standard product verification/testing of the equipment (Factory Staging and Testing) before delivery to Miami-Dade.
- Deliver the equipment to a Harris location in the Miami-Dade area.
- Work with Miami-Dade to verify installation and grounding practices.

Harris' infrastructure installation tasks include:

- Install RF equipmen[redacted]cks as per drawings, in existing shelters or equipment rooms using Harris standard installation practices.
- Complete intra-cabinet/rack wiring.
- Hang new antennas and cabling on existing towers or buildings per Antenna Location Charts in the "Site Development Plan" and "System Descriptions." The antenna locations were chosen based on available tower space and associated antenna performance. The antennas will remain at these locations throughout the ATP and cutover and at the end of the program, Miami-Dade and Harris will decide then whether or not to relocate antennas to locations vacated by the removal of the [redacted]
- Make up RF cable jumpers (combiners and multicouplers).
- Install RF cable lightning protection.
- Ground all racks and equipment to an existing common ground inside the shelter or equipment room.
- Install routers and make connections to existing backhaul.
- Test all RF sites back to th[redacted]
- Install new consoles and test to verify proper operation for all consoles.
- Provide interoperability interfaces to agreed-upon demarcation points.

Miami-Dade shall:

- Resolve any site connectivity issues in a timely manner.
- Terminate interoperability interfaces at agreed-upon demarcation points.
- Provide support services to resolve any issues associated with the interface of the Interoperability Gateway to Miami-Dade supplied audio sources (i.e. re-programming control stations or ensuring proper operation at Miami-Dade's demarcation point).

System Optimization

Once the backbone installation is complete, Harris' System Engineer will work with the on-site technicians to optimize the system as follows:

- All levels and parameters will be set and verified at the site and [redacted] as necessary.
- IP addresses will be verified against the plan.
- Levels and parameters will be recorded for site documentation and submitted to the Miami-Dade as part of the final documentation package.
- Cross-connect information will be entered and verified as to drawings. Corrections will be made as red line corrections to the final drawing package.
- All sites will be prepared for Acceptance Testing.

Harris shall:

- Instruct the Miami-Dade team on system and site optimization.
- Provide instructions and guidelines for site setup and optimization.
- Provide detailed interface diagrams, which will assist Miami-Dade on making interoperability interfaces operate.

Miami-Dade shall:

- Provide support as necessary for interoperability interfaces, site setup, and optimization.

Acceptance Test Plan (ATP)

The System Engineer will verify that system installation and optimization is completed and ready for the acceptance test. Installation and operation of the new P25 system will be demonstrated through completion of the following Acceptance Test Procedures as defined by the contract document:

Staging/Factory Functional Test Procedure [redacted]	(SAT)	EN0011A
Fielded Functional Test Procedure [redacted]	(FAT)	EN0012A
Staging/Factory Functional Test Procedure [redacted]	(SAT)	EN0011B
Fielded Functional Test Procedure [redacted]	(FAT)	EN0012B
Mutual Aid Functional Test Procedure	(MAAT)	EN0013
Coverage Acceptance Test Procedure	(CAT)	EN0015
30 Day Operational Test Period	(30RP)	EN0016
30 Day Combined Systems Operational Test	(30DT)	EN0017
65 Building Mandatory Coverage Test	(65BT)	EN0018
Rotary Aircraft Coverage Test	(ACT)	EN0019

Upon satisfactory completion of the functional tests and coverage test, the Harris Project Manager will present documentation for system acceptance.

The field acceptance tests are broken into two elements: Functional ATPs and Coverage ATPs.

Functional ATP

The functional tests are designed to test all major features of the system. The ATP contains a short description, test methodology, and a record form for logging results and acceptance signatures for each functionality tested. The functional tests of the system will be completed after sites have been installed and optimized.

Coverage ATP

The RF Coverage Acceptance Test defines how the RF coverage tests will be conducted and the format for collected data.

Acceptance Test Responsibilities

Harris shall:

- Provide the acceptance test procedures to properly test the new P25 systems equipment.
- Prepare and program Miami-Dade owned subscriber equipment for testing.
- Perform Functional Acceptance Test and RF Coverage Acceptance Test.

Miami-Dade shall:

- Review and comment on test procedures as part of the DDR
- Provide personnel to observe/witness the Functional and Coverage Acceptance Tests.
- Sign-off test documentation at successful completion of each test.

System Acceptance [redacted] and Multisites)

Harris shall:

- Provide all test results fo[redacted]nd multisites to Miami-Dade.

Miami-Dade shall:

- Review/accept ATP results for [redacted]and multisites.
- Provide acceptance for System A and multisites.

Cutover Plan [redacted]and Multisites)

To make the various cutovers a success, careful planning must take place to ensure everything is ready, scheduled and coordinated. When Miami-Dade has completed their database and fleet-map planning and these plans have been approved, programming of the system and user equipment may begin. The time for cutovers will be selected after all subscribers have been programmed under Subscriber Touch 1 and the various systems have been installed and tested. The cutovers will usually be performed during relatively quiet periods, where any cutover disruptions will have little effect on operations. Dispatcher and user training will be scheduled to happen just before the selected cutover dates and times.

Many issues associated with cutover must be worked out, such as training, mobile installation schedules, portable radio distribution, and user availability for the cutovers to progress as rapidly as possible.

Cutover Responsibilities

Harris shall:

- Assist Miami-Dade with:
  - Cutover planning
  - Talkgroup planning
  - System database planning
  - Training plan as it pertains to the timing of the training
- Plan/schedule:
  - System Administrator Training
  - Dispatcher training
  - User subscriber training
  - System maintenance training
  - User equipment maintenance training
- Work with the Miami-Dade to establish:
  - User radio programming guides
  - User radio distribution plans
  - Radio installation schedules
  - Interoperability interfaces to be employed during cutover
  - A measurement of system latency and access time for up to ten subscriber terminals and one console, for up to forty measurement points to include simulcast, multi-site console and confirmed call types.

The Miami-Dade shall:

- Work with Harris to prepare cutover plan.
- Program the system database.
- Prepare radio user profiles and radio personalities.
- Schedule training and distribution of user radios.
- Identify a System Administrator responsible for system setup and database management, and if applicable, [redacted]
- Work with Harris to ensure that all tasks are scheduled and completed per agreed upon schedule.

System Acceptance [redacted]

Harris shall:

- Provide all test results for System B to Miami-Dade.

Miami-Dade shall:

- Review/accept ATP results fo[redacted]
- Provide acceptance fo[redacted]

Cutover Plan [redacted]

To make the various cutovers a success, careful planning must take place to ensure everything is ready, scheduled and coordinated. The time for cutovers will be selected after all subscribers have been programmed under Subscriber Touch 1 and the various systems have been installed and tested. The cutovers will usually be performed during relatively quiet periods, where any cutover disruptions will have little effect on operations. Dispatcher and user training will be scheduled to happen just before the selected cutover dates and times.

Cutover Responsibilities

Harris shall:

- Assist Miami-Dade with:
  - Cutover planning
  - Talkgroup planning
  - System database planning
  - Training plan as it pertains to the timing of the training
- Plan/schedule:
  - System Administrator Training
  - Dispatcher training
  - User training
  - System maintenance training
  - User equipment maintenance training
- Work with the Miami-Dade to establish:
  - User radio programming guides
  - User radio distribution plans
  - Radio installation schedules
  - Interoperability interfaces to be employed during cutover

Miami-Dade shall:

- Work with Harris to prepare cutover plan.

- Program the system database.
- Prepare radio user profiles and radio personalities.
- Schedule training and distribution of user radios.
- Identify a System Administrator responsible for system setup and database management, and if applicable [redacted].
- Work with Harris to ensure that all tasks are scheduled and completed per agreed upon schedule.

Final Acceptance

Once cutover is complete, the Harris Project Manager will submit the "As-Built" documentation and a letter requesting final acceptance to Miami-Dade. The signing of the final acceptance document will initiate the beginning of the warranty period. Harris' Field Service representative will provide information on Warranty Service.

Final Acceptance Responsibilities

Harris shall:

- Present final system documentation
- Provide instructions with regard to warranty and warranty repair work
- Submit Final Acceptance Letter
- Assist the County with up to two weeks of support for developing Preventive Maintenance Procedures.
- Provide County with simulcast alignment data.

Miami-Dade shall:

- Review/accept final documentation
- Sign Final Acceptance

Old Equipment Removal

Harris will remove old equipment as it pertains to infrastructure and terminal being replaced including cabling and raceways. Old equipment will be transported to a location designated by Miami-Dade.

List of Assumptions

- Harris assumes that at the point in time when [redacted] MHz P25 Phase-1 Multisite system would have already been installed under a separate SOW for the PSIC contract.
- Harris assumes that at the point in time when [redacted] MHz P25 Phase-1 Multisite system would have already been installed under a separate SOW for the PSIC contract.

Section 7 – Subscriber Programming and Installation

Introduction

Miami-Dade operates approximately [redacted] units within various agencies located throughout the County. These subscribers include mobile units, portable units, and control stations. It is anticipated approximately 24,000 total units must be replaced. The remaining units are designated for reprogramming and feature upgrading.

Due to the complexity of the Miami-Dade radio system, two radio "touches" are required under Harris' plan. Subscriber Touch 1 entails the programming of replacement radios and the reprogramming of non-replaced radios with duplicate systems for [redacted]id, the [redacted] As part of the first touch, it has been determined that Miami-Dade and Harris will be responsible respectively for programming approximately 50% of the existing radios as well as programming, deployment and installation of approximately 50% of the replaced units.

Subscriber Touch 2 entails the reprogramming of all radios with Miami-Dade responsible for approximately 75% of such effort and Harris responsible for approximately 25% of that effort. Subscriber Touch 2 is necessary to remove redundant systems from the radios, returning the radios to their pre-reconfiguration personalities with final system frequencies.

Subscriber Equipment Reconfiguration

Prior to cutover of the systems, all radios must be programmed to include the new rebanded frequency sets.

The following advisory recommendations are provided to ensure successful radio replacement and re-programming. Please view them as pre-requisites that are essential for the successful, timely, and cost-effective implementation of Miami-Dade's rebanding project.

It is assumed that Miami-Dade shall:

- Be responsible for coordinating locations to remove/install and reprogram mobile and portable radios for all replaced radios under Subscriber Touch 1 and any radios to be reprogrammed under Subscriber Touches 1 and 2.
- Be responsible for coordinating the scheduling of subscriber users to deliver radios to equipment replacement/reprogramming locations as efficiently as possible.
- Be responsible for coordinating with all agencies to develop and manage schedules for equipment installation/programming.
- Be responsible for coordinating the rescheduling of subscribers where the user does not arrive as scheduled (no-shows). Accommodating no-shows is subject to additional costs to reschedule and perform work, which may result in a change order.
- Be responsible for programming 50% of non-replaced control stations.

- Be responsible for programming and installation of 50% of replaced control stations.
- Be responsible for testing of all personalities prior to programming activities.
- Be responsible for the development of all radio personalities.
- Be responsible for inventorying and approving all radio returns to Sprint.
- Be responsible for all asset tagging and tracking as required by Miami-Dade.
- Should additional programming of the radios be required, Miami-Dade will agree to provide radios for reprogramming in the most efficient way possible, retaining responsibility for 50% of the programming.
- Be responsible for the programming and installation of all subscribers aboard fixed-wing, if any exist, and rotary aircraft.
- Be responsible for providing Harris with a vehicle inventory for mobile installations that include:
    - Make and Model of Vehicle
    - County Asset Tag
    - Existing Mobile Installed
    - Type of Installation (i.e. Front-Mount or Trunk-Mount)
    - Any Special Installation and/or Antenna Requirements

It is assumed that Harris shall:

- Provide factory data sheets for subscribers, proving that they have been factory tested and meet the published specification.
- Be responsible for storage of the approximately 24,000 replacement radios and accessories provided by Sprint-Nextel and storage of the removed equipment (radios only) pending return to Sprint-Nextel.
- Be responsible for removal, installation, and programming of 50% of replaced radios and programming of 50% of non-replaced radios.
- Be responsible for submitting a database containing at a minimum, serial number of radio, inventory tagging identification number along with the personality loaded into the radio and the name and agency of the user receiving new radio equipment for the portion of terminals Harris is responsible for programming.
- Be responsible for submitting a database containing at a minimum, the user equipment returned by each individual user for return to Sprint for the portion of terminals Harris is responsible for collecting.
- Be responsible for returning replaced radios as approved by Miami-Dade.
- Should additional programming of radios be required, Harris agrees to program radios in the most efficient way possible, retaining the responsibility for 50% of the programming.
- Provide up to four weeks of technical assistance to Miami-Dade to determine the appropriate settings for personalities in the P25 Phase 1 arena.

- Be responsible for 50% of programming of non-replaced control stations.
- Be responsible for programming and installation of replaced control stations.
- Be responsible for providing 50' of cable per control station ordered from Sprint-Nextel. The cable required will be provided in 500' spools.
- Be responsible for software upgrading any P7100, P5100 or M7100 model radio currently in inventory of Miami Dade to P25 functionality.
- Be responsible for hardware upgrading any P7100, P5100 or M7100 radios that require such an upgrade for P25 functionality.

The following is the process as defined by Miami-Dade for the reprogramming/replacement of their subscriber units:

1. **Personality Development (Miami-Dade / Harris responsibility)**

   As each personality is developed, an Excel spreadsheet of the personality is also developed and used as a tool to confirm that the personalities were developed correctly. The personality will be developed to include original and final frequency sets for all systems. This estimate also includes the checking of the Radio Template against the personality. The Radio Template will also be used for field training during deployment of the re-programmed radios.

2. **Personality Testing (Miami-Dade / Harris responsibility)**

   Standard personality testing to be defined, is required on every personality prior to programming of any radios. Harris and Miami-Dade will mutually agree on the tests to be performed and will work jointly to complete the testing.

3. **Shipment of Replacement Radios (Sprint) (Harris responsibility)**
   Once radios and the associated accessories are ordered by Sprint-Nextel, they are shipped and delivered to a warehouse facility rented by Harris for this effort. Harris must verify that every radio shipped and every accessory shipped was actually received. This entails a detailed comparison of what was shipped against what is listed as shipped in the packing slips.

4. **Inventory Procedures for Replacement Radios (Miami-Dade responsibility)**

   Miami-Dade General Services Administration (GSA) Department, Materials Management Division will dispatch two inventory clerks who will travel to Harris' storage location and begin the inventory process. The process is defined below:

   a. Each and every radio is removed from its box. The serial numbers are recorded by the inventory clerk.
   b. Each radio is then labeled with two (2) (DC) Inventory stickers. Both stickers have the same number which makes the item a property of the capital listing of Miami-Dade assets.
   c. Each radio is then engraved with the DC number that was assigned in Step b.
   d. Each radio is then returned to its original box.

5. **Mobile Installations for Replacement Radios (Joint responsibility)**

   The installation process will be mutually agreed upon, however, it is agreed that Harris and Miami-Dade will each be responsible for the installation and programming of 50% of mobile installations and programmings.

   After Harris installs each mobile radio, Miami-Dade shall inspect the installation, witness proper operation, and sign-off the installation before the vehicle is released back to Miami-Dade.

6. **Deployment of Programmed Replacement Portables (Joint responsibility)**
   The programming process will be mutually agreed upon, however, it is agreed that Harris and Miami-Dade will each be responsible for programming 50% of all portable replacement radios.

7. **Programming Non-Replacement Radios (Joint responsibility)**
   The programming process will be mutually agreed upon, however, it is agreed that Harris and Miami-Dade will each be responsible for programming 50% of all retained portable radios

Subscriber Touch 2

Miami-Dade will be responsible for programming approximately 75% of all radios associated with Subscriber Touch 2, Harris will be responsible for programming approximately 25% of the radios, which is incorporated as a touch to the subscriber units to remove the pre-rebanded frequencies from the subscriber radios.

Section 8 – P25^{IP} Training

Developing the knowledge and skills of Miami-Dade personnel who will operate, manage and maintain the new radio system are critical elements in successfully launching a P25^{IP} communications system. To perform these tasks, high-quality, performance-based training is required that will build and enhance personnel competence. In addition, training will enable Miami-Dade to optimally use the features and capabilities of P25^{IP} to meet and exceed the specified communication requirements.

The customized training program that will be conducted for Miami-Dade is divided into four categories: System Management Training, Dispatcher Training, Radio User Training, and Maintenance Technician Training.

System Management Training

System managers have the overall responsibility for defining and maintaining the system's configurable parameters. The importance of this role has increased significantly as communication systems have become larger and more complex. The responsibilities include defining the group structure, maintaining unit and group databases, planning radio feature usage and personalities, developing operating procedures, generating reports, controlling radios (e.g., enabling and disabling units), and analyzing system performance.

Harris will conduct each of the following four courses/workshops one time at a facility provided by Miami-Dade. Maximum class size is ten students.

- P25^{IP} System Administration Course (4½ days)
- P25^{IP} Structuring Workshop (2 days)
- Unified Administration System Course (2 days)
- Regional Network Manager (2 days)

Dispatcher Training

Dispatch personnel are at the core of effective and efficient implementation of a radio sy[redacted] A key benefit to Miami-Dade is that dispatch personnel are already proficient operating the [redacted] n the existing EDACS system. This will facilitate the transition [redacted]. The new console uses the same [redacted] interface and the majority of dispatch functions (i.e., patch and simulselect operation) are identical. Therefore, only a one-hour session will be required to train regular and relief dispatchers and their supervisors.

While the time required for training is minimal, the payback is immense. Dispatcher Training sessions will be conducted using the installed equipment with small groups of no more than two people on an operating console. This maximizes the effectiveness of the hands-on portion of the training. Each student will receive a quick reference manual for the operation of the [redacted] Dispatch Console. These training sessions will include an overview of the new P25^{IP} communications system and hands-on training using the [redacted] e focusing on the differences between the old and new consoles.

Harris will conduct up to 18 one-hour, instructor-led training sessions over three consecutive working days. These sessions will be scheduled just prior to implementation to allow participants to promptly begin using the skills learned.

Radio User Training

The importance of radio users understanding basic system operation and the operation of their portable and/or mobile radios and control stations must not be underestimated. As was the case with dispatch personnel, the transition to our P25^{IP} system will be facilitated by the radio users' experience operating on an EDACS system. Harris will provide two methods for training radio users: instructor-led train-the-trainer and web-based training.

Train-the-Trainer

Harris will conduct four-hour, train-the-trainer sessions that will include the following topics:

- An overview of the Miami-Dade P25^{IP} communications system
- A discussion on the differences between analog and digital voice
- A discussion of radio/system coverage expectations
- A demonstration of radio operation
- Hands-on practice with the radios
- A discussion of basic radio care including battery maintenance

Harris recommends that instructors have previous instructional experience and operating experience on the EDACS system. Additionally, a desire to conduct the training will be beneficial to optimize training effectiveness for end users. Harris is committed to providing model training and support materials for designated Miami-Dade instructors to use during the implementation phase.

Harris will conduct ten Radio User Training sessions over five consecutive days at a facility provided by Miami-Dade. Each session is limited to a maximum of 15 students. The train-the-trainer sessions should be scheduled approximately two-to-four weeks prior to the start of the performance period. This will allow time for the instructors to practice using the equipment as well as to hold training sessions for their "trainees." Operating equipment purchased by Miami-Dade from Harris as part of the system will be used during the training.

Web-Based Training

Harris will provide Miami-Dade with access to our web-based training solution during the transition period from EDACS to P25. Using web-based training will facilitate the migration to P25 by providing radio users with self-paced, highly interactive training just prior to cutover. Training courses on radio operation include the following learning objectives:

- Discuss the safety precautions when using the radio.
- Explain the display indicators and alert tones.
- Make and receive group calls.
- Change the selected talkgroup.
- Manually change the system.

- Make and receive individual calls, as applicable.
- Make and receive emergency calls.
- Establish a scan list and turn scan on and off.
- Lock and unlock the keypad.
- Adjust the display backlight and contrast.

Harris will customize the web-based training courses for the Police, Fire and Transit agencies based on radio personalities provided by Miami-Dade. Once a radio user registers for a course, that course will be accessible for 30 days, which allows the student to review selected sections or the entire course multiple times to reinforce the learning.

Maintenance Technician Training

Maintenance technicians will require intensive training in order to troubleshoot and perform maintenance on the P25^{IP} communications system. The maintenance training program will provide technicians with the knowledge and skills needed to conduct preventative maintenance, troubleshoot problems, and take corrective action.

Harris will conduct each of the following five courses two times at a facility provided by Miami-Dade. Miami-Dade will be responsible for providing the necessary tools and equipment to support the hands-on portion of the maintenance training. The laboratory exercises included in the maintenance training courses are best served if conducted at the customer's service shop. This facilitates access to tools, cables, connectors and other miscellaneous items needed for the training. Maximum class size is ten students.

- P25^{IP} System Maintenance Course (7 days)
- Network Operation & Maintenance Course (3 days)
- MASTR V Station Maintenance Course (3 days)
- P25^{IP} Simulcast System Maintenance Course (3 days)
- Radio Maintenance Course (4 days)

Section 9 – Warranty Support Services

Overview

Harris has the corporate experience, capabilities and resources necessary to provide a complete suite of support services for the Miami-Dade Communications System project. Harris is offering a customized Warranty Support Plan that will fully meet or exceed the needs of Miami-Dade.

To support a communication system the size of the proposed Miami-Dade system, Harris will use the services of its Miami-based Authorized Service Center (ASC), Cooper General, in addition to Harris personnel. Cooper General technicians will be trained, have the tools and test equipment necessary, and will be provisioned with the spare parts needed to support Miami-Dade's system infrastructure and user equipment during the two year warranty period.

In addition to service facilities in Miami, Harris' Technical Assistance Center (TAC), located in Lynchburg, Virginia, will provide 24 x 7 x 365 access to its technical staff of engineers and senior technicians should questions or system performance issues arise, requiring additional support beyond those provided by the local ASC. Harris also maintains two factory depot repair facilities, located in Lynchburg, Virginia and Harrisburg, Pennsylvania. These facilities will be used to augment the field service teams in Miami, when necessary, and will provide rapid equipment repairs when the necessary repairs cannot be accomplished in the field.

Warranty Services

Harris will provide a warranty for equipment supplied to Miami-Dade as further specified in Article 31 of the System Purchase Contract. Miami-Dade has stated that it intends to be self-maintained following the warranty period. Accordingly, Harris recommends that during the warranty period Miami-Dade radio service technicians accompany Harris/Cooper General service technicians, as their schedules permit, to gain familiarity, experience and knowledge of the new system to assure a seamless transition post warranty.

Service Requests, Response Times and Restoration Times

Harris will provide Miami-Dade with a toll free number, available 24 x 7 x 365, to report problems with the system and/or request service from its local ASC. Harris/Cooper General will begin troubleshooting activity within 30 minutes of receipt of the call. If permission is granted for on line system access by Miami-Dade, Harris/Cooper General will begin real time diagnostic activity and if deemed necessary, dispatch its service technicians to be on site within two hours of the reported problem to provide on site corrective action. Harris recognizes the importance of rapid response to service requests on a public safety/public service communication system and has prepared a call escalation plan that will meet the needs of Miami-Dade. The following is an example of successful escalation procedures that have been employed for critical failures on other statewide and large communication systems as part of Harris' warranty support program.

- Step 1 – Miami-Dade personnel/users of the system initiate a service request by calling the toll free number. The caller, nature of the request, etc. is logged.

- Step 2 – Harris personnel will begin the evaluation of the problem and contact the appropriate service technician should it be determined that on site support may be required. If after 30 minutes the on call technician has not responded, the second on call technician will be paged/called and the Cooper General Service Manager will be contacted. Within two hours of the initial request and upon verification that a technician is responding, the appropriate/designated Miami-Dade point of contact will be called and the remediation status reported.
- Step 3 – Within two hours of receipt of the service request, a technician will be on site to commence repair activities if the problem cannot be resolved remotely.
- Step 4 – If, after two hours, the technician has not confirmed they are on site, the Harris Regional Service Manager will be contacted by Cooper General to report the missed on site response time and to engage additional resources to resolve the service issue. The Miami-Dade designated point of contact will be notified of the situation.
- Step 5 – In the unlikely event that the service problem cannot be resolved by the on site technician, Cooper General will contact Harris' Senior Regional Service Manager for additional assistance and notify Miami-Dade's designated point of contact of the repair status.
- Step 6 – If within 24 hours of a service request, the problem has not been resolved the Harris Director of Field Operations will be contacted by Cooper General and the designated Miami-Dade point of contact will be notified of the progress made and current status of the remedial actions being taken.

Spare Parts

During the warranty period, Harris will have system critical spare parts available for use at its ASC facility in Miami. As spares are used to correct warranty failures, they will be replaced.

Appendices A to K

The Acceptance Test Procedures are included in separate files.

System Acceptance & Test Plan

for

Miami-Dade - P25 Trunking System

EN0010 – Rev – A

326

RECORD OF CHANGES

Revision History			
REV	DATE	PAGES AFFECTED	REMARKS
A	11/05/09	Original	

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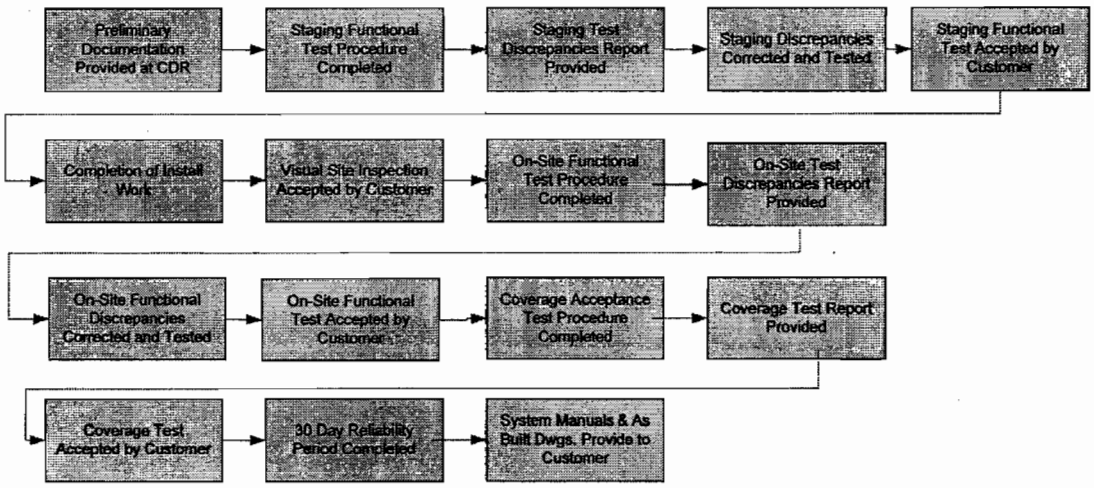
1.0 OVERVIEW OF TEST OBJECTIVES

This Acceptance Test Plan describes the testing and inspection techniques required to verify proper system operation and installation of the new Miami-Dade P25 LMR Trunking System. Successful completion of the test plan will constitute final customer acceptance of the Miami-Dade P25 LMR Trunking System and certify that it is completely installed and fully operational. The test plan for the Miami-Dade project will utilize a test and verification checklist to track and approve the installation, configuration and operation of the new P25 system. The following flow chart outlines the steps to reach system acceptance.



This Test plan outlines the following:

- A description of the testing methods that to be employed during the acceptance testing process.
- Required observers for testing.
- Descriptions of the facilities and resources that will be needed to support testing.
- Test Plan checklist outlining each acceptance test requirement.

2.0 ACCEPTANCE TESTING METHODS

The tests will include a combination of functional tests to demonstrate proper operation and analytical measurements to verify performance. Specific methods are described in the Test Procedures. Tests are performed on a representative portion of the system. Simulcast

[redacted] ll be staged and tested independently. Successful demonstration of system administration features or [redacted] will not be repeated during staging tests o[redacted] All tests will be performed or supervised by the assigned Harris systems engineer utilizing Harris contracted technical support. All test equipment required will be provided by Harris. Harris will only test the new LMR system and new LMR subsystems per the functional test procedures. No testing will be performed on the existing LMR system, subsystems or custom applications. All testing on the new LMR system will be performed using standard Harris test configurations, test agencies and test groups. The Miami-Dade LMT/System Administrator will be responsible for coordinating the creation and testing of end user radio personalities.

Installation and operation of the new P25 system will be demonstrated through completion of the following Acceptance Test Procedures;

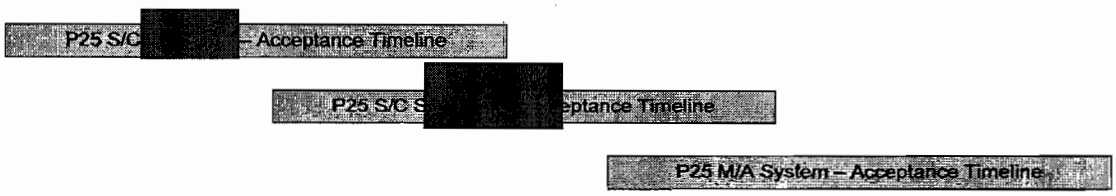
Staging/ Factory Functional Test [redacted]	**(SAT)**	**EN0011A**
Fielded Functional Test Procedur [redacted]	**(FAT)**	**EN0012A**
Staging/ Factory Functional Test [redacted]	**(SAT)**	**EN0011B**
Fielded Functional Test Procedur [redacted]	**(FAT)**	**EN0012B**
Mutual Aid Functional Test Procedure	**(MAAT)**	**EN0013**
Coverage Acceptance Test Procedure	**(CAT)**	**EN0015**
30 Day Operational Test	**(30RP)**	**EN0016**
30 Day Combined Systems Operational Test	**(30DT)**	**EN0017**
65 Building Mandatory Testing	**(65BT)**	**EN0018**
Rotary Aircraft Coverage Acceptance Test Procedure	**(ACT)**	**EN0019**

Two weeks notice will be provided when the system is ready for formal testing. Formal testing using the methods identified above will be conducted during the SAT and the FAT while in the presence of Harris and Miami-Dade personnel and/or their designated representative(s). Drawings, technical documentation or certifications will be provided two weeks in advance and can be reviewed before, during or after the actual SAT or FAT. Since the radio terminals, networking and repeater hardware are COTS equipment that has been previously tested and qualified, environmental qualification test will not be repeated on this hardware.

A feature/function that is tested shall be declared, "pass" if the results of the test method demonstrate that the applicable system functionality is met. If the results fail to demonstrate the requirement but the cause of failure can be immediately found and corrected then the test will be repeated and scored "pass". Otherwise, all failures will be recorded on the failure report form shown in Appendix 1. The failed test results will be used to determine the cause(s) of the failure and the appropriate corrective action required to correct the fault implemented. The analysis also will identify any retesting that is necessary. The scope and schedule for retesting, if not specified, will be mutually agreed upon between the Customer and Harris. All failures or errors revealed during testing will be rectified and subsequent verification performed prior to the next formal test.

3.0 TEST ENVIRONMENT AND LOCATION AND SCHEDULE

The Miami-Dade system will under go both a Factory Staging Functional Acceptance Test (SAT) and an On-Site Functional Acceptance Test (FAT). The schedule for testing will be in accordance with the contract schedule. All applicable SAT testing will be conducted at the Harris staging facilities in Lynchburg, Virginia. The remaining FAT testing will be conducted at the designated site locations in Florida where the Miami-Dade system will be installed.



Acceptance Timeline Chart

The system acceptance process will conform to the project installation phases. If the install is implemented in staggered phases, the acceptance timeline will be also staggered as show in the following acceptance timeline chart.

4.0 TEST PARTICIPANTS AND RESPONSIBILITIES

Harris will provide all supporting documentation as well as all test equipment required. During the FAT and SAT verification activities, both a Harris Systems Engineer and Miami-Dade representative will be present. It is the responsibility of the Harris participants to perform testing, analysis and recording of test results. Harris will only test the new LMR system and new LMR subsystems per the functional test procedures. No testing will be performed on the existing LMR system, subsystems or custom applications. The Miami-Dade LMT/System Administrator will be responsible for coordinating the creation and testing of end user radio personalities as well as testing any custom systems components or applications not provided by Harris. The Miami-Dade representative will initial successfully completed tests and sign approval when each acceptance test procedure is completed.

5.0 CUSTOMER FURNISHED EQUIPMENT

The Customer shall be responsible for the providing the following Equipment, Information and Services in support of the test during Coverage Acceptance Testing (CAT).

- Vehicles and qualified drivers for off road coverage acceptance testing identified in the test plan.

  Note: Typically, two (2) four-wheel drive vehicles with drivers and with 12 V accessory power is sufficient. If drive testing in tracked-vehicle areas is desired, then a suitable tracked vehicle must be provided. Likewise, testing over water will typically require a suitable marine vessel with 12 V accessory power.

6.0 SECURITY

Access to the Harris facilities in Lynchburg is controlled. Test participants will require some form of identification and a Harris escort. Prior notice of attendance may be required for all non-Harris personnel.

If access to the Miami-Dade facility is controlled, the Miami-Dade will provide access approval and escorts for the duration of the testing. Harris will provide a list of company attendees if requested.

7.0 TEST PLAN CHECKLIST

Acceptance Requirement	Date Completed	Harris/Miami-Dade Representative
Preliminary Documentation Provided at CDR		
Staging Functional Test Procedure Completed		
Staging Test Discrepancies Report Provided		
Staging Discrepancies Corrected and Tested		
Staging Functional Test Accepted by Customer		
Completion of Install Work		
Visual Site Inspection Accepted by Customer		
On-Site Functional Test Procedure Completed		
On-Site Test Discrepancies Report Provided		
On-Site Discrepancies Corrected and Tested		
On-Site Functional Test Accepted by Customer		
Coverage Acceptance Test Procedure Completed		
Coverage Test Report Provided		
Coverage Test Accepted by Customer		
30 Day Reliability Period Completed		
System Manuals & As Built Dwgs. Provide to Customer		

8.0 SYSTEM ACCEPTANCE

This Acceptance Test Plan has been successfully completed.

Miami-Dade Representative	Harris System Engineer
Signature	Signature
Printed name and title	Printed name and title

Miami-Dade Representative	Harris Project Manager
Signature	Signature
Printed name and title	Printed name and title

Appendix 1.

Sample Failure Report

FAILURE REPORT

PROGRAM NAME					REPORT NUMBER
TEST NAME	TEST NUMBER	JO NUMBER	DATE	TIME	FAILURE CYCLE NO./AXIS
TEST ENVIRONMENT		ETI READING: START	STOP		CHAMBER LOCATION

SYSTEM LEVEL

SYSTEM NAME	SYSTEM PART NUMBER	SYSTEM PROD/SERIAL NUMBER
FAILURE SYMPTOMS		
TROUBLESHOOTER	ENGINEER	

MODULE LEVEL

MODULE NAME	MODULE PART NUMBER	MODULE PROD/SERIAL NUMBER
FAILURE SYMPTOMS		
TROUBLESHOOTER	ENGINEER	

CIRCUIT CARD LEVEL

CCA NAME	CCA PART NUMBER	CCA PROD/SERIAL NUMBER
FAILURE SYMPTOMS		
TROUBLESHOOTER	ENGINEER	

PARTS REPLACED

PRIMARY FAILURE (X)	NAME	PART NUMBER	SYMBOL	MANUFACTURER	DATE CODE	DEFECT
TROUBLESHOOTER			ENGINEER			

CAUSE OF FAILURE	CODE
CORRECTIVE ACTION	

☐ EQUIPMENT DESIGN ☐ PART DESIGN ☐ UNVERIFIED ☐ SOFTWARE ERROR
☐ EQUIPMENT MANUFACTURING WORKMANSHIP ☐ PART WORKMANSHIP ☐ INTERMITTENT FAILURE ☐ OTHER_____

RELIABILITY QUALITY ASSURANCE ENGINEERING ☐ RELEVANT ☐ NON-RELEVANT

RELIABILITY ENGRN - ORIGINAL PRODUCTION ENGRN - 1 DESIGN ENGRN - 1 QUALITY ASSURANCE - 1

SAMPLE

Staging/Factory Functional Test Procedures

for

Miami-Dade

SAT-EN0011A Rev – A

P25 Simulcast [redacted]

336

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ABOUT THIS DOCUMENT

This document was specifically prepared for the customer shown below. Each section of this document is individually maintained in the Harris document control system. The revisions of each section are individually listed.

Customer:	Miami-Dade
Prepared By:	Shaun Hancock, Harris Corporation
Total Test Pages:	**55**

DOCUMENT USAGE

Many of the tests in this document will need to be run on multiple pieces of equipment. For instance a console test may be run on three consoles. For tests that need to be run multiple times, log in the comment section of the result box the identifier of the equipment tested. Although specific tests are not included relating to electrical measurements or timing parameters of equipment, these tests and levels are conducted and recorded as part of Harris' standard installation practices. These parameters include but are not limited to:

- Transmit Frequency and Deviation
- Output and Reflected Power
- Receiver Sensitivity
- Receiver Multicoupler Gain (if applicable)
- Receiver Preamplifier Gain (if applicable)
- Time Domain Reflectometry of Transmission Line
- Combiner Loss (if applicable)
- Audio line out
- Audio line in

System parameters and measurements will be provided to Miami-Dade as part of the final documentation package.

SUBSCRIBER UNIT USAGE

All tests for subscriber (terminal) units in this document will be performed with Harris subscriber units unless the test setup identifies another Vendor's subscriber unit to be used for the test.

1. *CUSTOMER APPROVAL*

This Acceptance Test Procedure has been read and approved for use as the system acceptance test.

Miami-Dade Representative	Harris Corporation – Systems Engineer
Signature	Signature
Printed name and title	Printed name and title
Miami-Dade Representative	Harris Corporation – Project Manager
Signature	Signature
Printed name and title	Printed name and title

2. *SYSTEM ACCEPTANCE*

This Acceptance Test Procedure has been successfully completed.

Customer Representative	Harris
Signature	Signature
Printed name and title	Printed name and title
Date	Date

3. P25 REGIONAL NETWORK MANAGER (RNM) AND UNIVERSAL ADMINISTRATION SYSTEM (UAS)

3.1 Create UAS User Account with Agency privileges

Setup

Access to an UAS or UAS client. Predefined Agency and Region in the UAS.

Execution

1. Log into the UAS.
2. Create an Agency administrative class by selecting System/Administrative/Admin Class.
3. Select "Add Entry" to display the Administration Classes Detail screen.
4. Enter a name (e.g., MDPDAgency) and description. Download.
5. Click the underlined agency name from above and then Add Entry to display Administrator User Privileges Detail.
6. Select appropriate Agency from Scope pulldown menu. Enter a description, and select Read Only (RO) or Read/Write (RW) privileges. Download.
7. Select System/Administrative/Admin User to create a new user to use this class of service.
8. Select "Add Entry" to display the AdminUser Detail screen.
9. Enter an Admin User name (e.g., MDPDAgencyUser); select the Admin Class from #5 above; enter a description; and enter a password. (Note password here or elsewhere for future reference.) Download.
10. Verify under System/Administrative/Admin User that a new Admin User as named in #9 with the class as defined in #5 is listed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.2 Create Talkgroups and Units (UAS)

Setup

Access to the UAS or an UAS client.

Availability of predetermined ID ranges for agencies, talkgroups, users & IP addresses.

Execution

1. Log into the UAS.

2. In the Region for the Agency under test, verify or create the available range of talk group ID's, User ID's, and IP addresses by selecting the Regions menu and making the appropriate entries.

3. For the Agency under which the talkgroup should be created, select Agency/ "agency name"/ R/W Talk Group.

4. Click Add Entry and then on the TalkGroup Detail screen input the TG ID, Name, Description, and select all other appropriate parameters. Click OK and download.

5. Verify the talkgroup has been added to the list of talkgroups.

6. To create units, for the Agency under which the unit should be placed, select Agency/"agency name"/Profile and create a profile with the talkgroup added in step 4. Next select Agency/"agency name"/Personality and create a personality containing the profile just created. Click OK and download.

7. Select Agency/"agency name"/Voice End User. Click Add Entry and then on the EndUser Detail screen input the User ID, password ("p25user"), Name, Description, etc. of the user. Modify privilege as desired. Click OK and download.

8. Verify the user ID has been added to the list of users.

9. Select Agency/"agency name"/Subscriber Unit and enter the appropriate User ID, IP Address, and ESN for the user created in step 7. Click OK and download.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.3 Site Access Control (UAS)

Setup

Access to UAS or an UAS client.

Ensure Regional Site Manager is connected into network and into site.

Radios 1 & 2 programmed with ID's valid on the site under test. Set to Group A.

Radio 3 programmed with an ID not valid on the site under test. Set to Group A.

Execution

1. If not already accomplished, download a database of valid radio ID's from the UAS to the site.
2. Program Radio 3 with an ID not within that list of valid radio ID's.
3. Attempt to PTT Radio 3. Verify access to the site is denied.
4. PTT Radio 1. Verify access to the site is permitted and audio is heard on Radio 2.
5. Enable Radio 3 in the UAS database and download.
6. PTT Radio 3. Verify access to the site is permitted and audio is heard on Radio 2.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.4 Subscriber Report (UAS)

Setup

Access to UAS or an UAS client.

Execution

1. Log into the UAS.
2. Select System/Report/Voice End User. Select the Region ID/Agency ID of the Region or Agency from which a subscriber report is desired. Modify Max Rows to a desired number.
3. Click the proper icon in the column to the right of Max Rows.
4. Verify the User ID's of the ROC & AOC selected are displayed. Select the Magnifying Glass icon for details on any specific User ID.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.5 Unit Enable/Disable

Setup

Obtain 2 radios switched to the same Group and note the IDs. Switch on the radios and ensure that they communicate. Verify all sites are on line. Note that Unit Disable will automatically delete the encryption key from the radio as it is disabled. To restore unit functionality, the radio must have the encryption key re-installed.

Execution

1. Select group A on both radios and verify that the radios can communicate.
2. From the UAS:
   Select UNIT ENABLE/DISABLE.
   Under the UNIT Enable/Disable tab, enter the ID of radio 1 to be modified.
   Select the DISABLE button and check the status.

3. Attempt to PTT the radio and verify that it will not communicate with the system. PTT radio 2 and verify that radio 1 cannot receive the call.

4. Enable the ID of radio 1. Verify that the Enable/Disable screen indicates that the Current State of the radio is Enabled. Confirm that the radios can communicate in unencrypted mode.

5. Switch off radio 2 and disable it from the Enable/Disable screen. Verify that the desired state is Disabled and the Current State is Enabled. Switch on the radio and verify that, on logging into the site, it becomes disabled. Verify that the State settings change to Disabled and that the radios cannot communicate.

6. Enable both radios and verify that radios can communicate communicate in unencrypted mode.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.6 Dynamic Regroup

Setup

Ensure that Dynamic Regroup is a feature of the customer's radios. Ensure that both the Radio ID's and the Talkgroup IDs to be used are in the database and that the database has been successfully uploaded to site(s).

Radio 1 set to Talkgroup A.
Radio 2 set to Talkgroup B.

Execution

1. From the UAS client, send a dynamic regroup command to Talkgroup C for Radio 1 and Radio 2.

2. Verify that Radio 1 and Radio 2 are forced to Talkgroup C.

3. At Radio 1 and Radio 2, attempt to change talkgroups away from Talkgroup C. Verify that both radios are forced to remain on Talkgroup C.

4. PTT Radio 1 on Talkgroup C. Verify that Radio 2 hears audio on Talkgroup C and can respond.

5. Clear the dynamic regroup command from the UAS client. Verify that both Radio 1 and Radio 2 are no longer forced to Talkgroup C (i.e., they can select other predefined talkgroups).

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.7 Unit Deregistration

Setup

Radio 1 allowed on System X, Site 1; programmed to Group A.
Radio 2 allowed on System Y, Site 1; programmed to Group B.

Note MES AGE timeout (in VNIC) for deregistration or reduce it to a smaller value just for the purpose of testing.

Execution

1. PTT Radio 1 on Group A and verify it communicates on the system to Radio 2. Return call from Radio 2 to Radio 1 on Group A.

2. Turn off radio 1 and wait for expiration of the radio timeout period.

3. PTT Radio 2 on System Y, Site 1 after expiration of timeout. Verify no channel is assigned to the System X, Site 1, since Radio 1 has deregistered from site.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.8 Real Time Site Monitoring (RNM)

Setup

Access to a Regional Network Manager and within radio coverage of a site connected to that Region.

Radio 1, Radio 2, and Console A operating on the site & NSC under test, all programmed with Group A.

Execution

1. On the RNM, open the real time event viewer for the site's channels by clicking the Realtime Viewers button from the Task Launcher. Click Site Calls. Select the site and expand. Select channels to add.

2. Place a group call from Radio 1 to Radio 2 on the site, and verify that the event viewer displays the talkgroup ID and calling party ID. Verify the state changes from Free to Talk. Verify the TG Alias displays the Group #.

3. Place an emergency call from Radio 1 to Radio 2 on the site, and verify that the event viewer displays the Emergency indication (in the VNIC Time Stamp column) in addition to the talkgroup ID and calling party ID.

4. Place an individual call from Radio 1 to Radio 2 on the site, and verify that the event viewer displays an Individual call on the channel. Verify the VNIC-assigned Talk Group ID changes with each transmission.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.9 Site Usage Reports (RNM)

Setup

Ensure radio traffic has occurred across the network recently. If necessary or desired, place some calls with a known radio ID on multisite talkgroups prior to running the test for reference during the test.

At the Regional Network Manager or Central Network Manager, enter a URL of "http://<RNM ip address>/report/", where <RNM ip address> is the IP address of the Network Manager under test.

Execution

1. From "site-oriented reports," select the following:

   - Report scope: display activity in region [Region ID under test].
   - Report type: Site-oriented reports/"Calls per site in the selected region"
   - Report duration: Yesterday
   - Chart options: top 20

2. Select "Create Report"

3. Verify a graph of "Calls by Site" displays with the Region's correct number of sites.

4. Click the hyperlinked numeric value under the Calls column. Verify a table indicating talkgroups, caller, duration, and sites is displayed.

5. Click the "Back" button in the web browser.

6. Click the numeric value under the Site ID column. Verify multiple graphs indicating the number of calls by hour, voice group, call type, User ID, etc. are displayed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.10 Infrastructure Summary (RNM or CNM)

Setup

Access to the Regional or Central Network Manager.

Execution

1. From the Task Launcher click Network Viewer. Expand the tree and select desired level (1,2,3) to view.

2. From the View menu, select Icons and verify the Infrastructure is presented in Icon view.

3. From the View menu, select List and verify the Infrastructure is presented in List view.

4. From the View menu, select Details and verify the Infrastructure is presented in Detail view.

5. Choose Icon view and select an Object. Right Mouse Click and select Properties or any other desired menu attribute to view information related to the object.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.11 Alarm Indications (RNM)

Setup

Access to the a site under test and its RNM. The alarm will need to be generated by a channel being physically powered-down. Refer to the Manual for explanation of the alarms. Note the time of the alarm condition for later tests.

Execution

1. Generate an alarm indication on the site by turning OFF a channel's repeater.

2. On the RNM, select the Network Viewer from the Task Launcher to view site alarms. Verify that the RNM indicates a site alarm for the affected channel (the object turns Red).

3. Turn the repeater back ON. Verify that the alarm clears after acknowledgement of the initial alarm (the object turns Green).

4. Review alarm details by performing a Right Mouse Click on an Object. Select the desired menu option.

5. Repeat showing alarms for Router Failure, RF Interference, Site Link failure.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.12 Site Reconfiguration

Setup

Access to the Regional Network Manager and a site under test with at least 3 channels.

Radios 1 & 2 operating on the site, using Group A.

Execution

1. In the RNM, access the screen to configure channel parameters.
2. Make a site configuration change, such as forcing the Control Channel to operate on just channels 1 & 2 of the site. Download changes to the site.
3. Force the Control Channel to rotate from Channel 1 to Channel 2 by holding the reset button on the SitePro card for 3 seconds. Observe that the Control Channel rotates to Channel 2.
4. Force the Control Channel to rotate from Channel 2 by holding the Channel 2 SitePro card reset button for 3 seconds. Observe that the Control Channel rotates back to Channel 1, rather than to Channel 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4. *P25 SITE FEATURES*

Setup

This setup applies to the tests contained in this section. Three radios are required, programmed as follows:

(Utilize test or customer data base groups A, B, C & D as specified here)

Radio 1:	All Call group (Group A)
Radio 2:	(Group A) (Group B)
Radio 3:	(Group A) (Group C) (Group D)

Note1: Additional radios are required for Call Queue Declaration Alert test.
Note 2: Group priorities 5 = 200 (@ UAS), 3 (@ site) highest
4 = 100 (@ UAS), 7 (@ site) mid
3 = 10 (@ UAS), 10 (@ site) lowest

Group matrix			
Name	**GID**	**Priority**	**Comments**
Group A		5	
Group B		4	
Group C		4	
Group D		3	
Group E		3	Announcement Group for Group A, B, C and D.

4.1 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.

3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.2 Individual (Private) Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.

2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.

3. Release the PTT on radio 1 and immediately PTT on radio 2.

4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.

5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.

6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.

7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.

8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.3 Recent User Priority

Setup

This test requires 2 more trunked radios than there are site working channels. Disable channels (if necessary) until there are 2 working channels at the site. Thus, 4 radios are required for this test. Set up the radios 1, 2, 3, and 4 to different talkgroups, with each talkgroup configured for equal talkgroup priorities. Save and upload the database if required.

This test is to be run with no other users on the system and at intervals as set in the Recent Caller Interval (a time of greater than 10 seconds is recommended for the test which is configurable in the SitePro).

Execution

1. PTT and release radio 1 (establish a recent user entry).
2. PTT radios 3 and 4 and hold on transmit to busy both working channels.
3. PTT and release radio 2 (queue a call less recent than radio 1).
4. PTT and release radio 1 (queue the recent user).
5. Unkey radio 4 and verify that radio 1 unqueues and transmits.
6. Unkey all radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.4 Call Priority for Group IDs

Setup

This test requires two more radios than there are site working channels. The procedure is presented assuming there are two working channels. Disable channels (if necessary) until there are two working channels on the site. Thus, 4 radios each with a different group are required for this test. At the group database, set up the groups of radios 1, 2 and 3 for voice call priority 3 (medium). Set up the group of radio 4 for priority 6 (highest). Make sure the ID voice priority of each of the radios is less than or equal that of the respective Group ID (GID) voice priority. Save and upload the database.

Execution

1. PTT radios 1 and 2 and hold on transmit to busy both working channels.
2. PTT and release radio 3 (medium priority entry into the queue).
3. PTT and release radio 4 (high priority entry into the queue).
4. Unkey radio 1 and verify that radio 4 unqueues and keys.
5. Unkey radio 2 and verify that radio 3 unqueues and keys.
6. Unkey all radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.5 Single Site Call Queue Declaration Alert

Setup

This test requires two more radios than the number of working channels on the selected system used for test. To minimize the test setup and radio requirements for sites with many channels, channels may be disabled on the site so only two working channels are operational.

Set up a number of radios equal to the number of operational working channels on the selected system (radio x, radio y, etc.) each with a different valid talk group selected.

Set up two additional test radios (radio 1, radio 2) both with the same valid group selected. This talk group must be different than the groups selected by the other test radios.

Ensure that group scan is disabled on all the radios.

Execution

1. Busy up all working channels on the system with the first set of radios (radio x, radio y, etc.) by pressing and holding the PTT button on each of the radios.
2. With all working channels busied, momentarily press and release the PTT button on test radio 1.
3. Verify that a Call Queued tone is heard at the radio.
4. Unkey (release PTT button) one of the first set of radios, ex. radio x.
5. Verify that radio 1 is assigned to the freed working channel and the grant tone is heard at the radio, without having to rekey the radio (redepress the PTT button).
6. Press the PTT button on radio 1 within the autokey time applicable to the radio type (approx. 2 seconds) to keep the assigned channel.
7. Verify that audio from radio 1 is heard at radio 2.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.6 Emergency Call Priority for Group IDs

Setup

This test requires the same setup as for Call Priority with one of the radios programmed as a Supervisor radio (enabled to clear emergencies).

Execution

1. PTT radios 1 and 2 and hold on transmit to busy both working channels.
2. PTT and release radio 4 (high priority entry into the queue).
3. Declare an emergency on radio 3 (medium priority entry into the queue but now at Emergency Priority).
4. Unkey radio 1 and verify that radio 3 unqueues and is assigned a channel without having to PTT. (Key the radio within the specified autokey time in order to keep the channel.)
5. Unkey all radios and clear the emergency with the Supervisor radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.7 Unit to Unit Call Alert Paging

Setup

Radio 1 with Call Alert programmed into a button ("PAGE") and Radio 2's ID programmed into its Individual Call list.

Radio 1 & Radio 2 on the same site.

Execution

1. Select the PAGE function from the MENU on Radio 1. Select Radio 2 from the preprogrammed list of radios and PTT Radio 1.
2. Verify Radio 1 displays "*TX PAGE" on the second line.
3. Verify Radio 2 displays the ID of Radio 1 on its first line and "*RX PAGE" on the second line. Verify Radio 2 beeps multiple times to indicate a received page.
4. Verify Radio 1 beeps multiple times to indicate the page was successfully sent.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.8 Out of Range Tone on PTT

Setup

One radio with valid ID and valid group on selected system.

System scanning disabled in radio personality as necessary for specific radio type being tested.

Execution

1. With valid group selected, and radio initially logged into and monitoring the control channel on the selected system, reduce the signal strength reaching the radio by some means (ex. unscrewing and removing the portable radio antenna, or moving further from the site).

2. Verify that the radio indicates loss of control channel on the display when the received signal strength is sufficiently reduced (i.e. out of range of system).

3. Press PTT button on radio, and verify that an out of range tone is heard at radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.9 Transmit Denied (for Invalid radio ID)

Setup

Program system so that radio ID is not valid on the site under test. Download database to site.

Execution

1. Press PTT button on radio with valid group selected.
2. Verify the radio is prohibited access to system.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5. *P25 TRUNKED FEATURES*

Setup

This setup applies to the tests contained in this section. Three radios are required, programmed as follows:

(Utilize test or customer data base groups A, B, C & D as specified here)

Radio 1:	All Call group (Group A)
Radio 2:	(Group A) (Group B)
Radio 3:	(Group A) (Group C) (Group D)

Note1: Additional radios are required for Call Queue Declaration Alert test.
Note 2: Group priorities 5 = 200 (@ UAS), 3 (@ site) highest
4 = 100 (@ UAS), 7 (@ site) mid
3 = 10 (@ UAS), 10 (@ site) lowest

Group matrix					
Name	**GID**	**Priority**	**Encryption**	**Key**	**Comments**
Group A		5			
Group B		4			
Group C		4			
Group D		3			
Group E		3			Announcement Group for Group A, B, C and D.

5.1 All Call

Setup

Set radio 1 to All Call, radio 2 to (Group A) and radio 3 to (Group C).

All Call is defined in the I-Call set.

Execution

1. Place the All Call from radio 1.
2. Audio should be heard at radios 2 and 3.
3. Set radio 2 to (Group B) and radio 3 to (Group C).
4. Place the All Call from radio 1.
5. Audio should be heard at radios 2 and 3.

6. Repeat the previous steps for encrypted voice, if applicable.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.2 Announcement Group Call

Setup

Set radio 1 to (Group E).
Set radio 2 to (Group A).
Set radio 3 to (Group B). Groups A & B are in Announcement Group E per test group structure. Ensure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. ANNOUNCE should be displayed at radios 2 and 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.3 Transmission Trunking

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Verify transmission trunking operation by noting that repeater channel in use is freed after PTT is released (i.e., no message trunking operation).

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.4 Transmit Grant Tone

Setup

One radio with valid ID and valid group on selected system.

Grant tone (Ready to Talk tone) enabled in radio personality as applicable for specific radio type being tested.

Execution

1. Press PTT button on radio with valid group selected.

2. Verify grant tone is heard at radio when working channel access is granted.

Note: If the call is queued, the grant tone will be delayed until the call is assigned a working channel.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.5 Group Scan

Setup

Two radios (radio 1, radio 2) each with valid IDs and two valid groups (group A, group B) on selected system.

Radio 1 set up with group A and group B in the scan list, group A selected, and group scan initially disabled.

Execution

1. Place a call from radio 2 on talk group A.
2. Verify the call is received and audio is heard on radio 1.
3. Place a call from radio 2 on talk group B.
4. Verify the call is not received by radio 1.
5. Enable group scan on radio 1.
6. Place another call from radio 2 on talk group B.
7. Verify that the call is now received and audio is heard on radio 1.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.6 Priority Scan

Setup

Set radio 1 to priority scan Group A and scan (at lower priority) Group B. Set radio 1 to Group C. Have scan enabled on radio 1.

Set radio 2 to Group B.

Set radio 3 to Group A.

Execution

1. With group C selected on radio 1, place a call from radio 2 on Group B.

2. Verify radio 1 scans to Group B and hears audio from radio 2. Continue transmitting from radio 2.

3. Place a call from radio 3 on Group A.

4. With radio 2 still transmitting on Group B, verify radio 1 priority scans to Group A and hears audio from radio 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.7 Transmit Busy Lockout

Setup

Two radios (radio 1, radio 2) each with valid IDs and same valid group on selected system.

Talk group used for test must be set up as transmission trunked. This feature does not apply to message trunked calls.

Execution

1. Place a call from radio 1 on selected talk group by pressing and holding the PTT button.

2. Verify the call is received and audio is heard on radio 2.

3. While the call is in progress, press the PTT button on radio 2.

4. Verify that radio 2 does not transmit over (step on) the call in progress.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.8 Continuous Control Channel Update

Setup

This test requires two trunked radios and a test group.

Execution

1. Set both radios to the test group.
2. Turn one radio OFF.
3. Key one radio and hold. Turn ON the second radio (and set it to the test group if necessary).
4. Verify that the second radio joins the call in progress and hears audio from the call in progress.
5. Unkey the first radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.9 Convert To Callee

Setup

This is a test of single site simultaneous call arbitration. Have two radios programmed to operate on the same site and group.

Execution

1. Set two radios to the same site and group.
2. Key both radios at the same time.
3. Verify that one radio ends up transmitting and the other ends up receiving.
4. Verify that the call audio is routed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.10 Multi-site Announcement Group Call

Setup

Set radio 1 to (Group E).
Set radio 2 to (Group A).
Set radio 3 to (Group B). Groups A & B are in Announcement Group E per test group structure. Ensure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. ANNOUNCE should be displayed at radios 2 and 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.11 Multisite Emergency Group Call

Setup

Program three radios with the same emergency home group. Set the supervisor radio (radio 1) and radio 2 to the home group. Set radio 3 to a different group (not home group). The radios must remain logged onto different sites.

Execution

1. Press the Emergency call button on radio 3 and talk within the pre-defined Emergency Autokey time, and/or PTT radio 3 during or just after that time.

2. Verify that radio 3 indicates the "TX EMER" declaration and that it reverts to the home group.

3. Verify that radio 1 (on Site 1) and radio 2 (on Site 2) indicate a "RX EMER" and hear audio on the emergency home group.

4. Clear the emergency with the Supervisor radio (radio 1). Verify the emergency clears in the radios.

5. Repeat the previous steps for encrypted voice.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.12 Multi-site Routing (for Multi-site Logout)

Setup

This test requires the following:
Radio 1, logged into Site 1.
Radio 2, logged into Site 2.

Note: Site 1 and 2 should be selected such that Radio 2 can log into Site 1 and then Site 2. If coverage prevents this, then program a third radio with the ID of Radio 2. Use the third radio to key on Site 1 with the ID of Radio 2 whenever the test procedure calls for this. The primary objective of this test is to demonstrate that the system routes calls to Site 2 whenever a unit (i.e. radio 2) is logged onto Site 2 and does not route calls to Site 2 when no units are logged into Site 2.

Execution

1. Key Radio 1 on Site 1. Verify channel assignments occur on Site 2. Unkey radio.

2. Key Radio 2 on Site 1 (Radio 2 is no longer logged into Site 2). Verify no channel assignment occurs on Site 2 since there are no radios logged into Site 2. Unkey radio.

3. Key Radio 1. Verify no channel assignment occurs on Site 2 since there are no radios logged into Site 2. Unkey radio.

4. Key Radio 2 on Site 2. Verify a channel assignment occurs on Site 2. Unkey radio.

5. Key Radio 1. Verify a channel assignment occurs on Site 2 since Radio 2 is logged into Site 2. Unkey radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.13 Site Trunking (Failsoft) Indication

Setup

Radio 1 and Radio 2 enabled on the Site under test (Site 1), using Talkgroup A. Both radios must have a display.

Radio 3 on a different Site (Site 2) also programmed with Talkgroup A.

Execution

1. Verify that the Radio 1, Radio 2, and Radio 3 can communicate on the system.

2. Turn OFF power to or disconnect the SiteLink, causing loss of communication from the site back to the Network Switching Center.

3. Verify that Radio 1 and Radio 2 indicate a Failsoft alarm ("F") on their displays.

4. PTT Radio 1 on Talkgroup A. Verify audio is heard at Radio 2. Verify audio is not heard on Radio 3.

5. Reenable the SiteLink. Verify the Failsoft alarm disappears on the radios and that communications with Radio 3 is reestablished.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.14 Unconfirmed Call (Multisite Late-Enter)

Setup

Log Radio 1 into Site 1 on the test group A.
Log Radio 2 into Site 2 on the test group A.
Log Radio 3 into Site 2 on the test group A.
Make sure that Confirm Call is disabled for test group A at the two sites.

Execution

1. Key up additional radios on different groups (e.g., B & C) on Site 1 so that there are no channels available to process a call on Group A on Site 1. To reduce the number of radios required, some of the working channels on Site 1 can be disabled while performing this test.

2. Key up Radio 2 on Group A on Site 2. Radio 2 should get the grant tone and the call should go through to Radio 3 on Site 2. Since Site 1 has no channels available, the call should not go through to Radio 1 on Site 1.

3. While Radio 2 is still keyed up, free up a channel on Site 1.

4. Verify that the call gets routed to Site 1 and that Radio 1 late-enters into the call on that site.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.15 Confirmed Call

Setup

In the system, enable Confirm Call on a test group. Ensure that the group is set up for multisite operation.

Log the radios to the sites as follows:
Radio 1, Site 1 on the test group A
Radio 2, Site 2 on the test group A

Additional radios are required to busy the working channels. If the system is large, it might be necessary to disable channels at the two sites.

Execution

1. Key up additional radios on Site 1 so that there are no channels available to process a call on the Test Group on Site 1. To reduce the number of radios required, some of the working channels on Site 1 can be disabled while performing this test.

2. Key Radio 2 on Site 2 and verify that the confirmed call is not allowed to proceed until the "Confirmed Call Timeout" period has expired. The call should go through to Site 2, but not to Site 1.

3. Repeat this test, but this time, free up a channel on site 1 before the "Confirmed Call Timeout" period expires. Verify that the call goes through to both Site 1 and Site 2.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6. *P25 SIMULCAST BYPASS OPERATION*

This test is only applicable to GPS simulcast systems.

6.1 Setup

Program the TX site SitePro modules (both Control Points and Transmit Sites) to the Final Configuration. Refer to the installation manual for the guide to setting TX SitePros / CP SitePros personality parameters.

Verify the BYPASS plan has been reviewed and approved by customer representative. This procedure makes assumptions on bypass sites before implementation and test of the Miami-Dade System. After WMS/Panther signal strength data collection, final decision will be made on the actual bypass "ON" and "OFF" sites

Prepare a minimum of two terminal radios programmed to operate on the active BYPASS site and the main simulcast system.

MIAMI-DADE BYPASS MATRIX

Site	SITE	SYSTEM	BYPASS	Other Notes
Nomen.			On/Off	
Plan to be developed at Customer Design Meeting(s)				

6.2 Site OFF - Final Configuration

Execution

Sites intended to be "OFF" in event of BYPASS must have all channels set to "N" for CC, Clear Voice, Digital Voice, and Data fields in the TX Site SitePro modules.

1. Starting with site "2S", create a condition to force BYPASS by switching LCL/BYPS switch on BYPASS Module to the ON position *(at the TX site).*

2. Verify transmit site is in BYPASS mode. BYPS LED on Bypass module and the SitePro module display indicates "WC" instead of "SSWC" or "SSCC". Note: WC= Working Channel, standalone mode, SSWC=Working Channel, simulcast mode, and SSCC= Control Channel, simulcast mode.

3. Observe the repeater (station) SitePro modules. Verify there is no active control channel.

4. Verify no stations are keyed or producing RF power.

5. Restore the site to normal by returning the LCL/BYPS switch to the OFF position.

6. Verify transmit site is in normal simulcast mode. BYPS LED on Bypass module and SitePro modules indicate either "SSWC" or "SSCC".

7. Repeat steps 1-6 for the remaining "OFF" bypass sites in the simulcast system under test.

Results (Pass/Fail) _____

Tester: _____ Date: _____

Comments: _____

_____

_____

6.3 Site ON - Final Configuration

Execution

Sites intended to be "ON" and active in event of BYPASS must have channels intended to be active set to "Y" for CC, Clear Voice, Digital Voice, and Data fields, and inactive channels set to "N".

1. Create a condition to force BYPASS by switching LCL/BYPS switch on BYPASS Module to the ON position *(at the TX site).*

2. Verify transmit site is in BYPASS mode. BYPS LED on Bypass module and the SitePro module display indicates either "WC" or "CC" instead of "SSWC" or "SSCC".

3. Observe the stations/repeater SitePro modules. Verify there is an active control channel on one of the SitePro modules. The remaining repeater/stations SitePro modules will indicate "WC".

4. Verify the station appearing as control channel is keyed, producing RF power and modulated with control channel data.

5. Verify a terminal radio set to the system programmed for the site in BYPASS with the correct site ID recognizes the site's control channel data.

6. Key the terminal radio on a group call.

7. Verify a working channel assignment is made within the channel group allowed in the personality.

8. Verify the call is heard on a second terminal radio set to the active BYPASS system.

9. Restore the site to normal by returning the LCL/BYPS switch to the OFF position.

10. Verify transmit site is in normal simulcast mode. BYPS LED on Bypass module and SitePro modules indicate either "SSWC" or "SSCC".

11. Repeat sections 2.1.1 and 2.1.2 for the remaining simulcast systems.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.4 Control Point Trunking Reset Control

A properly set up Simulcast BYPASS system will disable (hold in RESET) CPSitePro modules associated with active channels at a TX site operating in BYPASS. This keeps the remaining sites operating in Simulcast mode from being assigned to channels expected to be active at the site in BYPASS. Sites programmed to be OFF in BYPASS will not require any CPSitePro to be held in RESET.

This test will verify that the Control Point SitePro modules will be held in RESET corresponding to the active channels at a site as a result of the TX site being in BYPASS.

NOTE

This procedure requires simultaneous activity at the Control Point and Transmit Site.

Execution

1. Force a TX site that will become active into BYPASS by switching LCL/BYPASS switch on the BYPASS module to the ON position *(at the TX site).*

2. Verify TX site is in BYPASS mode.

3. Verify transmit site is in BYPASS mode. BYPS LED on Bypass module and the SitePro module display indicates either "WC" or "CC" instead of "SSWC" or "SSCC".

4. Verify the Control Point "E" leads have become "inactive" by observing that the BYPASS LED on the System Bypass board located at the rear of the Common Rack associated with the site in BYPASS is ON.

5. Verify the System Bypass board OVERRIDE LED is OFF for the site in BYPASS, and its RESET ACTIVE LED is ON.

6. Verify the CPSitePro modules on the channels intended to be OFF are held in RESET. (on channel assignments.)

7. Observe the Site Manager monitor screen for the simulcast system. Verify the channels intended to be OFF at the Control Point display GETC Poll Failure as a result of being held in RESET.

8. Restore the site to normal by returning the LCL/BYPS switch to the OFF position *(at the TX site).*

9. Verify the TX site SitePro modules revert to normal Simulcast.

10. Verify the Control Point "E" lead has returned to the "active" state by observing that the LED on the System Bypass board associated with the site in BYPASS is OFF.

11. Verify the System Bypass board OVERRIDE LED is OFF for the site in BYPASS, and its RESET ACTIVE LED is OFF.

12. Verify the CPSitePro modules associated with the site in BYPASS are returned to normal *(Not in RESET).*

13. Verify Site Manager Monitor screen indicates GETC poll failures clear as a result of the CPTC RESET condition being cleared.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7. MAESTRO^{IP} P25 DISPATCH FEATURE SET

These tests assume a valid LID/GID database with aliases defined for the test entities has been set up, privileged and programmed into the console under test. It also assumes radios have been programmed with the above test entities. Tests can be conducted first with the microphone/select speaker and then with the headset.

7.1 Transmitting With a Microphone (Group Calls, I Calls)

Setup

Choose a group to use as a test group

Program a radio with the test group.

Program a console module with the test group.

Review Console User Profile settings for Console under Test (i.e. Audio Indicators).

7.1.1 Talk Group Call

Execution

1. Press the INSTANT TX function (for example right mouse button) on the module with the test group. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the Instant TX key.

2. Press the SELECT button on the module with the test group. Verify that the SELECT indication for that module becomes highlighted.

3. Press the SELECT TX function. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the SELECT TX function.

4. Press the PTT foot pedal. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the foot pedal.

5. Repeat the procedure with an encrypted talk group, if applicable.

7.1.2 Individual (Unit-to-Unit) Call

Execution

1. Program a module with the ID of the test radio. Select the console module with the test unit ID.

2. Press the SELECT TX function. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the SELECT TX function.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.2 Receiving Calls (Unit ID Display, Talkgroup ID Display, Aliasing)

Setup

Program the test group into a module.

Set a radio to the test group.

7.2.1 Talk Group Call

Execution

1. Unselect the console module with the test group. Key the radio and verify that the call is heard at the Unselect speaker and that the calling radio ID and the Call Indicator are displayed.

2. Select the console module with the test group. Key the radio. Verify that the call is heard at the select speaker and that the calling radio ID and the Call Indicator are displayed.

3. Key the radio. Verify that the module call light is on, the call is heard at the Select speaker and the calling radio ID is displayed.

4. Repeat the procedure with an encrypted talk group, if applicable.

7.2.2 Individual (Unit-to-Unit) Call

Execution

1. Program a module with the ID of the test radio.

2. Select the console module with the test unit ID. Call the console from the radio (ICALL with Console ID). Verify that the call is heard at the select speaker and that the calling radio ID and the Call Indicator are displayed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.3 Emergency Call and Emergency Alarm

Setup

This test requires a test radio capable of generating and clearing an emergency (i.e. Supervisor Radio).

Execution

1. UNSELECT the test group. Using the test radio, declare an emergency on the test group.
2. Verify the module turns red, the 'EMER' flag is briefly displayed in the module, the ID/Name of the test radio is displayed, the emergency message is displayed in the message window, and the emergency alert tone is heard on the console.
3. Pick the module with the emergency and depress 'Alarm Reset'. Verify the alert tone is silenced on the console, but the emergency is still displayed.
4. Select and transmit on the group with the emergency. Verify the test radio receives the call, and is still in emergency mode.
5. Clear the emergency using the 'EMER CLR' key. Verify the module no longer indicates an emergency.
6. Transmit on the test radio and verify the emergency is cleared and normal group calls have resumed.
7. With the test group selected on the console, declare an emergency on the test group. Verify the console and radio have the same indications as steps 2 to 4.
8. Clear the emergency with the console.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.4 Agency Broadcast (System Wide Call)

Setup

Choose an agency to use as a test group

Program at least two radios with different subfleets but in the same test agency.

Program a console module with the test agency.

Review Console User Profile settings for Console under Test (i.e. Audio Indicators).

Execution

1. Press INSTANT TX on the module with the test agency. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radios. Release the Instant TX key.

2. Press the SELECT button on the module with the test group. Verify that the SELECT indication for that module becomes highlighted.

3. Press the SELECT TX function. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radios. Release the SELECT TX function.

4. Press the PTT foot pedal. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radios. Release the foot pedal.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.5 Alert Tones

Execution

1. Press the SELECT button on the module with the test group. Verify that the SELECT indication for that module becomes highlighted.

2. Press and hold the foot pedal or 'Selected Transmit' key. The test radio will receive the call. While still transmitting, press one of the three alert tone keys (Alert, Pulse, Warble). Verify the alert tone is received by the radio and also heard on the console.

3. While not transmitting, press and hold one of the alert tone keys. Verify the console transmits on the selected group, the test radio receives the call, and the alert tone is heard by the radio and console. When the Alert tone key is released, verify the call drops.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.6 Console Pre-Empt

Setup

Choose a group to use as a test group

Program two radios with the test group.

Program a console module with the test group.

Execution

1. Key the first radio on the test group and hold the call up. Verify that audio is heard at the second radio and the console.

2. Key the console on the test group and hold the second, pre-empting call up. Verify that the XMT indicator is displayed along with the pre-empted caller LID and CALL indicator. Verify that the second radio begins to hear the console audio and not the first radio call. Verify that the pre-empted radio audio is still heard on the pre-empting console.

3. Unkey the first radio. Verify that the pre-empted caller LID and CALL indicators are removed and the pre-empted radio audio is no longer heard on the pre-empting console.

4. Unkey the console. Verify that the call drops.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.7 Simulselect

Setup

Program four test groups.
Have on hand 2 radios programmed to 2 of the test groups and logged on to site.

Execution

1. Create a 4 group Simulselect on the 4 test group modules. Verify that the ACTIVE indicator (i.e. S1 displayed in each module) for SIMULSELECT 1 comes ON and the SELECT indicators of the 4 group modules are ON and highlighted, respectively.

2. Un-select SIMULSELECT 1 and verify that the active indicator goes OFF.

3. Re-activate SIMULSELECT 1. Verify that the ACTIVE indicator comes ON.

4. Modify SIMULSELECT 1 by removing two of the groups in the Simulselect. This results in a two group Simulselect. Verify that the ACTIVE and SELECT indicators of the two remaining groups are ON and highlighted, respectively and the ACTIVE and SELECT indicators of the two deleted groups are OFF.

5. Set one radio on each of the test groups in the Simulselect and turn scan off. Activate and select SIMULSELECT 1. Key one of the radios on its test group. Verify that the call is heard at the select speaker and not at the other radio.

6. Repeat the previous step, except key the other radio.

7. Transmit from the console on SIMULSELECT 1. Verify that audio is heard at both radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.8 Patch

Setup

Program four test groups.

Have on hand, 2 radios programmed with 2 of the test groups and logged on to sites.

Execution

1. Create a 4 group patch on PATCH 1. Verify that the ACTIVE indicator for PATCH 1 (i.e. P1 indicator in each module) comes ON and the four modules are included in the patch.

2. De-activate PATCH 1 and verify that the ACTIVE indicator goes OFF.

3. Re-activate PATCH 1. Verify that the ACTIVE indicator comes back ON.

4. Modify PATCH 1 by removing two of the groups in the patch. Verify this results in a two group patch. Verify that the patch indicators of the two

remaining groups are ON and the patch indicators of the two deleted groups are OFF.

5. Set each radio to a different test group in the patch and turn scan off.

6. Activate and Select PATCH 1.

7. Key one of the radios on its test group. Verify that the call is heard at the other radio and at the select speaker.

8. Repeat the previous step, except key the other radio.

9. Key the console by pressing the transmit bar. Verify that audio is heard at both radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.9 Console to Console Interaction (Intercom and Crossmute)

7.9.1 Console Intercom

1. On Console A, program a module with the console ID of Console B. On Console B, program a module with the console ID of Console A. Select this module on both consoles. Transmit from Console A on the module for Console B.

2. Verify on Console A that 'XMIT' is displayed in the module. Verify that on Console B, 'BUSY' is displayed in the module. Release the transmit from Console A.

3. Answer the call at Console B by transmiting from Console B on the module for Console A.

4. Verify on Console B that 'XMIT' is displayed in the module. Verify that on Console A, 'BUSY' is displayed in the module. Release the transmit from Console B.

7.9.2 Console Crossmute

Setup

Establish two consoles (A and B) to test the Crossmute function. The Consoles must be on the same NSC. Program and select a test group on both consoles.

Execution

1. Place a call on console A on the test group.
2. Verify that console B can hear console A in the select speaker.
3. At console B, mute console A.
4. Place a call on console A on the test group and verify that it cannot be heard at console B.
5. Restore the desired cross mute setup.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.10 Call History

Setup

This tests compares programmed module call activity to the history scroll lists. Utility page, dispatch menu will be selected. Select either the "Select History" or "Unselect History".

Execution

1. Press the 'Scroll Up' and 'Scroll Down' buttons to scroll through the Unselect call history list. Compare these calls with known activity.
2. Press the 'Scroll Up' and 'Scroll Down' buttons to scroll through the selected call history list. Compare these calls with known activity.
3. Press the 'Esc' button to exit the history scroll mode.
4. To monitor call history on a single group use the 'module history' button (on the 'module modify' menu. Use the 'scroll up' and 'scroll down' buttons to scroll through the calls for the picked module. Compare these calls with known activity.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.11 User Definable Screens

Setup

Verify User Definable Screens (UDS) is installed on a Maestro Dispatch Console. This console may be used to develop and verify the custom screen configurations required by the customer dispatch center operations.

Execution

In the C3 Maestro Configuration Editor verify the appropriate message text is defined for the Radio Status message that will be used.
Example:

Number	Type	Message Text
1	RSM	RSM1-TXT
2	RSM	RSM2-TXT
3	RSM	In Route

In the UDS modify Screen File #2 as follows:

A) Use the PAGE pull-down menu and select "BUTTON TEXT and COLOR".
B) Change LABEL TEXT for PAGE button number 1 to "Fire Dispatch".
C) Change LABEL TEXT for PAGE button number 2 to "Police Dispatch".

In the UDS modify Screen File #2 as follows:

A) Use the MODULE pull-down menu and select ADD and RSM to add the previously defined RSM status
B) Position the module where desired on the console screen layout.
Note: Existing modules may need to be deleted to make room for the new RSM modules.

Restart the C3 Maestro application and verify the changes have taken place on the Dispatch Screen.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8. *HIGH AVAILABILITY FAILOVER TESTS*

8.1 Primary VNIC Failover

Setup

Locate the primary NSS1 server. From the root user login screen, initaite a VNIC failover by typing VNICshutdown.

Execution

1. Note that Primary VNIC (NSS1) goes down.
2. Verify that Secondary VNIC (NSS2) becomes Primary.
3. Verify call functionality by making group and individual radio calls.
4. Verify that NSS1 VNIC comes back into operation as the standby VNIC.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.2 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.
3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.3 Individual Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.
2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.
3. Release the PTT on radio 1 and immediately PTT on radio 2.
4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.
5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.
6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.
7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.
8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.4 Secondary VNIC Failover

Setup

Locate the primary NSS2 server. From the root user login screen, initaite a VNIC failover by typing VNICshutdown.

Execution

1. Note that Primary VNIC (NSS2) goes down.
2. Verify that Secondary VNIC (NSS1) becomes Primary.
3. Verify call functionality by making group and individual radio calls.
4. Verify that NSS21 VNIC comes back into operation as the standby VNIC.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.5 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.

3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.6 Individual Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.

2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.

3. Release the PTT on radio 1 and immediately PTT on radio 2.

4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.

5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.

6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.

7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.

8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.7 Primary Router (bss1) Failover

Setup

Locate the primary bss1 router. From the admin user login screen, initaite a reset to fail the router.

Execution

1. Note the primary bss1 router goes down.
2. Verify the secondary bss2 router becomes Primary by;
3. Verify call functionality by making group and individual radio calls.
4. Verify primary bss1 router comes back into operation after reboot.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.8 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.
3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.9 Individual Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.
2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.
3. Release the PTT on radio 1 and immediately PTT on radio 2.
4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.
5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.
6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.

7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.

8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

Staging/Factory Functional Test Procedures

for

Miami-Dade

SAT-EN0011B Rev – A

P25 Simulcast System

394

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ABOUT THIS DOCUMENT

This document was specifically prepared for the customer shown below. Each section of this document is individually maintained in the Harris document control system. The revisions of each section are individually listed.

Customer:	Miami-Dade
Prepared By:	Shaun Hancock, Harris Corporation
Total Test Pages:	**46**

DOCUMENT USAGE

Many of the tests in this document will need to be run on multiple pieces of equipment. For instance a console test may be run on three consoles. For tests that need to be run multiple times, log in the comment section of the result box the identifier of the equipment tested. Although specific tests are not included relating to electrical measurements or timing parameters of equipment, these tests and levels are conducted and recorded as part of Harris' standard installation practices. These parameters include but are not limited to:

- Transmit Frequency and Deviation
- Output and Reflected Power
- Receiver Sensitivity
- Receiver Multicoupler Gain (if applicable)
- Receiver Preamplifier Gain (if applicable)
- Time Domain Reflectometry of Transmission Line
- Combiner Loss (if applicable)
- Audio line out
- Audio line in

System parameters and measurements will be provided to Miami-Dade as part of the final documentation package.

SUBSCRIBER UNIT USAGE

All tests for subscriber (terminal) units in this document will be performed with Harris subscriber units unless the test setup identifies another Vendor's subscriber unit to be used for the test.

1. *CUSTOMER APPROVAL*

This Acceptance Test Procedure has been read and approved for use as the system acceptance test.

Miami-Dade Representative	Harris Corporation – Systems Engineer
Signature	Signature
Printed name and title	Printed name and title
Miami-Dade Representative	Harris Corporation – Project Manager
Signature	Signature
Printed name and title	Printed name and title

2. *SYSTEM ACCEPTANCE*

This Acceptance Test Procedure has been successfully completed.

Customer Representative	Harris
Signature	Signature
Printed name and title	Printed name and title
Date	Date

3. P25 SITE FEATURES

Setup

This setup applies to the tests contained in this section. Three radios are required, programmed as follows:

(Utilize test or customer data base groups A, B, C & D as specified here)

Radio 1:	All Call group (Group A)
Radio 2:	(Group A) (Group B)
Radio 3:	(Group A) (Group C) (Group D)

Note1: Additional radios are required for Call Queue Declaration Alert test.
Note 2: Group priorities 5 = 200 (@ UAS), 3 (@ site) highest
4 = 100 (@ UAS), 7 (@ site) mid
3 = 10 (@ UAS), 10 (@ site) lowest

Group matrix			
Name	**GID**	**Priority**	**Comments**
Group A		5	
Group B		4	
Group C		4	
Group D		3	
Group E		3	Announcement Group for Group A, B, C and D.

3.1 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.

3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.2 Individual (Private) Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.

2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.

3. Release the PTT on radio 1 and immediately PTT on radio 2.

4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.

5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.

6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.

7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.

8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.3 Recent User Priority

Setup

This test requires 2 more trunked radios than there are site working channels. Disable channels (if necessary) until there are 2 working channels at the site. Thus, 4 radios are required for this test. Set up the radios 1, 2, 3, and 4 to different talkgroups, with each talkgroup configured for equal talkgroup priorities. Save and upload the database if required.

This test is to be run with no other users on the system and at intervals as set in the Recent Caller Interval (a time of greater than 10 seconds is recommended for the test which is configurable in the SitePro).

Execution

1. PTT and release radio 1 (establish a recent user entry).
2. PTT radios 3 and 4 and hold on transmit to busy both working channels.
3. PTT and release radio 2 (queue a call less recent than radio 1).
4. PTT and release radio 1 (queue the recent user).
5. Unkey radio 4 and verify that radio 1 unqueues and transmits.
6. Unkey all radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.4 Call Priority for Group IDs

Setup

This test requires two more radios than there are site working channels. The procedure is presented assuming there are two working channels. Disable channels (if necessary) until there are two working channels on the site. Thus, 4 radios each with a different group are required for this test. At the group database, set up the groups of radios 1, 2 and 3 for voice call priority 3 (medium). Set up the group of radio 4 for priority 6 (highest). Make sure the ID voice priority of each of the radios is less than or equal that of the respective Group ID (GID) voice priority. Save and upload the database.

Execution

1. PTT radios 1 and 2 and hold on transmit to busy both working channels.
2. PTT and release radio 3 (medium priority entry into the queue).
3. PTT and release radio 4 (high priority entry into the queue).
4. Unkey radio 1 and verify that radio 4 unqueues and keys.
5. Unkey radio 2 and verify that radio 3 unqueues and keys.
6. Unkey all radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.5 Single Site Call Queue Declaration Alert

Setup

This test requires two more radios than the number of working channels on the selected system used for test. To minimize the test setup and radio requirements for sites with many channels, channels may be disabled on the site so only two working channels are operational.

Set up a number of radios equal to the number of operational working channels on the selected system (radio x, radio y, etc.) each with a different valid talk group selected.

Set up two additional test radios (radio 1, radio 2) both with the same valid group selected. This talk group must be different than the groups selected by the other test radios.

Ensure that group scan is disabled on all the radios.

Execution

1. Busy up all working channels on the system with the first set of radios (radio x, radio y, etc.) by pressing and holding the PTT button on each of the radios.
2. With all working channels busied, momentarily press and release the PTT button on test radio 1.
3. Verify that a Call Queued tone is heard at the radio.
4. Unkey (release PTT button) one of the first set of radios, ex. radio x.
5. Verify that radio 1 is assigned to the freed working channel and the grant tone is heard at the radio, without having to rekey the radio (redepress the PTT button).
6. Press the PTT button on radio 1 within the autokey time applicable to the radio type (approx. 2 seconds) to keep the assigned channel.
7. Verify that audio from radio 1 is heard at radio 2.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.6 Emergency Call Priority for Group IDs

Setup

This test requires the same setup as for Call Priority with one of the radios programmed as a Supervisor radio (enabled to clear emergencies).

Execution

1. PTT radios 1 and 2 and hold on transmit to busy both working channels.

2. PTT and release radio 4 (high priority entry into the queue).

3. Declare an emergency on radio 3 (medium priority entry into the queue but now at Emergency Priority).

4. Unkey radio 1 and verify that radio 3 unqueues and is assigned a channel without having to PTT. (Key the radio within the specified autokey time in order to keep the channel.)

5. Unkey all radios and clear the emergency with the Supervisor radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.7 Unit to Unit Call Alert Paging

Setup

Radio 1 with Call Alert programmed into a button ("PAGE") and Radio 2's ID programmed into its Individual Call list.

Radio 1 & Radio 2 on the same site.

Execution

1. Select the PAGE function from the MENU on Radio 1. Select Radio 2 from the preprogrammed list of radios and PTT Radio 1.

2. Verify Radio 1 displays "*TX PAGE" on the second line.

3. Verify Radio 2 displays the ID of Radio 1 on its first line and "*RX PAGE" on the second line. Verify Radio 2 beeps multiple times to indicate a received page.

4. Verify Radio 1 beeps multiple times to indicate the page was successfully sent.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.8 Out of Range Tone on PTT

Setup

One radio with valid ID and valid group on selected system.

System scanning disabled in radio personality as necessary for specific radio type being tested.

Execution

1. With valid group selected, and radio initially logged into and monitoring the control channel on the selected system, reduce the signal strength reaching the radio by some means (ex. unscrewing and removing the portable radio antenna, or moving further from the site).

2. Verify that the radio indicates loss of control channel on the display when the received signal strength is sufficiently reduced (i.e. out of range of system).

3. Press PTT button on radio, and verify that an out of range tone is heard at radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.9 Transmit Denied (for Invalid radio ID)

Setup

Program system so that radio ID is not valid on the site under test. Download database to site.

Execution

1. Press PTT button on radio with valid group selected.
2. Verify the radio is prohibited access to system.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4. *P25 TRUNKED FEATURES*

Setup

This setup applies to the tests contained in this section. Three radios are required, programmed as follows:

(Utilize test or customer data base groups A, B, C & D as specified here)

Radio 1:	All Call group (Group A)
Radio 2:	(Group A) (Group B)
Radio 3:	(Group A) (Group C) (Group D)

Note1: Additional radios are required for Call Queue Declaration Alert test.
Note 2: Group priorities 5 = 200 (@ UAS), 3 (@ site) highest
4 = 100 (@ UAS), 7 (@ site) mid
3 = 10 (@ UAS), 10 (@ site) lowest

Group matrix					
Name	**GID**	**Priority**	**Encryption**	**Key**	**Comments**
Group A		5			
Group B		4			
Group C		4			
Group D		3			
Group E		3			Announcement Group for Group A, B, C and D.

4.1 All Call

Setup

Set radio 1 to All Call, radio 2 to (Group A) and radio 3 to (Group C).

All Call is defined in the I-Call set.

Execution

1. Place the All Call from radio 1.
2. Audio should be heard at radios 2 and 3.
3. Set radio 2 to (Group B) and radio 3 to (Group C).
4. Place the All Call from radio 1.

5. Audio should be heard at radios 2 and 3.

6. Repeat the previous steps for encrypted voice, if applicable.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.2 Announcement Group Call

Setup

Set radio 1 to (Group E).
Set radio 2 to (Group A).
Set radio 3 to (Group B). Groups A & B are in Announcement Group E per test group structure. Ensure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. ANNOUNCE should be displayed at radios 2 and 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.3 Transmission Trunking

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Verify transmission trunking operation by noting that repeater channel in use is freed after PTT is released (i.e., no message trunking operation).

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.4 Transmit Grant Tone

Setup

One radio with valid ID and valid group on selected system.

Grant tone (Ready to Talk tone) enabled in radio personality as applicable for specific radio type being tested.

Execution

1. Press PTT button on radio with valid group selected.

2. Verify grant tone is heard at radio when working channel access is granted.

Note: If the call is queued, the grant tone will be delayed until the call is assigned a working channel.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.5 Group Scan

Setup

Two radios (radio 1, radio 2) each with valid IDs and two valid groups (group A, group B) on selected system.

Radio 1 set up with group A and group B in the scan list, group A selected, and group scan initially disabled.

Execution

1. Place a call from radio 2 on talk group A.
2. Verify the call is received and audio is heard on radio 1.
3. Place a call from radio 2 on talk group B.
4. Verify the call is not received by radio 1.
5. Enable group scan on radio 1.
6. Place another call from radio 2 on talk group B.
7. Verify that the call is now received and audio is heard on radio 1.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.6 Priority Scan

Setup

Set radio 1 to priority scan Group A and scan (at lower priority) Group B. Set radio 1 to Group C. Have scan enabled on radio 1.

Set radio 2 to Group B.

Set radio 3 to Group A.

Execution

1. With group C selected on radio 1, place a call from radio 2 on Group B.
2. Verify radio 1 scans to Group B and hears audio from radio 2. Continue transmitting from radio 2.
3. Place a call from radio 3 on Group A.
4. With radio 2 still transmitting on Group B, verify radio 1 priority scans to Group A and hears audio from radio 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.7 Transmit Busy Lockout

Setup

Two radios (radio 1, radio 2) each with valid IDs and same valid group on selected system.

Talk group used for test must be set up as transmission trunked. This feature does not apply to message trunked calls.

Execution

1. Place a call from radio 1 on selected talk group by pressing and holding the PTT button.
2. Verify the call is received and audio is heard on radio 2.
3. While the call is in progress, press the PTT button on radio 2.

4. Verify that radio 2 does not transmit over (step on) the call in progress.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.8 Continuous Control Channel Update

Setup

This test requires two trunked radios and a test group.

Execution

1. Set both radios to the test group.
2. Turn one radio OFF.
3. Key one radio and hold. Turn ON the second radio (and set it to the test group if necessary).
4. Verify that the second radio joins the call in progress and hears audio from the call in progress.
5. Unkey the first radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.9 Convert To Callee

Setup

This is a test of single site simultaneous call arbitration. Have two radios programmed to operate on the same site and group.

Execution

1. Set two radios to the same site and group.
2. Key both radios at the same time.
3. Verify that one radio ends up transmitting and the other ends up receiving.
4. Verify that the call audio is routed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.10 Multi-site Announcement Group Call

Setup

Set radio 1 to (Group E).
Set radio 2 to (Group A).
Set radio 3 to (Group B). Groups A & B are in Announcement Group E per test group structure. Ensure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
2. Audio should be heard in radios 2 & 3. ANNOUNCE should be displayed at radios 2 and 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.11 Multisite Emergency Group Call

Setup

Program three radios with the same emergency home group. Set the supervisor radio (radio 1) and radio 2 to the home group. Set radio 3 to a different group (not home group). The radios must remain logged onto different sites.

Execution

1. Press the Emergency call button on radio 3 and talk within the pre-defined Emergency Autokey time, and/or PTT radio 3 during or just after that time.
2. Verify that radio 3 indicates the "TX EMER" declaration and that it reverts to the home group.
3. Verify that radio 1 (on Site 1) and radio 2 (on Site 2) indicate a "RX EMER" and hear audio on the emergency home group.
4. Clear the emergency with the Supervisor radio (radio 1). Verify the emergency clears in the radios.
5. Repeat the previous steps for encrypted voice.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.12 Multi-site Routing (for Multi-site Logout)

Setup

This test requires the following:
Radio 1, logged into Site 1.
Radio 2, logged into Site 2.

Note: Site 1 and 2 should be selected such that Radio 2 can log into Site 1 and then Site 2. If coverage prevents this, then program a third radio with the ID of Radio 2. Use the third radio to key on Site 1 with the ID of Radio 2 whenever the test procedure calls for this. The primary objective of this test is to demonstrate that the system routes calls to Site 2 whenever a unit (i.e. radio 2) is logged onto Site 2 and does not route calls to Site 2 when no units are logged into Site 2.

Execution

1. Key Radio 1 on Site 1. Verify channel assignments occur on Site 2. Unkey radio.

2. Key Radio 2 on Site 1 (Radio 2 is no longer logged into Site 2). Verify no channel assignment occurs on Site 2 since there are no radios logged into Site 2. Unkey radio.

3. Key Radio 1. Verify no channel assignment occurs on Site 2 since there are no radios logged into Site 2. Unkey radio.

4. Key Radio 2 on Site 2. Verify a channel assignment occurs on Site 2. Unkey radio.

5. Key Radio 1. Verify a channel assignment occurs on Site 2 since Radio 2 is logged into Site 2. Unkey radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.13 Site Trunking (Failsoft) Indication

Setup

Radio 1 and Radio 2 enabled on the Site under test (Site 1), using Talkgroup A. Both radios must have a display.

Radio 3 on a different Site (Site 2) also programmed with Talkgroup A.

Execution

1. Verify that the Radio 1, Radio 2, and Radio 3 can communicate on the system.
2. Turn OFF power to or disconnect the SiteLink, causing loss of communication from the site back to the Network Switching Center.
3. Verify that Radio 1 and Radio 2 indicate a Failsoft alarm ("F") on their displays.
4. PTT Radio 1 on Talkgroup A. Verify audio is heard at Radio 2. Verify audio is not heard on Radio 3.
5. Reenable the SiteLink. Verify the Failsoft alarm disappears on the radios and that communications with Radio 3 is reestablished.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.14 Unconfirmed Call (Multisite Late-Enter)

Setup

Log Radio 1 into Site 1 on the test group A.
Log Radio 2 into Site 2 on the test group A.
Log Radio 3 into Site 2 on the test group A.
Make sure that Confirm Call is disabled for test group A at the two sites.

Execution

1. Key up additional radios on different groups (e.g., B & C) on Site 1 so that there are no channels available to process a call on Group A on Site 1.

To reduce the number of radios required, some of the working channels on Site 1 can be disabled while performing this test.

2. Key up Radio 2 on Group A on Site 2. Radio 2 should get the grant tone and the call should go through to Radio 3 on Site 2. Since Site 1 has no channels available, the call should not go through to Radio 1 on Site 1.

3. While Radio 2 is still keyed up, free up a channel on Site 1.

4. Verify that the call gets routed to Site 1 and that Radio 1 late-enters into the call on that site.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.15 Confirmed Call

Setup

In the system, enable Confirm Call on a test group. Ensure that the group is set up for multisite operation.

Log the radios to the sites as follows:
Radio 1, Site 1 on the test group A
Radio 2, Site 2 on the test group A

Additional radios are required to busy the working channels. If the system is large, it might be necessary to disable channels at the two sites.

Execution

1. Key up additional radios on Site 1 so that there are no channels available to process a call on the Test Group on Site 1. To reduce the number of radios required, some of the working channels on Site 1 can be disabled while performing this test.

2. Key Radio 2 on Site 2 and verify that the confirmed call is not allowed to proceed until the "Confirmed Call Timeout" period has expired. The call should go through to Site 2, but not to Site 1.

3. Repeat this test, but this time, free up a channel on site 1 before the "Confirmed Call Timeout" period expires. Verify that the call goes through to both Site 1 and Site 2.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5. *P25 SIMULCAST BYPASS OPERATION*

This test is only applicable to GPS simulcast systems.

5.1 Setup

Program the TX site SitePro modules (both Control Points and Transmit Sites) to the Final Configuration. Refer to the installation manual for the guide to setting TX SitePros / CP SitePros personality parameters.

Verify the BYPASS plan has been reviewed and approved by customer representative. This procedure makes assumptions on bypass sites before implementation and test of the Miami-Dade System. After WMS/Panther signal strength data collection, final decision will be made on the actual bypass "ON" and "OFF" sites

Prepare a minimum of two terminal radios programmed to operate on the active BYPASS site and the main simulcast system.

MIAMI-DADE BYPASS MATRIX

Site	SITE	SYSTEM	BYPASS	Other Notes
Nomen.			On/Off	
Plan to be developed at Customer Design Meeting(s)				

5.2 Site OFF - Final Configuration

Execution

Sites intended to be "OFF" in event of BYPASS must have all channels set to "N" for CC, Clear Voice, Digital Voice, and Data fields in the TX Site SitePro modules.

1. Starting with site "2S", create a condition to force BYPASS by switching LCL/BYPS switch on BYPASS Module to the ON position *(at the TX site)*.

2. Verify transmit site is in BYPASS mode. BYPS LED on Bypass module and the SitePro module display indicates "WC" instead of "SSWC" or "SSCC". Note: WC= Working Channel, standalone mode, SSWC=Working Channel, simulcast mode, and SSCC= Control Channel, simulcast mode.

3. Observe the repeater (station) SitePro modules. Verify there is no active control channel.

4. Verify no stations are keyed or producing RF power.

5. Restore the site to normal by returning the LCL/BYPS switch to the OFF position.

6. Verify transmit site is in normal simulcast mode. BYPS LED on Bypass module and SitePro modules indicate either "SSWC" or "SSCC".

7. Repeat steps 1-6 for the remaining "OFF" bypass sites in the simulcast system under test.

Results (Pass/Fail) _____

Tester: _____ Date: _____

Comments: _____

_____

_____

5.3 Site ON - Final Configuration

Execution

Sites intended to be "ON" and active in event of BYPASS must have channels intended to be active set to "Y" for CC, Clear Voice, Digital Voice, and Data fields, and inactive channels set to "N".

1. Create a condition to force BYPASS by switching LCL/BYPS switch on BYPASS Module to the ON position *(at the TX site).*

2. Verify transmit site is in BYPASS mode. BYPS LED on Bypass module and the SitePro module display indicates either "WC" or "CC" instead of "SSWC" or "SSCC".

3. Observe the stations/repeater SitePro modules. Verify there is an active control channel on one of the SitePro modules. The remaining repeater/stations SitePro modules will indicate "WC".

4. Verify the station appearing as control channel is keyed, producing RF power and modulated with control channel data.

5. Verify a terminal radio set to the system programmed for the site in BYPASS with the correct site ID recognizes the site's control channel data.

6. Key the terminal radio on a group call.

7. Verify a working channel assignment is made within the channel group allowed in the personality.

8. Verify the call is heard on a second terminal radio set to the active BYPASS system.

9. Restore the site to normal by returning the LCL/BYPS switch to the OFF position.

10. Verify transmit site is in normal simulcast mode. BYPS LED on Bypass module and SitePro modules indicate either "SSWC" or "SSCC".

11. Repeat sections 2.1.1 and 2.1.2 for the remaining simulcast systems.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.4 Control Point Trunking Reset Control

A properly set up Simulcast BYPASS system will disable (hold in RESET) CPSitePro modules associated with active channels at a TX site operating in BYPASS. This keeps the remaining sites operating in Simulcast mode from being assigned to channels expected to be active at the site in BYPASS. Sites programmed to be OFF in BYPASS will not require any CPSitePro to be held in RESET.

This test will verify that the Control Point SitePro modules will be held in RESET corresponding to the active channels at a site as a result of the TX site being in BYPASS.

NOTE

This procedure requires simultaneous activity at the Control Point and Transmit Site.

Execution

1. Force a TX site that will become active into BYPASS by switching LCL/BYPASS switch on the BYPASS module to the ON position *(at the TX site).*

2. Verify TX site is in BYPASS mode.

3. Verify transmit site is in BYPASS mode. BYPS LED on Bypass module and the SitePro module display indicates either "WC" or "CC" instead of "SSWC" or "SSCC".

4. Verify the Control Point "E" leads have become "inactive" by observing that the BYPASS LED on the System Bypass board located at the rear of the Common Rack associated with the site in BYPASS is ON.

5. Verify the System Bypass board OVERRIDE LED is OFF for the site in BYPASS, and its RESET ACTIVE LED is ON.

6. Verify the CPSitePro modules on the channels intended to be OFF are held in RESET. (on channel assignments.)

7. Observe the Site Manager monitor screen for the simulcast system. Verify the channels intended to be OFF at the Control Point display GETC Poll Failure as a result of being held in RESET.

8. Restore the site to normal by returning the LCL/BYPS switch to the OFF position *(at the TX site).*

9. Verify the TX site SitePro modules revert to normal Simulcast.

10. Verify the Control Point "E" lead has returned to the "active" state by observing that the LED on the System Bypass board associated with the site in BYPASS is OFF.

11. Verify the System Bypass board OVERRIDE LED is OFF for the site in BYPASS, and its RESET ACTIVE LED is OFF.

12. Verify the CPSitePro modules associated with the site in BYPASS are returned to normal *(Not in RESET).*

13. Verify Site Manager Monitor screen indicates GETC poll failures clear as a result of the CPTC RESET condition being cleared.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6. MAESTRO^{IP} P25 DISPATCH FEATURE SET

These tests assume a valid LID/GID database with aliases defined for the test entities has been set up, privileged and programmed into the console under test. It also assumes radios have been programmed with the above test entities. Tests can be conducted first with the microphone/select speaker and then with the headset.

6.1 Transmitting With a Microphone (Group Calls, I Calls)

Setup

Choose a group to use as a test group

Program a radio with the test group.

Program a console module with the test group.

Review Console User Profile settings for Console under Test (i.e. Audio Indicators).

6.1.1 Talk Group Call

Execution

1. Press the INSTANT TX function (for example right mouse button) on the module with the test group. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the Instant TX key.

2. Press the SELECT button on the module with the test group. Verify that the SELECT indication for that module becomes highlighted.

3. Press the SELECT TX function. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the SELECT TX function.

4. Press the PTT foot pedal. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the foot pedal.

5. Repeat the procedure with an encrypted talk group, if applicable.

6.1.2 Individual (Unit-to-Unit) Call

Execution

1. Program a module with the ID of the test radio. Select the console module with the test unit ID.

2. Press the SELECT TX function. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the SELECT TX function.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.2 Receiving Calls (Unit ID Display, Talkgroup ID Display, Aliasing)

Setup

Program the test group into a module.

Set a radio to the test group.

6.2.1 Talk Group Call

Execution

1. Unselect the console module with the test group. Key the radio and verify that the call is heard at the Unselect speaker and that the calling radio ID and the Call Indicator are displayed.

2. Select the console module with the test group. Key the radio. Verify that the call is heard at the select speaker and that the calling radio ID and the Call Indicator are displayed.

3. Key the radio. Verify that the module call light is on, the call is heard at the Select speaker and the calling radio ID is displayed.

4. Repeat the procedure with an encrypted talk group, if applicable.

6.2.2 Individual (Unit-to-Unit) Call

Execution

1. Program a module with the ID of the test radio.

2. Select the console module with the test unit ID. Call the console from the radio (ICALL with Console ID). Verify that the call is heard at the select speaker and that the calling radio ID and the Call Indicator are displayed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.3 Emergency Call and Emergency Alarm

Setup

This test requires a test radio capable of generating and clearing an emergency (i.e. Supervisor Radio).

Execution

1. UNSELECT the test group. Using the test radio, declare an emergency on the test group.

2. Verify the module turns red, the 'EMER' flag is briefly displayed in the module, the ID/Name of the test radio is displayed, the emergency message is displayed in the message window, and the emergency alert tone is heard on the console.

3. Pick the module with the emergency and depress 'Alarm Reset'. Verify the alert tone is silenced on the console, but the emergency is still displayed.

4. Select and transmit on the group with the emergency. Verify the test radio receives the call, and is still in emergency mode.

5. Clear the emergency using the 'EMER CLR' key. Verify the module no longer indicates an emergency.

6. Transmit on the test radio and verify the emergency is cleared and normal group calls have resumed.

7. With the test group selected on the console, declare an emergency on the test group. Verify the console and radio have the same indications as steps 2 to 4.

8. Clear the emergency with the console.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.4 Agency Broadcast (System Wide Call)

Setup

Choose an agency to use as a test group

Program at least two radios with different subfleets but in the same test agency.

Program a console module with the test agency.

Review Console User Profile settings for Console under Test (i.e. Audio Indicators).

Execution

1. Press INSTANT TX on the module with the test agency. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radios. Release the Instant TX key.

2. Press the SELECT button on the module with the test group. Verify that the SELECT indication for that module becomes highlighted.

3. Press the SELECT TX function. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radios. Release the SELECT TX function.

4. Press the PTT foot pedal. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radios. Release the foot pedal.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.5 Alert Tones

Execution

1. Press the SELECT button on the module with the test group. Verify that the SELECT indication for that module becomes highlighted.

2. Press and hold the foot pedal or 'Selected Transmit' key. The test radio will receive the call. While still transmitting, press one of the three alert tone keys (Alert, Pulse, Warble). Verify the alert tone is received by the radio and also heard on the console.

3. While not transmitting, press and hold one of the alert tone keys. Verify the console transmits on the selected group, the test radio receives the call, and the alert tone is heard by the radio and console. When the Alert tone key is released, verify the call drops.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.6 Console Pre-Empt

Setup

Choose a group to use as a test group

Program two radios with the test group.

Program a console module with the test group.

Execution

1. Key the first radio on the test group and hold the call up. Verify that audio is heard at the second radio and the console.

2. Key the console on the test group and hold the second, pre-empting call up. Verify that the XMT indicator is displayed along with the pre-empted caller LID and CALL indicator. Verify that the second radio begins to hear the console audio and not the first radio call. Verify that the pre-empted radio audio is still heard on the pre-empting console.

3. Unkey the first radio. Verify that the pre-empted caller LID and CALL indicators are removed and the pre-empted radio audio is no longer heard on the pre-empting console.

4. Unkey the console. Verify that the call drops.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.7 Simulselect

Setup

Program four test groups.
Have on hand 2 radios programmed to 2 of the test groups and logged on to site.

Execution

1. Create a 4 group Simulselect on the 4 test group modules. Verify that the ACTIVE indicator (i.e. S1 displayed in each module) for SIMULSELECT 1 comes ON and the SELECT indicators of the 4 group modules are ON and highlighted, respectively.

2. Un-select SIMULSELECT 1 and verify that the active indicator goes OFF.

3. Re-activate SIMULSELECT 1. Verify that the ACTIVE indicator comes ON.

4. Modify SIMULSELECT 1 by removing two of the groups in the Simulselect. This results in a two group Simulselect. Verify that the ACTIVE and SELECT indicators of the two remaining groups are ON and highlighted, respectively and the ACTIVE and SELECT indicators of the two deleted groups are OFF.

5. Set one radio on each of the test groups in the Simulselect and turn scan off. Activate and select SIMULSELECT 1. Key one of the radios on its test group. Verify that the call is heard at the select speaker and not at the other radio.

6. Repeat the previous step, except key the other radio.

7. Transmit from the console on SIMULSELECT 1. Verify that audio is heard at both radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.8 Patch

Setup

Program four test groups.

Have on hand, 2 radios programmed with 2 of the test groups and logged on to sites.

Execution

1. Create a 4 group patch on PATCH 1. Verify that the ACTIVE indicator for PATCH 1 (i.e. P1 indicator in each module) comes ON and the four modules are included in the patch.

2. De-activate PATCH 1 and verify that the ACTIVE indicator goes OFF.

3. Re-activate PATCH 1. Verify that the ACTIVE indicator comes back ON.

4. Modify PATCH 1 by removing two of the groups in the patch. Verify this results in a two group patch. Verify that the patch indicators of the two

remaining groups are ON and the patch indicators of the two deleted groups are OFF.

5. Set each radio to a different test group in the patch and turn scan off.

6. Activate and Select PATCH 1.

7. Key one of the radios on its test group. Verify that the call is heard at the other radio and at the select speaker.

8. Repeat the previous step, except key the other radio.

9. Key the console by pressing the transmit bar. Verify that audio is heard at both radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.9 Console to Console Interaction (Intercom and Crossmute)

6.9.1 Console Intercom

1. On Console A, program a module with the console ID of Console B. On Console B, program a module with the console ID of Console A. Select this module on both consoles. Transmit from Console A on the module for Console B.

2. Verify on Console A that 'XMIT' is displayed in the module. Verify that on Console B, 'BUSY' is displayed in the module. Release the transmit from Console A.

3. Answer the call at Console B by transmiting from Console B on the module for Console A.

4. Verify on Console B that 'XMIT' is displayed in the module. Verify that on Console A, 'BUSY' is displayed in the module. Release the transmit from Console B.

6.9.2 Console Crossmute

Setup

Establish two consoles (A and B) to test the Crossmute function. The Consoles must be on the same NSC. Program and select a test group on both consoles.

Execution

1. Place a call on console A on the test group.
2. Verify that console B can hear console A in the select speaker.
3. At console B, mute console A.
4. Place a call on console A on the test group and verify that it cannot be heard at console B.
5. Restore the desired cross mute setup.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.10 Call History

Setup

This tests compares programmed module call activity to the history scroll lists. Utility page, dispatch menu will be selected. Select either the "Select History" or "Unselect History".

Execution

1. Press the 'Scroll Up' and 'Scroll Down' buttons to scroll through the Unselect call history list. Compare these calls with known activity.
2. Press the 'Scroll Up' and 'Scroll Down' buttons to scroll through the selected call history list. Compare these calls with known activity.
3. Press the 'Esc' button to exit the history scroll mode.
4. To monitor call history on a single group use the 'module history' button (on the 'module modify' menu. Use the 'scroll up' and 'scroll down'

buttons to scroll through the calls for the picked module. Compare these calls with known activity.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.11 User Definable Screens

Setup

Verify User Definable Screens (UDS) is installed on a Maestro Dispatch Console. This console may be used to develop and verify the custom screen configurations required by the customer dispatch center operations.

Execution

In the C3 Maestro Configuration Editor verify the appropriate message text is defined for the Radio Status message that will be used.
Example:

Number	Type	Message Text
1	RSM	RSM1-TXT
2	RSM	RSM2-TXT
3	RSM	In Route

In the UDS modify Screen File #2 as follows:

A) Use the PAGE pull-down menu and select "BUTTON TEXT and COLOR".
B) Change LABEL TEXT for PAGE button number 1 to [redacted]
C) Change LABEL TEXT for PAGE button number 2 to [redacted]

In the UDS modify Screen File #2 as follows:

A) Use the MODULE pull-down menu and select ADD and RSM to add the previously defined RSM status
B) Position the module where desired on the console screen layout.
Note: Existing modules may need to be deleted to make room for the new RSM modules.

Restart the C3 Maestro application and verify the changes have taken place on the Dispatch Screen.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7. *HIGH AVAILABILITY FAILOVER TESTS*

7.1 Primary VNIC Failover

Setup

Locate the primary NSS1 server. From the root user login screen, initiate a VNIC failover by typing VNICshutdown.

Execution

1. Note that Primary VNIC (NSS1) goes down.
2. Verify that Secondary VNIC (NSS2) becomes Primary.
3. Verify call functionality by making group and individual radio calls.
4. Verify that NSS1 VNIC comes back into operation as the standby VNIC.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.2 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.
3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.3 Individual Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.

2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.

3. Release the PTT on radio 1 and immediately PTT on radio 2.

4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.

5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.

6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.

7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.

8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.4 Secondary VNIC Failover

Setup

Locate the primary NSS2 server. From the root user login screen, initiate a VNIC failover by typing VNICshutdown.

Execution

1. Note that Primary VNIC (NSS2) goes down.
2. Verify that Secondary VNIC (NSS1) becomes Primary.
3. Verify call functionality by making group and individual radio calls.
4. Verify that NSS21 VNIC comes back into operation as the standby VNIC.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.5 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.

3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.6 Individual Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.

2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.

3. Release the PTT on radio 1 and immediately PTT on radio 2.

4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.

5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.

6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.

7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.

8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.7 Primary Router (bss1) Failover

Setup

Locate the primary bss1 router. From the admin user login screen, initiate a reset to fail the router.

Execution

1. Note the primary bss1 router goes down.
2. Verify the secondary bss2 router becomes Primary by;
3. Verify call functionality by making group and individual radio calls.
4. Verify primary bss1 router comes back into operation after reboot.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.8 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.
3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.9 Individual Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.
2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.
3. Release the PTT on radio 1 and immediately PTT on radio 2.
4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.
5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.
6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.

7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.

8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

Fielded Functional Test Procedures
for
Miami-Dade

FAT-EN0012A Rev – A

P25 Simulcast System [redacted]

443

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ABOUT THIS DOCUMENT

This document was specifically prepared for the customer shown below. Each section of this document is individually maintained in the Harris document control system. The revisions of each section are individually listed.

Customer:	Miami-Dade
Prepared By:	Shaun Hancock, Harris Corporation
Total Test Pages:	**62**

DOCUMENT USAGE

Many of the tests in this document will need to be run on multiple pieces of equipment. For instance a console test may be run on three consoles. For tests that need to be run multiple times, log in the comment section of the result box the identifier of the equipment tested. Although specific tests are not included relating to electrical measurements or timing parameters of equipment, these tests and levels are conducted and recorded as part of Harris' standard installation practices. These parameters include but are not limited to:

- Transmit Frequency and Deviation
- Output and Reflected Power
- Receiver Sensitivity
- Receiver Multicoupler Gain (if applicable)
- Receiver Preamplifier Gain (if applicable)
- Time Domain Reflectometry of Transmission Line
- Combiner Loss (if applicable)
- Audio line out
- Audio line in

System parameters and measurements will be provided to Miami-Dade as part of the final documentation package.

SUBSCRIBER UNIT USAGE

All tests for subscriber (terminal) units in this document will be performed with Harris subscriber units unless the test setup identifies another Vendor's subscriber unit to be used for the test.

1. *CUSTOMER APPROVAL*

This Acceptance Test Procedure has been read and approved for use as the system acceptance test.

Miami-Dade Representative	Harris Corporation – Systems Engineer
Signature	Signature
Printed name and title	Printed name and title
Miami-Dade Representative	Harris Corporation – Project Manager
Signature	Signature
Printed name and title	Printed name and title

2. *SYSTEM ACCEPTANCE*

This Acceptance Test Procedure has been successfully completed.

Customer Representative	Harris
Signature	Signature
Printed name and title	Printed name and title
Date	Date

3. P25 Regional Network Manager (RNM) and Universal Administration System (UAS)

3.1 Create UAS User Account with Agency privileges

Setup

Access to an UAS or UAS client. Predefined Agency and Region in the UAS.

Execution

1. Log into the UAS.
2. Create an Agency administrative class by selecting System/Administrative/Admin Class.
3. Select "Add Entry" to display the Administration Classes Detail screen.
4. Enter a name (e.g., USMAAgency) and description. Download.
5. Click the underlined agency name from above and then Add Entry to display Administrator User Privileges Detail.
6. Select appropriate Agency from Scope pulldown menu. Enter a description, and select Read Only (RO) or Read/Write (RW) privileges. Download.
7. Select System/Administrative/Admin User to create a new user to use this class of service.
8. Select "Add Entry" to display the AdminUser Detail screen.
9. Enter an Admin User name (e.g., USMAAgencyUser); select the Admin Class from #5 above; enter a description; and enter a password. (Note password here or elsewhere for future reference.) Download.
10. Verify under System/Administrative/Admin User that a new Admin User as named in #9 with the class as defined in #5 is listed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.2 Create Talkgroups and Units (UAS)

Setup

Access to the UAS or an UAS client.

Availability of predetermined ID ranges for agencies, talkgroups, users & IP addresses.

Execution

1. Log into the UAS.

2. In the Region for the Agency under test, verify or create the available range of talk group ID's, User ID's, and IP addresses by selecting the Regions menu and making the appropriate entries.

3. For the Agency under which the talkgroup should be created, select Agency/ "agency name"/ R/W Talk Group.

4. Click Add Entry and then on the TalkGroup Detail screen input the TG ID, Name, Description, and select all other appropriate parameters. Click OK and download.

5. Verify the talkgroup has been added to the list of talkgroups.

6. To create units, for the Agency under which the unit should be placed, select Agency/"agency name"/Profile and create a profile with the talkgroup added in step 4. Next select Agency/"agency name"/Personality and create a personality containing the profile just created. Click OK and download.

7. Select Agency/"agency name"/Voice End User. Click Add Entry and then on the EndUser Detail screen input the User ID, password ("p25user"), Name, Description, etc. of the user. Modify privilege as desired. Click OK and download.

8. Verify the user ID has been added to the list of users.

9. Select Agency/"agency name"/Subscriber Unit and enter the appropriate User ID, IP Address, and ESN for the user created in step 7. Click OK and download.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.3 Site Access Control (UAS)

Setup

Access to UAS or an UAS client.

Ensure Regional Site Manager is connected into network and into site.

Radios 1 & 2 programmed with ID's valid on the site under test. Set to Group A.
Radio 3 programmed with an ID not valid on the site under test. Set to Group A.

Execution

1. If not already accomplished, download a database of valid radio ID's from the UAS to the site.
2. Program Radio 3 with an ID not within that list of valid radio ID's.
3. Attempt to PTT Radio 3. Verify access to the site is denied.
4. PTT Radio 1. Verify access to the site is permitted and audio is heard on Radio 2.
5. Enable Radio 3 in the UAS database and download.
6. PTT Radio 3. Verify access to the site is permitted and audio is heard on Radio 2.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.4 Subscriber Report (UAS)

Setup

Access to UAS or an UAS client.

Execution

1. Log into the UAS.
2. Select System/Report/Voice End User. Select the Region ID/Agency ID of the Region or Agency from which a subscriber report is desired. Modify Max Rows to a desired number.
3. Click the proper icon in the column to the right of Max Rows.
4. Verify the User ID's of the ROC & AOC selected are displayed. Select the Magnifying Glass icon for details on any specific User ID.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.5 Unit Enable/Disable

Setup

Obtain 2 radios switched to the same Group and note the IDs. Switch on the radios and ensure that they communicate. Verify all sites are on line. Note that Unit Disable will automatically delete the encryption key from the radio as it is disabled. To restore unit functionality, the radio must have the encryption key re-installed.

Execution

1. Select group A on both radios and verify that the radios can communicate.
2. From the UAS:
   Select UNIT ENABLE/DISABLE.
   Under the UNIT Enable/Disable tab, enter the ID of radio 1 to be modified.
   Select the DISABLE button and check the status.

3. Attempt to PTT the radio and verify that it will not communicate with the system. PTT radio 2 and verify that radio 1 cannot receive the call.

4. Enable the ID of radio 1. Verify that the Enable/Disable screen indicates that the Current State of the radio is Enabled. Confirm that the radios can communicate in unencrypted mode.

5. Switch off radio 2 and disable it from the Enable/Disable screen. Verify that the desired state is Disabled and the Current State is Enabled. Switch on the radio and verify that, on logging into the site, it becomes disabled. Verify that the State settings change to Disabled and that the radios cannot communicate.

6. Enable both radios and verify that radios can communicate communicate in unencrypted mode.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.6 Dynamic Regroup

Setup

Ensure that Dynamic Regroup is a feature of the customer's radios. Ensure that both the Radio ID's and the Talkgroup IDs to be used are in the database and that the database has been successfully uploaded to site(s).

Radio 1 set to Talkgroup A.
Radio 2 set to Talkgroup B.

Execution

1. From the UAS client, send a dynamic regroup command to Talkgroup C for Radio 1 and Radio 2.

2. Verify that Radio 1 and Radio 2 are forced to Talkgroup C.

3. At Radio 1 and Radio 2, attempt to change talkgroups away from Talkgroup C. Verify that both radios are forced to remain on Talkgroup C.

4. PTT Radio 1 on Talkgroup C. Verify that Radio 2 hears audio on Talkgroup C and can respond.

5. Clear the dynamic regroup command from the UAS client. Verify that both Radio 1 and Radio 2 are no longer forced to Talkgroup C (i.e., they can select other predefined talkgroups).

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.7 Unit Deregistration

Setup

Radio 1 allowed on System X, Site 1; programmed to Group A.
Radio 2 allowed on System Y, Site 1; programmed to Group B.

Note MES AGE timeout (in VNIC) for deregistration or reduce it to a smaller value just for the purpose of testing.

Execution

1. PTT Radio 1 on Group A and verify it communicates on the system to Radio 2. Return call from Radio 2 to Radio 1 on Group A.

2. Turn off radio 1 and wait for expiration of the radio timeout period.

3. PTT Radio 2 on System Y, Site 1 after expiration of timeout. Verify no channel is assigned to the System X, Site 1, since Radio 1 has deregistered from site.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.8 Real Time Site Monitoring (RNM)

Setup

Access to a Regional Network Manager and within radio coverage of a site connected to that Region.

Radio 1, Radio 2, and Console A operating on the site & NSC under test, all programmed with Group A.

Execution

1. On the RNM, open the real time event viewer for the site's channels by clicking the Realtime Viewers button from the Task Launcher. Click Site Calls. Select the site and expand. Select channels to add.

2. Place a group call from Radio 1 to Radio 2 on the site, and verify that the event viewer displays the talkgroup ID and calling party ID. Verify the state changes from Free to Talk. Verify the TG Alias displays the Group #.

3. Place an emergency call from Radio 1 to Radio 2 on the site, and verify that the event viewer displays the Emergency indication (in the VNIC Time Stamp column) in addition to the talkgroup ID and calling party ID.

4. Place an individual call from Radio 1 to Radio 2 on the site, and verify that the event viewer displays an Individual call on the channel. Verify the VNIC-assigned Talk Group ID changes with each transmission.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.9 Site Usage Reports (RNM)

Setup

Ensure radio traffic has occurred across the network recently. If necessary or desired, place some calls with a known radio ID on multisite talkgroups prior to running the test for reference during the test.

At the Regional Network Manager or Central Network Manager, enter a URL of "http://<RNM ip address>/report/", where <RNM ip address> is the IP address of the Network Manager under test.

Execution

1. From "site-oriented reports," select the following:

   - Report scope: display activity in region [Region ID under test].
   - Report type: Site-oriented reports/"Calls per site in the selected region"
   - Report duration: Yesterday
   - Chart options: top 20

2. Select "Create Report"

3. Verify a graph of "Calls by Site" displays with the Region's correct number of sites.

4. Click the hyperlinked numeric value under the Calls column. Verify a table indicating talkgroups, caller, duration, and sites is displayed.

5. Click the "Back" button in the web browser.

6. Click the numeric value under the Site ID column. Verify multiple graphs indicating the number of calls by hour, voice group, call type, User ID, etc. are displayed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.10 Infrastructure Summary (RNM or CNM)

Setup

Access to the Regional or Central Network Manager.

Execution

1. From the Task Launcher click Network Viewer. Expand the tree and select desired level (1,2,3) to view.

2. From the View menu, select Icons and verify the Infrastructure is presented in Icon view.

3. From the View menu, select List and verify the Infrastructure is presented in List view.

4. From the View menu, select Details and verify the Infrastructure is presented in Detail view.

5. Choose Icon view and select an Object. Right Mouse Click and select Properties or any other desired menu attribute to view information related to the object.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.11 Alarm Indications (RNM)

Setup

Access to the a site under test and its RNM. The alarm will need to be generated by a channel being physically powered-down. Refer to the Manual for explanation of the alarms. Note the time of the alarm condition for later tests.

Execution

1. Generate an alarm indication on the site by turning OFF a channel's repeater.

2. On the RNM, select the Network Viewer from the Task Launcher to view site alarms. Verify that the RNM indicates a site alarm for the affected channel (the object turns Red).

3. Turn the repeater back ON. Verify that the alarm clears after acknowledgement of the initial alarm (the object turns Green).

4. Review alarm details by performing a Right Mouse Click on an Object. Select the desired menu option.

5. Repeat showing alarms for Router Failure, RF Interference, Site Link failure.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.12 Site Reconfiguration

Setup

Access to the Regional Network Manager and a site under test with at least 3 channels.

Radios 1 & 2 operating on the site, using Group A.

Execution

1. In the RNM, access the screen to configure channel parameters.
2. Make a site configuration change, such as forcing the Control Channel to operate on just channels 1 & 2 of the site. Download changes to the site.
3. Force the Control Channel to rotate from Channel 1 to Channel 2 by holding the reset button on the SitePro card for 3 seconds. Observe that the Control Channel rotates to Channel 2.
4. Force the Control Channel to rotate from Channel 2 by holding the Channel 2 SitePro card reset button for 3 seconds. Observe that the Control Channel rotates back to Channel 1, rather than to Channel 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4. P25 SITE FEATURES

Setup

This setup applies to the tests contained in this section. Three radios are required, programmed as follows:

(Utilize test or customer data base groups A, B, C & D as specified here)

Radio 1:	All Call group (Group A)
Radio 2:	(Group A) (Group B)
Radio 3:	(Group A) (Group C) (Group D)

Note1: Additional radios are required for Call Queue Declaration Alert test.
Note 2: Group priorities 5 = 200 (@ UAS), 3 (@ site) highest
4 = 100 (@ UAS), 7 (@ site) mid
3 = 10 (@ UAS), 10 (@ site) lowest

Group matrix			
Name	**GID**	**Priority**	**Comments**
Group A		5	
Group B		4	
Group C		4	
Group D		3	
Group E		3	Announcement Group for Group A, B, C and D.

4.1 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.

3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.2 Individual (Private) Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.
2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.
3. Release the PTT on radio 1 and immediately PTT on radio 2.
4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.
5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.
6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.
7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.
8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.3 Recent User Priority

Setup

This test requires 2 more trunked radios than there are site working channels. Disable channels (if necessary) until there are 2 working channels at the site. Thus, 4 radios are required for this test. Set up the radios 1, 2, 3, and 4 to different talkgroups, with each talkgroup configured for equal talkgroup priorities. Save and upload the database if required.

This test is to be run with no other users on the system and at intervals as set in the Recent Caller Interval (a time of greater than 10 seconds is recommended for the test which is configurable in the SitePro).

Execution

1. PTT and release radio 1 (establish a recent user entry).
2. PTT radios 3 and 4 and hold on transmit to busy both working channels.
3. PTT and release radio 2 (queue a call less recent than radio 1).
4. PTT and release radio 1 (queue the recent user).
5. Unkey radio 4 and verify that radio 1 unqueues and transmits.
6. Unkey all radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.4 Call Priority for Group IDs

Setup

This test requires two more radios than there are site working channels. The procedure is presented assuming there are two working channels. Disable channels (if necessary) until there are two working channels on the site. Thus, 4 radios each with a different group are required for this test. At the group database, set up the groups of radios 1, 2 and 3 for voice call priority 3 (medium). Set up the group of radio 4 for priority 6 (highest). Make sure the ID voice priority of each of the radios is less than or equal that of the respective Group ID (GID) voice priority. Save and upload the database.

Execution

1. PTT radios 1 and 2 and hold on transmit to busy both working channels.
2. PTT and release radio 3 (medium priority entry into the queue).
3. PTT and release radio 4 (high priority entry into the queue).
4. Unkey radio 1 and verify that radio 4 unqueues and keys.
5. Unkey radio 2 and verify that radio 3 unqueues and keys.
6. Unkey all radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.5 Single Site Call Queue Declaration Alert

Setup

This test requires two more radios than the number of working channels on the selected system used for test. To minimize the test setup and radio requirements for sites with many channels, channels may be disabled on the site so only two working channels are operational.

Set up a number of radios equal to the number of operational working channels on the selected system (radio x, radio y, etc.) each with a different valid talk group selected.

Set up two additional test radios (radio 1, radio 2) both with the same valid group selected. This talk group must be different than the groups selected by the other test radios.

Ensure that group scan is disabled on all the radios.

Execution

1. Busy up all working channels on the system with the first set of radios (radio x, radio y, etc.) by pressing and holding the PTT button on each of the radios.
2. With all working channels busied, momentarily press and release the PTT button on test radio 1.
3. Verify that a Call Queued tone is heard at the radio.
4. Unkey (release PTT button) one of the first set of radios, ex. radio x.
5. Verify that radio 1 is assigned to the freed working channel and the grant tone is heard at the radio, without having to rekey the radio (redepress the PTT button).
6. Press the PTT button on radio 1 within the autokey time applicable to the radio type (approx. 2 seconds) to keep the assigned channel.
7. Verify that audio from radio 1 is heard at radio 2.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.6 Emergency Call Priority for Group IDs

Setup

This test requires the same setup as for Call Priority with one of the radios programmed as a Supervisor radio (enabled to clear emergencies).

Execution

1. PTT radios 1 and 2 and hold on transmit to busy both working channels.
2. PTT and release radio 4 (high priority entry into the queue).
3. Declare an emergency on radio 3 (medium priority entry into the queue but now at Emergency Priority).
4. Unkey radio 1 and verify that radio 3 unqueues and is assigned a channel without having to PTT. (Key the radio within the specified autokey time in order to keep the channel.)
5. Unkey all radios and clear the emergency with the Supervisor radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.7 Unit to Unit Call Alert Paging

Setup

Radio 1 with Call Alert programmed into a button ("PAGE") and Radio 2's ID programmed into its Individual Call list.

Radio 1 & Radio 2 on the same site.

Execution

1. Select the PAGE function from the MENU on Radio 1. Select Radio 2 from the preprogrammed list of radios and PTT Radio 1.
2. Verify Radio 1 displays "*TX PAGE" on the second line.
3. Verify Radio 2 displays the ID of Radio 1 on its first line and "*RX PAGE" on the second line. Verify Radio 2 beeps multiple times to indicate a received page.
4. Verify Radio 1 beeps multiple times to indicate the page was successfully sent.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.8 Out of Range Tone on PTT

Setup

One radio with valid ID and valid group on selected system.

System scanning disabled in radio personality as necessary for specific radio type being tested.

Execution

1. With valid group selected, and radio initially logged into and monitoring the control channel on the selected system, reduce the signal strength reaching the radio by some means (ex. unscrewing and removing the portable radio antenna, or moving further from the site).

2. Verify that the radio indicates loss of control channel on the display when the received signal strength is sufficiently reduced (i.e. out of range of system).

3. Press PTT button on radio, and verify that an out of range tone is heard at radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.9 Transmit Denied (for Invalid radio ID)

Setup

Program system so that radio ID is not valid on the site under test. Download database to site.

Execution

1. Press PTT button on radio with valid group selected.
2. Verify the radio is prohibited access to system.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5. *P25 TRUNKED FEATURES*

Setup

This setup applies to the tests contained in this section. Three radios are required, programmed as follows:

(Utilize test or customer data base groups A, B, C & D as specified here)

Radio 1:	All Call group (Group A)
Radio 2:	(Group A) (Group B)
Radio 3:	(Group A) (Group C) (Group D)

Note1: Additional radios are required for Call Queue Declaration Alert test.
Note 2: Group priorities 5 = 200 (@ UAS), 3 (@ site) highest
4 = 100 (@ UAS), 7 (@ site) mid
3 = 10 (@ UAS), 10 (@ site) lowest

Group matrix					
Name	**GID**	**Priority**	**Encryption**	**Key**	**Comments**
Group A		5			
Group B		4			
Group C		4			
Group D		3			
Group E		3			Announcement Group for Group A, B, C and D.

5.1 All Call

Setup

Set radio 1 to All Call, radio 2 to (Group A) and radio 3 to (Group C).

All Call is defined in the I-Call set.

Execution

1. Place the All Call from radio 1.
2. Audio should be heard at radios 2 and 3.
3. Set radio 2 to (Group B) and radio 3 to (Group C).
4. Place the All Call from radio 1.

5. Audio should be heard at radios 2 and 3.

6. Repeat the previous steps for encrypted voice, if applicable.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.2 Announcement Group Call

Setup

Set radio 1 to (Group E).
Set radio 2 to (Group A).
Set radio 3 to (Group B). Groups A & B are in Announcement Group E per test group structure. Ensure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. ANNOUNCE should be displayed at radios 2 and 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.3 Transmission Trunking

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Verify transmission trunking operation by noting that repeater channel in use is freed after PTT is released (i.e., no message trunking operation).

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.4 Transmit Grant Tone

Setup

One radio with valid ID and valid group on selected system.

Grant tone (Ready to Talk tone) enabled in radio personality as applicable for specific radio type being tested.

Execution

1. Press PTT button on radio with valid group selected.

2. Verify grant tone is heard at radio when working channel access is granted.

Note: If the call is queued, the grant tone will be delayed until the call is assigned a working channel.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.5 Group Scan

Setup

Two radios (radio 1, radio 2) each with valid IDs and two valid groups (group A, group B) on selected system.

Radio 1 set up with group A and group B in the scan list, group A selected, and group scan initially disabled.

Execution

1. Place a call from radio 2 on talk group A.
2. Verify the call is received and audio is heard on radio 1.
3. Place a call from radio 2 on talk group B.
4. Verify the call is not received by radio 1.
5. Enable group scan on radio 1.
6. Place another call from radio 2 on talk group B.
7. Verify that the call is now received and audio is heard on radio 1.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.6 Priority Scan

Setup

Set radio 1 to priority scan Group A and scan (at lower priority) Group B. Set radio 1 to Group C. Have scan enabled on radio 1.

Set radio 2 to Group B.

Set radio 3 to Group A.

Execution

1. With group C selected on radio 1, place a call from radio 2 on Group B.
2. Verify radio 1 scans to Group B and hears audio from radio 2. Continue transmitting from radio 2.
3. Place a call from radio 3 on Group A.
4. With radio 2 still transmitting on Group B, verify radio 1 priority scans to Group A and hears audio from radio 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.7 Transmit Busy Lockout

Setup

Two radios (radio 1, radio 2) each with valid IDs and same valid group on selected system.

Talk group used for test must be set up as transmission trunked. This feature does not apply to message trunked calls.

Execution

1. Place a call from radio 1 on selected talk group by pressing and holding the PTT button.
2. Verify the call is received and audio is heard on radio 2.
3. While the call is in progress, press the PTT button on radio 2.

4. Verify that radio 2 does not transmit over (step on) the call in progress.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.8 Continuous Control Channel Update

Setup

This test requires two trunked radios and a test group.

Execution

1. Set both radios to the test group.
2. Turn one radio OFF.
3. Key one radio and hold. Turn ON the second radio (and set it to the test group if necessary).
4. Verify that the second radio joins the call in progress and hears audio from the call in progress.
5. Unkey the first radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.9 Convert To Callee

Setup

This is a test of single site simultaneous call arbitration. Have two radios programmed to operate on the same site and group.

Execution

1. Set two radios to the same site and group.
2. Key both radios at the same time.
3. Verify that one radio ends up transmitting and the other ends up receiving.
4. Verify that the call audio is routed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.10 Multi-site Announcement Group Call

Setup

Set radio 1 to (Group E).
Set radio 2 to (Group A).
Set radio 3 to (Group B). Groups A & B are in Announcement Group E per test group structure. Ensure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
2. Audio should be heard in radios 2 & 3. ANNOUNCE should be displayed at radios 2 and 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.11 Multisite Emergency Group Call

Setup

Program three radios with the same emergency home group. Set the supervisor radio (radio 1) and radio 2 to the home group. Set radio 3 to a different group (not home group). The radios must remain logged onto different sites.

Execution

1. Press the Emergency call button on radio 3 and talk within the pre-defined Emergency Autokey time, and/or PTT radio 3 during or just after that time.

2. Verify that radio 3 indicates the "TX EMER" declaration and that it reverts to the home group.

3. Verify that radio 1 (on Site 1) and radio 2 (on Site 2) indicate a "RX EMER" and hear audio on the emergency home group.

4. Clear the emergency with the Supervisor radio (radio 1). Verify the emergency clears in the radios.

5. Repeat the previous steps for encrypted voice.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.12 Multi-site Routing (for Multi-site Logout)

Setup

This test requires the following:
Radio 1, logged into Site 1.
Radio 2, logged into Site 2.

Note: Site 1 and 2 should be selected such that Radio 2 can log into Site 1 and then Site 2. If coverage prevents this, then program a third radio with the ID of Radio 2. Use the third radio to key on Site 1 with the ID of Radio 2 whenever the test procedure calls for this. The primary objective of this test is to demonstrate that the system routes calls to Site 2 whenever a unit (i.e. radio 2) is logged onto Site 2 and does not route calls to Site 2 when no units are logged into Site 2.

Execution

1. Key Radio 1 on Site 1. Verify channel assignments occur on Site 2. Unkey radio.

2. Key Radio 2 on Site 1 (Radio 2 is no longer logged into Site 2). Verify no channel assignment occurs on Site 2 since there are no radios logged into Site 2. Unkey radio.

3. Key Radio 1. Verify no channel assignment occurs on Site 2 since there are no radios logged into Site 2. Unkey radio.

4. Key Radio 2 on Site 2. Verify a channel assignment occurs on Site 2. Unkey radio.

5. Key Radio 1. Verify a channel assignment occurs on Site 2 since Radio 2 is logged into Site 2. Unkey radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.13 Site Trunking (Failsoft) Indication

Setup

Radio 1 and Radio 2 enabled on the Site under test (Site 1), using Talkgroup A. Both radios must have a display.

Radio 3 on a different Site (Site 2) also programmed with Talkgroup A.

Execution

1. Verify that the Radio 1, Radio 2, and Radio 3 can communicate on the system.
2. Turn OFF power to or disconnect the SiteLink, causing loss of communication from the site back to the Network Switching Center.
3. Verify that Radio 1 and Radio 2 indicate a Failsoft alarm ("F") on their displays.
4. PTT Radio 1 on Talkgroup A. Verify audio is heard at Radio 2. Verify audio is not heard on Radio 3.
5. Reenable the SiteLink. Verify the Failsoft alarm disappears on the radios and that communications with Radio 3 is reestablished.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.14 Unconfirmed Call (Multisite Late-Enter)

Setup

Log Radio 1 into Site 1 on the test group A.
Log Radio 2 into Site 2 on the test group A.
Log Radio 3 into Site 2 on the test group A.
Make sure that Confirm Call is disabled for test group A at the two sites.

Execution

1. Key up additional radios on different groups (e.g., B & C) on Site 1 so that there are no channels available to process a call on Group A on Site 1.

To reduce the number of radios required, some of the working channels on Site 1 can be disabled while performing this test.

2. Key up Radio 2 on Group A on Site 2. Radio 2 should get the grant tone and the call should go through to Radio 3 on Site 2. Since Site 1 has no channels available, the call should not go through to Radio 1 on Site 1.

3. While Radio 2 is still keyed up, free up a channel on Site 1.

4. Verify that the call gets routed to Site 1 and that Radio 1 late-enters into the call on that site.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.15 Confirmed Call

Setup

In the system, enable Confirm Call on a test group. Ensure that the group is set up for multisite operation.

Log the radios to the sites as follows:
Radio 1, Site 1 on the test group A
Radio 2, Site 2 on the test group A

Additional radios are required to busy the working channels. If the system is large, it might be necessary to disable channels at the two sites.

Execution

1. Key up additional radios on Site 1 so that there are no channels available to process a call on the Test Group on Site 1. To reduce the number of radios required, some of the working channels on Site 1 can be disabled while performing this test.

2. Key Radio 2 on Site 2 and verify that the confirmed call is not allowed to proceed until the "Confirmed Call Timeout" period has expired. The call should go through to Site 2, but not to Site 1.

3. Repeat this test, but this time, free up a channel on site 1 before the "Confirmed Call Timeout" period expires. Verify that the call goes through to both Site 1 and Site 2.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.16 Roaming (ProRoam)

Setup

The two radios used for this test must be capable (feature encrypted) and programmed for ProRoam. The radios must be valid on the two sites (Site 1 and Site 2) being used to conduct the tests. Site 1 and Site 2 should have overlapping coverage to verify Priority System Scan (if tested). Verify that the Tone Suppress Option is not selected in the personality so that an audible tone can be heard once the radios switch systems.

Program both radios for Dynamic Scan mode. Static works.

To test Priority System Scan (a.k.a., Preferred Site), ensure only Radio 1 has one of the sites (Site 1) used for the test as its Priority System. Have Radio 2's Priority System Scan site set to a site <u>not</u> near the sites used in this test (i.e., not Site 1 or Site 2).

Note that the display and indications of each model of radio differ. This test describes the general procedure for ProRoam Roaming. Refer to the specific radio operator's manual or the ProRoam Release Notes for details.

Log Radio 1 and Radio 2 onto the Site 1 used for this test. Ensure the radios are communicating on this system.

5.16.1 Roaming

Execution

1. Verify the name or indication of the system initially logged into by Radios 1 & 2 is Site 1.

2. Begin traveling toward an area where the coverage from Site 2 is stronger than the coverage from Site 1.

3. As you travel away from Site 1 towards Site 2, the signal quality of Site 1 will deteriorate. Once the signal level of Site 2 exceeds the programmed ProRoam parameters in the personality, Radio 1 and Radio 2 will switch to the Site 2. The radios will generate audible tones and will visually indicate that they have switched to Site 2.

4. After the radios have both switched to the Site 2, verify communications continue. (Test continued in 9.2 for Priority System Scan.)

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.17 Centralized Telephone Interconnect Calls

5.17.1 Radio Originated Interconnect Call

Setup

This test requires a radio, one phone with known phone number, and UAS.

Execution

1. From radio, place a call to phone and observe that the call is assigned a channel on the RNM Call Monitor screen. Ringing should occur at Phone.

2. Answer phone, and talk. Audio should be heard at radio. PTT radio and talk. Audio should be heard at phone.

3. Terminate the call from the radio and observe that call ends and channel is released from Interconnect.

4. From radio, recall the prestored number to call phone, and PTT. Observe a channel is assigned for the call on the RNM Call Monitor screen. Ringing should be heard at phone.

5. Answer phone; audio should be heard at radio. PTT radio and talk. Audio should be heard at phone.

6. Select another site for radio and repeat the steps 1 thru 4. Monitor the second site at the RNM Call Monitor.

7. Terminate the call from the radio.

8. Repeat the steps 1 thru 2 and continue the call until the channel times out. Verify that the radio receives the dropout alert tone (only in analogue calls).

9. Repeat the previous steps for each channel configured for interconnect.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.17.2 Telephone Originated Interconnect Call to Radio

Execution

1. From the telephone, place an interconnect individual call to the radio according to the operator's manual.

2. Verify ringing is heard at the telephone and the radio. While the radio is ringing, key the radio. Confirm that ringing is removed from the telephone and the radio.

3. Verify that the call allows two way communication between the radio and the telephone.

4. Continue the call until the channel times out. Monitor the second at the RNM Call Monitor. Verify that the radio receives the dropout alert tone (only in analogue calls).

5. Select another site for the radio and repeat the steps 1 thru 3. Monitor the second site at the RNM Call Monitor.

6. Drop the call from the telephone and verify the radio has terminated the call.

7. Repeat the previous steps for each channel configured for interconnect.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6. P25 SIMULCAST BYPASS OPERATION

This test is only applicable to GPS simulcast systems.

6.1 Setup

Program the TX site SitePro modules (both Control Points and Transmit Sites) to the Final Configuration. Refer to the installation manual for the guide to setting TX SitePros / CP SitePros personality parameters.

Verify the BYPASS plan has been reviewed and approved by customer representative. This procedure makes assumptions on bypass sites before implementation and test of the Miami-Dade System. After WMS/Panther signal strength data collection, final decision will be made on the actual bypass "ON" and "OFF" sites

Prepare a minimum of two terminal radios programmed to operate on the active BYPASS site and the main simulcast system.

MIAMI-DADE BYPASS MATRIX

Site	SITE	SYSTEM	BYPASS	Other Notes
Nomen.			On/Off	
Plan to be developed at Customer Design Meeting(s)				

6.2 Site OFF - Final Configuration

Execution

Sites intended to be "OFF" in event of BYPASS must have all channels set to "N" for CC, Clear Voice, Digital Voice, and Data fields in the TX Site SitePro modules.

1. Starting with site "2S", create a condition to force BYPASS by switching LCL/BYPS switch on BYPASS Module to the ON position *(at the TX site)*.

2. Verify transmit site is in BYPASS mode. BYPS LED on Bypass module and the SitePro module display indicates "WC" instead of "SSWC" or "SSCC". Note: WC= Working Channel, standalone mode, SSWC=Working Channel, simulcast mode, and SSCC= Control Channel, simulcast mode.

3. Observe the repeater (station) SitePro modules. Verify there is no active control channel.

4. Verify no stations are keyed or producing RF power.

5. Restore the site to normal by returning the LCL/BYPS switch to the OFF position.

6. Verify transmit site is in normal simulcast mode. BYPS LED on Bypass module and SitePro modules indicate either "SSWC" or "SSCC".

7. Repeat steps 1-6 for the remaining "OFF" bypass sites in the simulcast system under test.

Results (Pass/Fail) _____

Tester: _____ Date: _____

Comments: _____

_____

_____

6.3 Site ON - Final Configuration

Execution

Sites intended to be "ON" and active in event of BYPASS must have channels intended to be active set to "Y" for CC, Clear Voice, Digital Voice, and Data fields, and inactive channels set to "N".

1. Create a condition to force BYPASS by switching LCL/BYPS switch on BYPASS Module to the ON position *(at the TX site)*.

2. Verify transmit site is in BYPASS mode. BYPS LED on Bypass module and the SitePro module display indicates either "WC" or "CC" instead of "SSWC" or "SSCC".

3. Observe the stations/repeater SitePro modules. Verify there is an active control channel on one of the SitePro modules. The remaining repeater/stations SitePro modules will indicate "WC".

4. Verify the station appearing as control channel is keyed, producing RF power and modulated with control channel data.

5. Verify a terminal radio set to the system programmed for the site in BYPASS with the correct site ID recognizes the site's control channel data.

6. Key the terminal radio on a group call.

7. Verify a working channel assignment is made within the channel group allowed in the personality.

8. Verify the call is heard on a second terminal radio set to the active BYPASS system.

9. Restore the site to normal by returning the LCL/BYPS switch to the OFF position.

10. Verify transmit site is in normal simulcast mode. BYPS LED on Bypass module and SitePro modules indicate either "SSWC" or "SSCC".

11. Repeat sections 2.1.1 and 2.1.2 for the remaining simulcast systems.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.4 Control Point Trunking Reset Control

A properly set up Simulcast BYPASS system will disable (hold in RESET) CPSitePro modules associated with active channels at a TX site operating in BYPASS. This keeps the remaining sites operating in Simulcast mode from being assigned to channels expected to be active at the site in BYPASS. Sites programmed to be OFF in BYPASS will not require any CPSitePro to be held in RESET.

This test will verify that the Control Point SitePro modules will be held in RESET corresponding to the active channels at a site as a result of the TX site being in BYPASS.

NOTE

This procedure requires simultaneous activity at the Control Point and Transmit Site.

Execution

1. Force a TX site that will become active into BYPASS by switching LCL/BYPASS switch on the BYPASS module to the ON position *(at the TX site)*.

2. Verify TX site is in BYPASS mode.

3. Verify transmit site is in BYPASS mode. BYPS LED on Bypass module and the SitePro module display indicates either "WC" or "CC" instead of "SSWC" or "SSCC".

4. Verify the Control Point "E" leads have become "inactive" by observing that the BYPASS LED on the System Bypass board located at the rear of the Common Rack associated with the site in BYPASS is ON.

5. Verify the System Bypass board OVERRIDE LED is OFF for the site in BYPASS, and its RESET ACTIVE LED is ON.

6. Verify the CPSitePro modules on the channels intended to be OFF are held in RESET. (on channel assignments.)

7. Observe the Site Manager monitor screen for the simulcast system. Verify the channels intended to be OFF at the Control Point display GETC Poll Failure as a result of being held in RESET.

8. Restore the site to normal by returning the LCL/BYPS switch to the OFF position *(at the TX site)*.

9. Verify the TX site SitePro modules revert to normal Simulcast.

10. Verify the Control Point "E" lead has returned to the "active" state by observing that the LED on the System Bypass board associated with the site in BYPASS is OFF.

11. Verify the System Bypass board OVERRIDE LED is OFF for the site in BYPASS, and its RESET ACTIVE LED is OFF.

12. Verify the CPSitePro modules associated with the site in BYPASS are returned to normal *(Not in RESET)*.

13. Verify Site Manager Monitor screen indicates GETC poll failures clear as a result of the CPTC RESET condition being cleared.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7. MAESTRO^{IP} P25 DISPATCH FEATURE SET

These tests assume a valid LID/GID database with aliases defined for the test entities has been set up, privileged and programmed into the console under test. It also assumes radios have been programmed with the above test entities. Tests can be conducted first with the microphone/select speaker and then with the headset.

7.1 Transmitting With a Microphone (Group Calls, I Calls)

Setup

Choose a group to use as a test group

Program a radio with the test group.

Program a console module with the test group.

Review Console User Profile settings for Console under Test (i.e. Audio Indicators).

7.1.1 Talk Group Call

Execution

1. Press the INSTANT TX function (for example right mouse button) on the module with the test group. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the Instant TX key.

2. Press the SELECT button on the module with the test group. Verify that the SELECT indication for that module becomes highlighted.

3. Press the SELECT TX function. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the SELECT TX function.

4. Press the PTT foot pedal. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the foot pedal.

5. Repeat the procedure with an encrypted talk group, if applicable.

7.1.2 Individual (Unit-to-Unit) Call

Execution

1. Program a module with the ID of the test radio. Select the console module with the test unit ID.

2. Press the SELECT TX function. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the SELECT TX function.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.2 Receiving Calls (Unit ID Display, Talkgroup ID Display, Aliasing)

Setup

Program the test group into a module.

Set a radio to the test group.

7.2.1 Talk Group Call

Execution

1. Unselect the console module with the test group. Key the radio and verify that the call is heard at the Unselect speaker and that the calling radio ID and the Call Indicator are displayed.

2. Select the console module with the test group. Key the radio. Verify that the call is heard at the select speaker and that the calling radio ID and the Call Indicator are displayed.

3. Key the radio. Verify that the module call light is on, the call is heard at the Select speaker and the calling radio ID is displayed.

4. Repeat the procedure with an encrypted talk group, if applicable.

7.2.2 Individual (Unit-to-Unit) Call

Execution

1. Program a module with the ID of the test radio.

2. Select the console module with the test unit ID. Call the console from the radio (ICALL with Console ID). Verify that the call is heard at the select speaker and that the calling radio ID and the Call Indicator are displayed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.3 Emergency Call and Emergency Alarm

Setup

This test requires a test radio capable of generating and clearing an emergency (i.e. Supervisor Radio).

Execution

1. UNSELECT the test group. Using the test radio, declare an emergency on the test group.
2. Verify the module turns red, the 'EMER' flag is briefly displayed in the module, the ID/Name of the test radio is displayed, the emergency message is displayed in the message window, and the emergency alert tone is heard on the console.
3. Pick the module with the emergency and depress 'Alarm Reset'. Verify the alert tone is silenced on the console, but the emergency is still displayed.
4. Select and transmit on the group with the emergency. Verify the test radio receives the call, and is still in emergency mode.
5. Clear the emergency using the 'EMER CLR' key. Verify the module no longer indicates an emergency.
6. Transmit on the test radio and verify the emergency is cleared and normal group calls have resumed.
7. With the test group selected on the console, declare an emergency on the test group. Verify the console and radio have the same indications as steps 2 to 4.
8. Clear the emergency with the console.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.4 Agency Broadcast (System Wide Call)

Setup

Choose an agency to use as a test group

Program at least two radios with different subfleets but in the same test agency.

Program a console module with the test agency.

Review Console User Profile settings for Console under Test (i.e. Audio Indicators).

Execution

1. Press INSTANT TX on the module with the test agency. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radios. Release the Instant TX key.

2. Press the SELECT button on the module with the test group. Verify that the SELECT indication for that module becomes highlighted.

3. Press the SELECT TX function. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radios. Release the SELECT TX function.

4. Press the PTT foot pedal. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radios. Release the foot pedal.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.5 Alert Tones

Execution

1. Press the SELECT button on the module with the test group. Verify that the SELECT indication for that module becomes highlighted.

2. Press and hold the foot pedal or 'Selected Transmit' key. The test radio will receive the call. While still transmitting, press one of the three alert tone keys (Alert, Pulse, Warble). Verify the alert tone is received by the radio and also heard on the console.

3. While not transmitting, press and hold one of the alert tone keys. Verify the console transmits on the selected group, the test radio receives the call, and the alert tone is heard by the radio and console. When the Alert tone key is released, verify the call drops.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.6 Console Pre-Empt

Setup

Choose a group to use as a test group

Program two radios with the test group.

Program a console module with the test group.

Execution

1. Key the first radio on the test group and hold the call up. Verify that audio is heard at the second radio and the console.

2. Key the console on the test group and hold the second, pre-empting call up. Verify that the XMT indicator is displayed along with the pre-empted caller LID and CALL indicator. Verify that the second radio begins to hear the console audio and not the first radio call. Verify that the pre-empted radio audio is still heard on the pre-empting console.

3. Unkey the first radio. Verify that the pre-empted caller LID and CALL indicators are removed and the pre-empted radio audio is no longer heard on the pre-empting console.

4. Unkey the console. Verify that the call drops.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.7 Simulselect

Setup

Program four test groups.
Have on hand 2 radios programmed to 2 of the test groups and logged on to site.

Execution

1. Create a 4 group Simulselect on the 4 test group modules. Verify that the ACTIVE indicator (i.e. S1 displayed in each module) for SIMULSELECT 1 comes ON and the SELECT indicators of the 4 group modules are ON and highlighted, respectively.

2. Un-select SIMULSELECT 1 and verify that the active indicator goes OFF.

3. Re-activate SIMULSELECT 1. Verify that the ACTIVE indicator comes ON.

4. Modify SIMULSELECT 1 by removing two of the groups in the Simulselect. This results in a two group Simulselect. Verify that the ACTIVE and SELECT indicators of the two remaining groups are ON and highlighted, respectively and the ACTIVE and SELECT indicators of the two deleted groups are OFF.

5. Set one radio on each of the test groups in the Simulselect and turn scan off. Activate and select SIMULSELECT 1. Key one of the radios on its test group. Verify that the call is heard at the select speaker and not at the other radio.

6. Repeat the previous step, except key the other radio.

7. Transmit from the console on SIMULSELECT 1. Verify that audio is heard at both radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.8 Patch

Setup

Program four test groups.

Have on hand, 2 radios programmed with 2 of the test groups and logged on to sites.

Execution

1. Create a 4 group patch on PATCH 1. Verify that the ACTIVE indicator for PATCH 1 (i.e. P1 indicator in each module) comes ON and the four modules are included in the patch.

2. De-activate PATCH 1 and verify that the ACTIVE indicator goes OFF.

3. Re-activate PATCH 1. Verify that the ACTIVE indicator comes back ON.

4. Modify PATCH 1 by removing two of the groups in the patch. Verify this results in a two group patch. Verify that the patch indicators of the two

remaining groups are ON and the patch indicators of the two deleted groups are OFF.

5. Set each radio to a different test group in the patch and turn scan off.

6. Activate and Select PATCH 1.

7. Key one of the radios on its test group. Verify that the call is heard at the other radio and at the select speaker.

8. Repeat the previous step, except key the other radio.

9. Key the console by pressing the transmit bar. Verify that audio is heard at both radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.9 Console to Console Interaction (Intercom and Crossmute)

7.9.1 Console Intercom

1. On Console A, program a module with the console ID of Console B. On Console B, program a module with the console ID of Console A. Select this module on both consoles. Transmit from Console A on the module for Console B.

2. Verify on Console A that 'XMIT' is displayed in the module. Verify that on Console B, 'BUSY' is displayed in the module. Release the transmit from Console A.

3. Answer the call at Console B by transmiting from Console B on the module for Console A.

4. Verify on Console B that 'XMIT' is displayed in the module. Verify that on Console A, 'BUSY' is displayed in the module. Release the transmit from Console B.

7.9.2 Console Crossmute

Setup

Establish two consoles (A and B) to test the Crossmute function. The Consoles must be on the same NSC. Program and select a test group on both consoles.

Execution

1. Place a call on console A on the test group.
2. Verify that console B can hear console A in the select speaker.
3. At console B, mute console A.
4. Place a call on console A on the test group and verify that it cannot be heard at console B.
5. Restore the desired cross mute setup.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.10 Call History

Setup

This tests compares programmed module call activity to the history scroll lists. Utility page, dispatch menu will be selected. Select either the "Select History" or "Unselect History".

Execution

1. Press the 'Scroll Up' and 'Scroll Down' buttons to scroll through the Unselect call history list. Compare these calls with known activity.
2. Press the 'Scroll Up' and 'Scroll Down' buttons to scroll through the selected call history list. Compare these calls with known activity.
3. Press the 'Esc' button to exit the history scroll mode.
4. To monitor call history on a single group use the 'module history' button (on the 'module modify' menu. Use the 'scroll up' and 'scroll down'

buttons to scroll through the calls for the picked module. Compare these calls with known activity.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.11 User Definable Screens

Setup

Verify User Definable Screens (UDS) is installed on a Maestro Dispatch Console. This console may be used to develop and verify the custom screen configurations required by the customer dispatch center operations.

Execution

In the C3 Maestro Configuration Editor verify the appropriate message text is defined for the Radio Status message that will be used.
Example:

Number	Type	Message Text
1	RSM	RSM1-TXT
2	RSM	RSM2-TXT
3	RSM	In Route

In the UDS modify Screen File #2 as follows:

A) Use the PAGE pull-down menu and select "BUTTON TEXT and COLOR".
B) Change LABEL TEXT for PAGE button number 1 to "Fire Dispatch".
C) Change LABEL TEXT for PAGE button number 2 to "Police Dispatch".

In the UDS modify Screen File #2 as follows:

A) Use the MODULE pull-down menu and select ADD and RSM to add the previously defined RSM status
B) Position the module where desired on the console screen layout.
Note: Existing modules may need to be deleted to make room for the new RSM modules.

Restart the C3 Maestro application and verify the changes have taken place on the Dispatch Screen.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.12 Call Director Interface

Setup

Dispatch Console equipped with a Call Director interface, connected to a colocated (i.e., at the dispatch console) telephone line over a customer-furnished phone line & dial/on-hook/off-hook device.

Radio 1 on the same site, communicating on Talkgroup A.

Execution

7.12.1 Answering a Call

Execution

1. Establish a call by dialing the Call Director telephone number and then answering the call at the Console.
2. Verify the phone audio is heard in the select speaker along with select audio.
3. Transmit on the CD TX. Verify the Dispatcher audio is heard on the phone audio and the phone audio is not heard on the select speaker.
4. Release the CD TX. Verify the Dispatcher audio is not heard on the phone audio and the phone audio is heard on the select speaker along with select audio.
5. Select and TX on the module. Verify the Dispatcher audio is heard on the radio, but not on the phone audio.
6. Release the phone line from Call Director equipment. Verify the Console has "hung-up" the phone. No CD audio should be heard in the select speaker, and the CDOH status is not displayed on the status panel.
7. Key a radio on the selected module. Verify the audio is heard in the select speaker.

7.12.2 Patching a Call

A call director patch is activated by pressing <ALT>+<MODULE SELECT> from the keyboard or by the Call Dir. Patch button using the mouse/touch screen, when a module is picked.

Execution

1. Establish a call by dialing the Call Director telephone number and then answering the call at the Console.

2. Verify the phone audio is heard in the select speaker along with select audio.

3. Transmit on the CD TX. Verify the Dispatcher audio is heard on the phone audio and the phone audio is not heard on the select speaker.

4. Release the CD TX. Verify the Dispatcher audio is not heard on the phone audio and the phone audio is heard on the select speaker along with select audio.

5. Select the module and activate the call director patch. Verify phone audio is heard on the select speaker and on the radio and the alias background is green.

6. Key the radio. Verify the radio is heard on the telephone and in the select speaker, phone audio is heard on the select speaker even if the radio is transmitting.

7. Unkey the radio.

8. Deactivate the call director patch. Verify the XMT indication in the module is erased and the alias background is normal.

9. Communicate from the dispatch position over the telephone line.

10. With the telephone call still active, place a call from the same dispatch console position to Radio 1 on Talkgroup A. Verify the telephone call does not drop and the ability to communicate with Radio 1 on Talkgroup A when PTT'ing at the console.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.13 Enhanced RTT Feature

The following tests demonstrate RTT initiated voice calls to the Maestro^{IP} Dispatch Consoles as per requirements.

Transit Mobiles will be used as terminal equipment to initiate calls to Dispatch Consoles using the RTT function.

7.13.1 Regular RTT Call to Dispatch

Setup

This section demonstrates the normal RTT from a transit user and the associated voice call response from the Dispatch Console operator. Assumptions: Radios, Consoles are already logged on into the system.

Execution

1. Clear all RTT's from Console #1 and Console #2 RTT queue using the Delete Button. Select the (Group C) talkgroup on Console#1.

2. Using Radio 1 on the (Group A) talkgroup, press the RTT button.

3. Verify that the terminal indicates the RTT message was sent by the terminal.

4. Verify that for the Dispatch Console, the RTT message is received and placed in the RTT queue. The RTT message indicates UserID, GroupID and provides a time stamp of when the call was received.

5. Verify that for the Dispatch Console, a primary RTT tone is generated and the background color of the RTT module changes to "Active Primary RTT Message(s)".

6. Press "Reply" button on the Dispatch Console RTT module, and make a voice call to terminal 1.

7. Verify that on the Dispatch Console, (Group A) is selected, the Group voice call was successful, the RTT ringing tone is deactivated, the call count of the RTT module's highlighted entry is reset to zero.

8. Verify that after Reply is released, RTT modules background color is changed to normal.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8. *HIGH AVAILABILITY FAILOVER TESTS*

8.1 Primary VNIC Failover

Setup

Locate the primary NSS1 server. From the root user login screen, initaite a VNIC failover by typing VNICshutdown.

Execution

1. Note that Primary VNIC (NSS1) goes down.
2. Verify that Secondary VNIC (NSS2) becomes Primary.
3. Verify call functionality by making group and individual radio calls.
4. Verify that NSS1 VNIC comes back into operation as the standby VNIC.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.2 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.
3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.3 Individual Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.

2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.

3. Release the PTT on radio 1 and immediately PTT on radio 2.

4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.

5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.

6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.

7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.

8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.4 Secondary VNIC Failover

Setup

Locate the primary NSS2 server. From the root user login screen, initaite a VNIC failover by typing VNICshutdown.

Execution

1. Note that Primary VNIC (NSS2) goes down.
2. Verify that Secondary VNIC (NSS1) becomes Primary.
3. Verify call functionality by making group and individual radio calls.
4. Verify that NSS21 VNIC comes back into operation as the standby VNIC.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.5 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.

3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.6 Individual Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.

2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.

3. Release the PTT on radio 1 and immediately PTT on radio 2.

4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.

5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.

6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.

7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.

8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.7 Primary Router (bss1) Failover

Setup

Locate the primary bss1 router. From the admin user login screen, initaite a reset to fail the router.

Execution

1. Note the primary bss1 router goes down.
2. Verify the secondary bss2 router becomes Primary by;
3. Verify call functionality by making group and individual radio calls.
4. Verify primary bss1 router comes back into operation after reboot.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.8 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.

3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.9 Individual Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.

2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.

3. Release the PTT on radio 1 and immediately PTT on radio 2.

4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.

5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.

6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.

7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.

8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

9. POWER INTERRUPTION

9.1 Power Backup / UPS Verification

Setup

Prior to the execution of this test, ensure any computers or other devices with volatile memory are backed up or are on power circuits not affected by this test.

This test should be executed at all locations where power backup is provided. Record in the comments section the names of locations tested.

Execution

1. From the facility circuit breaker panel, disconnect main power.
2. Verify communication is uninterrupted.
3. After predetermined extent of designed backup power, reapply power.
4. Verify communication is uninterrupted.

Results (Pass/Fail) _____

Tester: _____

Date: _____

Comments: _____

GPS REFERENCE INTERRUPTION

10.1 Site Synchronization / GPS Interruption

Setup

Prior to the execution of this test, ensure that the system does not have any existing conditions that would cause it to enter into Global Bypass during this test.

Execution

1. From the remote site. Disconnect the GPS reference clock.
2. Verify that the site continues to simulcast for one hour.
3. Reconnect GPS reference clock.

Results (Pass/Fail) _____

Tester: _____

Date: _____

Comments: _____

Fielded Functional Test Procedures

for

Miami-Dade

FAT-EN0012B Rev – A

P25 Simulcast System

510

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ABOUT THIS DOCUMENT

This document was specifically prepared for the customer shown below. Each section of this document is individually maintained in the Harris document control system. The revisions of each section are individually listed.

Customer:	Miami-Dade
Prepared By:	Shaun Hancock, Harris Corporation
Total Test Pages:	**61**

DOCUMENT USAGE

Many of the tests in this document will need to be run on multiple pieces of equipment. For instance a console test may be run on three consoles. For tests that need to be run multiple times, log in the comment section of the result box the identifier of the equipment tested. Although specific tests are not included relating to electrical measurements or timing parameters of equipment, these tests and levels are conducted and recorded as part of Harris' standard installation practices. These parameters include but are not limited to:

- Transmit Frequency and Deviation
- Output and Reflected Power
- Receiver Sensitivity
- Receiver Multicoupler Gain (if applicable)
- Receiver Preamplifier Gain (if applicable)
- Time Domain Reflectometry of Transmission Line
- Combiner Loss (if applicable)
- Audio line out
- Audio line in

System parameters and measurements will be provided to Miami-Dade as part of the final documentation package.

SUBSCRIBER UNIT USAGE

All tests for subscriber (terminal) units in this document will be performed with Harris subscriber units unless the test setup identifies another Vendor's subscriber unit to be used for the test.

1. *CUSTOMER APPROVAL*

This Acceptance Test Procedure has been read and approved for use as the system acceptance test.

Miami-Dade Representative	Harris Corporation – Systems Engineer
Signature	Signature
Printed name and title	Printed name and title
Miami-Dade Representative	Harris Corporation – Project Manager
Signature	Signature
Printed name and title	Printed name and title

2. *SYSTEM ACCEPTANCE*

This Acceptance Test Procedure has been successfully completed.

Customer Representative	Harris
Signature	Signature
Printed name and title	Printed name and title
Date	Date

3. P25 REGIONAL NETWORK MANAGER (RNM) AND UNIVERSAL ADMINISTRATION SYSTEM (UAS)

3.1 Create UAS User Account with Agency privileges

Setup

Access to an UAS or UAS client. Predefined Agency and Region in the UAS.

Execution

1. Log into the UAS.
2. Create an Agency administrative class by selecting System/Administrative/Admin Class.
3. Select "Add Entry" to display the Administration Classes Detail screen.
4. Enter a name (e.g., USMAAgency) and description. Download.
5. Click the underlined agency name from above and then Add Entry to display Administrator User Privileges Detail.
6. Select appropriate Agency from Scope pulldown menu. Enter a description, and select Read Only (RO) or Read/Write (RW) privileges. Download.
7. Select System/Administrative/Admin User to create a new user to use this class of service.
8. Select "Add Entry" to display the AdminUser Detail screen.
9. Enter an Admin User name (e.g., USMAAgencyUser); select the Admin Class from #5 above; enter a description; and enter a password. (Note password here or elsewhere for future reference.) Download.
10. Verify under System/Administrative/Admin User that a new Admin User as named in #9 with the class as defined in #5 is listed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.2 Create Talkgroups and Units (UAS)

Setup

Access to the UAS or an UAS client.

Availability of predetermined ID ranges for agencies, talkgroups, users & IP addresses.

Execution

1. Log into the UAS.
2. In the Region for the Agency under test, verify or create the available range of talk group ID's, User ID's, and IP addresses by selecting the Regions menu and making the appropriate entries.
3. For the Agency under which the talkgroup should be created, select Agency/ "agency name"/ R/W Talk Group.
4. Click Add Entry and then on the TalkGroup Detail screen input the TG ID, Name, Description, and select all other appropriate parameters. Click OK and download.
5. Verify the talkgroup has been added to the list of talkgroups.
6. To create units, for the Agency under which the unit should be placed, select Agency/"agency name"/Profile and create a profile with the talkgroup added in step 4. Next select Agency/"agency name"/Personality and create a personality containing the profile just created. Click OK and download.
7. Select Agency/"agency name"/Voice End User. Click Add Entry and then on the EndUser Detail screen input the User ID, password ("p25user"), Name, Description, etc. of the user. Modify privilege as desired. Click OK and download.
8. Verify the user ID has been added to the list of users.
9. Select Agency/"agency name"/Subscriber Unit and enter the appropriate User ID, IP Address, and ESN for the user created in step 7. Click OK and download.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.3 Site Access Control (UAS)

Setup

Access to UAS or an UAS client.

Ensure Regional Site Manager is connected into network and into site.

Radios 1 & 2 programmed with ID's valid on the site under test. Set to Group A.
Radio 3 programmed with an ID not valid on the site under test. Set to Group A.

Execution

1. If not already accomplished, download a database of valid radio ID's from the UAS to the site.
2. Program Radio 3 with an ID not within that list of valid radio ID's.
3. Attempt to PTT Radio 3. Verify access to the site is denied.
4. PTT Radio 1. Verify access to the site is permitted and audio is heard on Radio 2.
5. Enable Radio 3 in the UAS database and download.
6. PTT Radio 3. Verify access to the site is permitted and audio is heard on Radio 2.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.4 Subscriber Report (UAS)

Setup

Access to UAS or an UAS client.

Execution

1. Log into the UAS.
2. Select System/Report/Voice End User. Select the Region ID/Agency ID of the Region or Agency from which a subscriber report is desired. Modify Max Rows to a desired number.
3. Click the proper icon in the column to the right of Max Rows.
4. Verify the User ID's of the ROC & AOC selected are displayed. Select the Magnifying Glass icon for details on any specific User ID.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.5 Unit Enable/Disable

Setup

Obtain 2 radios switched to the same Group and note the IDs. Switch on the radios and ensure that they communicate. Verify all sites are on line. Note that Unit Disable will automatically delete the encryption key from the radio as it is disabled. To restore unit functionality, the radio must have the encryption key re-installed.

Execution

1. Select group A on both radios and verify that the radios can communicate.
2. From the UAS:
   Select UNIT ENABLE/DISABLE.
   Under the UNIT Enable/Disable tab, enter the ID of radio 1 to be modified.
   Select the DISABLE button and check the status.

3. Attempt to PTT the radio and verify that it will not communicate with the system. PTT radio 2 and verify that radio 1 cannot receive the call.

4. Enable the ID of radio 1. Verify that the Enable/Disable screen indicates that the Current State of the radio is Enabled. Confirm that the radios can communicate in unencrypted mode.

5. Switch off radio 2 and disable it from the Enable/Disable screen. Verify that the desired state is Disabled and the Current State is Enabled. Switch on the radio and verify that, on logging into the site, it becomes disabled. Verify that the State settings change to Disabled and that the radios cannot communicate.

6. Enable both radios and verify that radios can communicate communicate in unencrypted mode.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.6 Dynamic Regroup

Setup

Ensure that Dynamic Regroup is a feature of the customer's radios. Ensure that both the Radio ID's and the Talkgroup IDs to be used are in the database and that the database has been successfully uploaded to site(s).

Radio 1 set to Talkgroup A.
Radio 2 set to Talkgroup B.

Execution

1. From the UAS client, send a dynamic regroup command to Talkgroup C for Radio 1 and Radio 2.

2. Verify that Radio 1 and Radio 2 are forced to Talkgroup C.

3. At Radio 1 and Radio 2, attempt to change talkgroups away from Talkgroup C. Verify that both radios are forced to remain on Talkgroup C.

4. PTT Radio 1 on Talkgroup C. Verify that Radio 2 hears audio on Talkgroup C and can respond.

5. Clear the dynamic regroup command from the UAS client. Verify that both Radio 1 and Radio 2 are no longer forced to Talkgroup C (i.e., they can select other predefined talkgroups).

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.7 Unit Deregistration

Setup

Radio 1 allowed on System X, Site 1; programmed to Group A.
Radio 2 allowed on System Y, Site 1; programmed to Group B.

Note MES AGE timeout (in VNIC) for deregistration or reduce it to a smaller value just for the purpose of testing.

Execution

1. PTT Radio 1 on Group A and verify it communicates on the system to Radio 2. Return call from Radio 2 to Radio 1 on Group A.

2. Turn off radio 1 and wait for expiration of the radio timeout period.

3. PTT Radio 2 on System Y, Site 1 after expiration of timeout. Verify no channel is assigned to the System X, Site 1, since Radio 1 has deregistered from site.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.8 Real Time Site Monitoring (RNM)

Setup

Access to a Regional Network Manager and within radio coverage of a site connected to that Region.

Radio 1, Radio 2, and Console A operating on the site & NSC under test, all programmed with Group A.

Execution

1. On the RNM, open the real time event viewer for the site's channels by clicking the Realtime Viewers button from the Task Launcher. Click Site Calls. Select the site and expand. Select channels to add.

2. Place a group call from Radio 1 to Radio 2 on the site, and verify that the event viewer displays the talkgroup ID and calling party ID. Verify the state changes from Free to Talk. Verify the TG Alias displays the Group #.

3. Place an emergency call from Radio 1 to Radio 2 on the site, and verify that the event viewer displays the Emergency indication (in the VNIC Time Stamp column) in addition to the talkgroup ID and calling party ID.

4. Place an individual call from Radio 1 to Radio 2 on the site, and verify that the event viewer displays an Individual call on the channel. Verify the VNIC-assigned Talk Group ID changes with each transmission.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.9 Site Usage Reports (RNM)

Setup

Ensure radio traffic has occurred across the network recently. If necessary or desired, place some calls with a known radio ID on multisite talkgroups prior to running the test for reference during the test.

At the Regional Network Manager or Central Network Manager, enter a URL of "http://<RNM ip address>/report/", where <RNM ip address> is the IP address of the Network Manager under test.

Execution

1. From "site-oriented reports," select the following:

   - Report scope: display activity in region [Region ID under test].
   - Report type: Site-oriented reports/"Calls per site in the selected region"
   - Report duration: Yesterday
   - Chart options: top 20

2. Select "Create Report"

3. Verify a graph of "Calls by Site" displays with the Region's correct number of sites.

4. Click the hyperlinked numeric value under the Calls column. Verify a table indicating talkgroups, caller, duration, and sites is displayed.

5. Click the "Back" button in the web browser.

6. Click the numeric value under the Site ID column. Verify multiple graphs indicating the number of calls by hour, voice group, call type, User ID, etc. are displayed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.10 Infrastructure Summary (RNM or CNM)

Setup

Access to the Regional or Central Network Manager.

Execution

1. From the Task Launcher click Network Viewer. Expand the tree and select desired level (1,2,3) to view.

2. From the View menu, select Icons and verify the Infrastructure is presented in Icon view.

3. From the View menu, select List and verify the Infrastructure is presented in List view.

4. From the View menu, select Details and verify the Infrastructure is presented in Detail view.

5. Choose Icon view and select an Object. Right Mouse Click and select Properties or any other desired menu attribute to view information related to the object.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.11 Alarm Indications (RNM)

Setup

Access to the a site under test and its RNM. The alarm will need to be generated by a channel being physically powered-down. Refer to the Manual for explanation of the alarms. Note the time of the alarm condition for later tests.

Execution

1. Generate an alarm indication on the site by turning OFF a channel's repeater.

2. On the RNM, select the Network Viewer from the Task Launcher to view site alarms. Verify that the RNM indicates a site alarm for the affected channel (the object turns Red).

3. Turn the repeater back ON. Verify that the alarm clears after acknowledgement of the initial alarm (the object turns Green).

4. Review alarm details by performing a Right Mouse Click on an Object. Select the desired menu option.

5. Repeat showing alarms for Router Failure, RF Interference, Site Link failure.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

3.12 Site Reconfiguration

Setup

Access to the Regional Network Manager and a site under test with at least 3 channels.

Radios 1 & 2 operating on the site, using Group A.

Execution

1. In the RNM, access the screen to configure channel parameters.
2. Make a site configuration change, such as forcing the Control Channel to operate on just channels 1 & 2 of the site. Download changes to the site.
3. Force the Control Channel to rotate from Channel 1 to Channel 2 by holding the reset button on the SitePro card for 3 seconds. Observe that the Control Channel rotates to Channel 2.
4. Force the Control Channel to rotate from Channel 2 by holding the Channel 2 SitePro card reset button for 3 seconds. Observe that the Control Channel rotates back to Channel 1, rather than to Channel 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4. P25 SITE FEATURES

Setup

This setup applies to the tests contained in this section. Three radios are required, programmed as follows:

(Utilize test or customer data base groups A, B, C & D as specified here)

Radio 1:	All Call group (Group A)
Radio 2:	(Group A) (Group B)
Radio 3:	(Group A) (Group C) (Group D)

Note1: Additional radios are required for Call Queue Declaration Alert test.
Note 2: Group priorities 5 = 200 (@ UAS), 3 (@ site) highest
4 = 100 (@ UAS), 7 (@ site) mid
3 = 10 (@ UAS), 10 (@ site) lowest

Group matrix			
Name	**GID**	**Priority**	**Comments**
Group A		5	
Group B		4	
Group C		4	
Group D		3	
Group E		3	Announcement Group for Group A, B, C and D.

4.1 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.

3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.2 Individual (Private) Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.

2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.

3. Release the PTT on radio 1 and immediately PTT on radio 2.

4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.

5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.

6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.

7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.

8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.3 Recent User Priority

Setup

This test requires 2 more trunked radios than there are site working channels. Disable channels (if necessary) until there are 2 working channels at the site. Thus, 4 radios are required for this test. Set up the radios 1, 2, 3, and 4 to different talkgroups, with each talkgroup configured for equal talkgroup priorities. Save and upload the database if required.

This test is to be run with no other users on the system and at intervals as set in the Recent Caller Interval (a time of greater than 10 seconds is recommended for the test which is configurable in the SitePro).

Execution

1. PTT and release radio 1 (establish a recent user entry).
2. PTT radios 3 and 4 and hold on transmit to busy both working channels.
3. PTT and release radio 2 (queue a call less recent than radio 1).
4. PTT and release radio 1 (queue the recent user).
5. Unkey radio 4 and verify that radio 1 unqueues and transmits.
6. Unkey all radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.4 Call Priority for Group IDs

Setup

This test requires two more radios than there are site working channels. The procedure is presented assuming there are two working channels. Disable channels (if necessary) until there are two working channels on the site. Thus, 4 radios each with a different group are required for this test. At the group database, set up the groups of radios 1, 2 and 3 for voice call priority 3 (medium). Set up the group of radio 4 for priority 6 (highest). Make sure the ID voice priority of each of the radios is less than or equal that of the respective Group ID (GID) voice priority. Save and upload the database.

Execution

1. PTT radios 1 and 2 and hold on transmit to busy both working channels.
2. PTT and release radio 3 (medium priority entry into the queue).
3. PTT and release radio 4 (high priority entry into the queue).
4. Unkey radio 1 and verify that radio 4 unqueues and keys.
5. Unkey radio 2 and verify that radio 3 unqueues and keys.
6. Unkey all radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.5 Single Site Call Queue Declaration Alert

Setup

This test requires two more radios than the number of working channels on the selected system used for test. To minimize the test setup and radio requirements for sites with many channels, channels may be disabled on the site so only two working channels are operational.

Set up a number of radios equal to the number of operational working channels on the selected system (radio x, radio y, etc.) each with a different valid talk group selected.

Set up two additional test radios (radio 1, radio 2) both with the same valid group selected. This talk group must be different than the groups selected by the other test radios.

Ensure that group scan is disabled on all the radios.

Execution

1. Busy up all working channels on the system with the first set of radios (radio x, radio y, etc.) by pressing and holding the PTT button on each of the radios.
2. With all working channels busied, momentarily press and release the PTT button on test radio 1.
3. Verify that a Call Queued tone is heard at the radio.
4. Unkey (release PTT button) one of the first set of radios, ex. radio x.
5. Verify that radio 1 is assigned to the freed working channel and the grant tone is heard at the radio, without having to rekey the radio (redepress the PTT button).
6. Press the PTT button on radio 1 within the autokey time applicable to the radio type (approx. 2 seconds) to keep the assigned channel.
7. Verify that audio from radio 1 is heard at radio 2.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.6 Emergency Call Priority for Group IDs

Setup

This test requires the same setup as for Call Priority with one of the radios programmed as a Supervisor radio (enabled to clear emergencies).

Execution

1. PTT radios 1 and 2 and hold on transmit to busy both working channels.
2. PTT and release radio 4 (high priority entry into the queue).
3. Declare an emergency on radio 3 (medium priority entry into the queue but now at Emergency Priority).
4. Unkey radio 1 and verify that radio 3 unqueues and is assigned a channel without having to PTT. (Key the radio within the specified autokey time in order to keep the channel.)
5. Unkey all radios and clear the emergency with the Supervisor radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.7 Unit to Unit Call Alert Paging

Setup

Radio 1 with Call Alert programmed into a button ("PAGE") and Radio 2's ID programmed into its Individual Call list.

Radio 1 & Radio 2 on the same site.

Execution

1. Select the PAGE function from the MENU on Radio 1. Select Radio 2 from the preprogrammed list of radios and PTT Radio 1.
2. Verify Radio 1 displays "*TX PAGE" on the second line.
3. Verify Radio 2 displays the ID of Radio 1 on its first line and "*RX PAGE" on the second line. Verify Radio 2 beeps multiple times to indicate a received page.
4. Verify Radio 1 beeps multiple times to indicate the page was successfully sent.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.8 Out of Range Tone on PTT

Setup

One radio with valid ID and valid group on selected system.

System scanning disabled in radio personality as necessary for specific radio type being tested.

Execution

1. With valid group selected, and radio initially logged into and monitoring the control channel on the selected system, reduce the signal strength reaching the radio by some means (ex. unscrewing and removing the portable radio antenna, or moving further from the site).

2. Verify that the radio indicates loss of control channel on the display when the received signal strength is sufficiently reduced (i.e. out of range of system).

3. Press PTT button on radio, and verify that an out of range tone is heard at radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.9 Transmit Denied (for Invalid radio ID)

Setup

Program system so that radio ID is not valid on the site under test. Download database to site.

Execution

1. Press PTT button on radio with valid group selected.
2. Verify the radio is prohibited access to system.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5. *P25 TRUNKED FEATURES*

Setup

This setup applies to the tests contained in this section. Three radios are required, programmed as follows:

(Utilize test or customer data base groups A, B, C & D as specified here)

Radio 1:	All Call group (Group A)
Radio 2:	(Group A) (Group B)
Radio 3:	(Group A) (Group C) (Group D)

Note1: Additional radios are required for Call Queue Declaration Alert test.
Note 2: Group priorities 5 = 200 (@ UAS), 3 (@ site) highest
4 = 100 (@ UAS), 7 (@ site) mid
3 = 10 (@ UAS), 10 (@ site) lowest

Group matrix					
Name	**GID**	**Priority**	**Encryption**	**Key**	**Comments**
Group A		5			
Group B		4			
Group C		4			
Group D		3			
Group E		3			Announcement Group for Group A, B, C and D.

5.1 All Call

Setup

Set radio 1 to All Call, radio 2 to (Group A) and radio 3 to (Group C).

All Call is defined in the I-Call set.

Execution

1. Place the All Call from radio 1.
2. Audio should be heard at radios 2 and 3.
3. Set radio 2 to (Group B) and radio 3 to (Group C).
4. Place the All Call from radio 1.

5. Audio should be heard at radios 2 and 3.

6. Repeat the previous steps for encrypted voice, if applicable.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.2 Announcement Group Call

Setup

Set radio 1 to (Group E).
Set radio 2 to (Group A).
Set radio 3 to (Group B). Groups A & B are in Announcement Group E per test group structure. Ensure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. ANNOUNCE should be displayed at radios 2 and 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.3 Transmission Trunking

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Verify transmission trunking operation by noting that repeater channel in use is freed after PTT is released (i.e., no message trunking operation).

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.4 Transmit Grant Tone

Setup

One radio with valid ID and valid group on selected system.

Grant tone (Ready to Talk tone) enabled in radio personality as applicable for specific radio type being tested.

Execution

1. Press PTT button on radio with valid group selected.

2. Verify grant tone is heard at radio when working channel access is granted.

Note: If the call is queued, the grant tone will be delayed until the call is assigned a working channel.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.5 Group Scan

Setup

Two radios (radio 1, radio 2) each with valid IDs and two valid groups (group A, group B) on selected system.

Radio 1 set up with group A and group B in the scan list, group A selected, and group scan initially disabled.

Execution

1. Place a call from radio 2 on talk group A.
2. Verify the call is received and audio is heard on radio 1.
3. Place a call from radio 2 on talk group B.
4. Verify the call is not received by radio 1.
5. Enable group scan on radio 1.
6. Place another call from radio 2 on talk group B.
7. Verify that the call is now received and audio is heard on radio 1.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.6 Priority Scan

Setup

Set radio 1 to priority scan Group A and scan (at lower priority) Group B. Set radio 1 to Group C. Have scan enabled on radio 1.

Set radio 2 to Group B.

Set radio 3 to Group A.

Execution

1. With group C selected on radio 1, place a call from radio 2 on Group B.
2. Verify radio 1 scans to Group B and hears audio from radio 2. Continue transmitting from radio 2.
3. Place a call from radio 3 on Group A.
4. With radio 2 still transmitting on Group B, verify radio 1 priority scans to Group A and hears audio from radio 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.7 Transmit Busy Lockout

Setup

Two radios (radio 1, radio 2) each with valid IDs and same valid group on selected system.

Talk group used for test must be set up as transmission trunked. This feature does not apply to message trunked calls.

Execution

1. Place a call from radio 1 on selected talk group by pressing and holding the PTT button.
2. Verify the call is received and audio is heard on radio 2.
3. While the call is in progress, press the PTT button on radio 2.

4. Verify that radio 2 does not transmit over (step on) the call in progress.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.8 Continuous Control Channel Update

Setup

This test requires two trunked radios and a test group.

Execution

1. Set both radios to the test group.
2. Turn one radio OFF.
3. Key one radio and hold. Turn ON the second radio (and set it to the test group if necessary).
4. Verify that the second radio joins the call in progress and hears audio from the call in progress.
5. Unkey the first radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.9 Convert To Callee

Setup

This is a test of single site simultaneous call arbitration. Have two radios programmed to operate on the same site and group.

Execution

1. Set two radios to the same site and group.
2. Key both radios at the same time.
3. Verify that one radio ends up transmitting and the other ends up receiving.
4. Verify that the call audio is routed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.10 Multi-site Announcement Group Call

Setup

Set radio 1 to (Group E).
Set radio 2 to (Group A).
Set radio 3 to (Group B). Groups A & B are in Announcement Group E per test group structure. Ensure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
2. Audio should be heard in radios 2 & 3. ANNOUNCE should be displayed at radios 2 and 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.11 Multisite Emergency Group Call

Setup

Program three radios with the same emergency home group. Set the supervisor radio (radio 1) and radio 2 to the home group. Set radio 3 to a different group (not home group). The radios must remain logged onto different sites.

Execution

1. Press the Emergency call button on radio 3 and talk within the pre-defined Emergency Autokey time, and/or PTT radio 3 during or just after that time.
2. Verify that radio 3 indicates the "TX EMER" declaration and that it reverts to the home group.
3. Verify that radio 1 (on Site 1) and radio 2 (on Site 2) indicate a "RX EMER" and hear audio on the emergency home group.
4. Clear the emergency with the Supervisor radio (radio 1). Verify the emergency clears in the radios.
5. Repeat the previous steps for encrypted voice.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.12 Multi-site Routing (for Multi-site Logout)

Setup

This test requires the following:
Radio 1, logged into Site 1.
Radio 2, logged into Site 2.

Note: Site 1 and 2 should be selected such that Radio 2 can log into Site 1 and then Site 2. If coverage prevents this, then program a third radio with the ID of Radio 2. Use the third radio to key on Site 1 with the ID of Radio 2 whenever the test procedure calls for this. The primary objective of this test is to demonstrate that the system routes calls to Site 2 whenever a unit (i.e. radio 2) is logged onto Site 2 and does not route calls to Site 2 when no units are logged into Site 2.

Execution

1. Key Radio 1 on Site 1. Verify channel assignments occur on Site 2. Unkey radio.

2. Key Radio 2 on Site 1 (Radio 2 is no longer logged into Site 2). Verify no channel assignment occurs on Site 2 since there are no radios logged into Site 2. Unkey radio.

3. Key Radio 1. Verify no channel assignment occurs on Site 2 since there are no radios logged into Site 2. Unkey radio.

4. Key Radio 2 on Site 2. Verify a channel assignment occurs on Site 2. Unkey radio.

5. Key Radio 1. Verify a channel assignment occurs on Site 2 since Radio 2 is logged into Site 2. Unkey radio.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.13 Site Trunking (Failsoft) Indication

Setup

Radio 1 and Radio 2 enabled on the Site under test (Site 1), using Talkgroup A. Both radios must have a display.

Radio 3 on a different Site (Site 2) also programmed with Talkgroup A.

Execution

1. Verify that the Radio 1, Radio 2, and Radio 3 can communicate on the system.
2. Turn OFF power to or disconnect the SiteLink, causing loss of communication from the site back to the Network Switching Center.
3. Verify that Radio 1 and Radio 2 indicate a Failsoft alarm ("F") on their displays.
4. PTT Radio 1 on Talkgroup A. Verify audio is heard at Radio 2. Verify audio is not heard on Radio 3.
5. Reenable the SiteLink. Verify the Failsoft alarm disappears on the radios and that communications with Radio 3 is reestablished.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.14 Unconfirmed Call (Multisite Late-Enter)

Setup

Log Radio 1 into Site 1 on the test group A.
Log Radio 2 into Site 2 on the test group A.
Log Radio 3 into Site 2 on the test group A.
Make sure that Confirm Call is disabled for test group A at the two sites.

Execution

1. Key up additional radios on different groups (e.g., B & C) on Site 1 so that there are no channels available to process a call on Group A on Site 1.

To reduce the number of radios required, some of the working channels on Site 1 can be disabled while performing this test.

2. Key up Radio 2 on Group A on Site 2. Radio 2 should get the grant tone and the call should go through to Radio 3 on Site 2. Since Site 1 has no channels available, the call should not go through to Radio 1 on Site 1.

3. While Radio 2 is still keyed up, free up a channel on Site 1.

4. Verify that the call gets routed to Site 1 and that Radio 1 late-enters into the call on that site.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.15 Confirmed Call

Setup

In the system, enable Confirm Call on a test group. Ensure that the group is set up for multisite operation.

Log the radios to the sites as follows:
Radio 1, Site 1 on the test group A
Radio 2, Site 2 on the test group A

Additional radios are required to busy the working channels. If the system is large, it might be necessary to disable channels at the two sites.

Execution

1. Key up additional radios on Site 1 so that there are no channels available to process a call on the Test Group on Site 1. To reduce the number of radios required, some of the working channels on Site 1 can be disabled while performing this test.

2. Key Radio 2 on Site 2 and verify that the confirmed call is not allowed to proceed until the "Confirmed Call Timeout" period has expired. The call should go through to Site 2, but not to Site 1.

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3. Repeat this test, but this time, free up a channel on site 1 before the "Confirmed Call Timeout" period expires. Verify that the call goes through to both Site 1 and Site 2.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.16 Roaming (ProRoam)

Setup

The two radios used for this test must be capable (feature encrypted) and programmed for ProRoam. The radios must be valid on the two sites (Site 1 and Site 2) being used to conduct the tests. Site 1 and Site 2 should have overlapping coverage to verify Priority System Scan (if tested). Verify that the Tone Suppress Option is not selected in the personality so that an audible tone can be heard once the radios switch systems.

Program both radios for Dynamic Scan mode. Static works.

To test Priority System Scan (a.k.a., Preferred Site), ensure only Radio 1 has one of the sites (Site 1) used for the test as its Priority System. Have Radio 2's Priority System Scan site set to a site <u>not</u> near the sites used in this test (i.e., not Site 1 or Site 2).

Note that the display and indications of each model of radio differ. This test describes the general procedure for ProRoam Roaming. Refer to the specific radio operator's manual or the ProRoam Release Notes for details.

Log Radio 1 and Radio 2 onto the Site 1 used for this test. Ensure the radios are communicating on this system.

5.16.1 Roaming

Execution

1. Verify the name or indication of the system initially logged into by Radios 1 & 2 is Site 1.

2. Begin traveling toward an area where the coverage from Site 2 is stronger than the coverage from Site 1.

3. As you travel away from Site 1 towards Site 2, the signal quality of Site 1 will deteriorate. Once the signal level of Site 2 exceeds the programmed ProRoam parameters in the personality, Radio 1 and Radio 2 will switch to the Site 2. The radios will generate audible tones and will visually indicate that they have switched to Site 2.

4. After the radios have both switched to the Site 2, verify communications continue. (Test continued in 9.2 for Priority System Scan.)

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.17 Centralized Telephone Interconnect Calls

5.17.1 Radio Originated Interconnect Call

Setup

This test requires a radio, one phone with known phone number, and UAS.

Execution

1. From radio, place a call to phone and observe that the call is assigned a channel on the RNM Call Monitor screen. Ringing should occur at Phone.

2. Answer phone, and talk. Audio should be heard at radio. PTT radio and talk. Audio should be heard at phone.

3. Terminate the call from the radio and observe that call ends and channel is released from Interconnect.

4. From radio, recall the prestored number to call phone, and PTT. Observe a channel is assigned for the call on the RNM Call Monitor screen. Ringing should be heard at phone.

5. Answer phone; audio should be heard at radio. PTT radio and talk. Audio should be heard at phone.

6. Select another site for radio and repeat the steps 1 thru 4. Monitor the second site at the RNM Call Monitor.

7. Terminate the call from the radio.

8. Repeat the steps 1 thru 2 and continue the call until the channel times out. Verify that the radio receives the dropout alert tone (only in analogue calls).

9. Repeat the previous steps for each channel configured for interconnect.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5.17.2 Telephone Originated Interconnect Call to Radio

Execution

1. From the telephone, place an interconnect individual call to the radio according to the operator's manual.

2. Verify ringing is heard at the telephone and the radio. While the radio is ringing, key the radio. Confirm that ringing is removed from the telephone and the radio.

3. Verify that the call allows two way communication between the radio and the telephone.

4. Continue the call until the channel times out. Monitor the second at the RNM Call Monitor. Verify that the radio receives the dropout alert tone (only in analogue calls).

5. Select another site for the radio and repeat the steps 1 thru 3. Monitor the second site at the RNM Call Monitor.

6. Drop the call from the telephone and verify the radio has terminated the call.

7. Repeat the previous steps for each channel configured for interconnect.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6. *P25 SIMULCAST BYPASS OPERATION*

This test is only applicable to GPS simulcast systems.

6.1 Setup

Program the TX site SitePro modules (both Control Points and Transmit Sites) to the Final Configuration. Refer to the installation manual for the guide to setting TX SitePros / CP SitePros personality parameters.

Verify the BYPASS plan has been reviewed and approved by customer representative. This procedure makes assumptions on bypass sites before implementation and test of the Miami-Dade System. After WMS/Panther signal strength data collection, final decision will be made on the actual bypass "ON" and "OFF" sites

Prepare a minimum of two terminal radios programmed to operate on the active BYPASS site and the main simulcast system.

MIAMI-DADE BYPASS MATRIX

Site	SITE	SYSTEM	BYPASS	Other Notes
Nomen.			On/Off	
Plan to be developed at Customer Design Meeting(s)				

6.2 Site OFF - Final Configuration

Execution

Sites intended to be "OFF" in event of BYPASS must have all channels set to "N" for CC, Clear Voice, Digital Voice, and Data fields in the TX Site SitePro modules.

1. Starting with site "2S", create a condition to force BYPASS by switching LCL/BYPS switch on BYPASS Module to the ON position *(at the TX site).*

2. Verify transmit site is in BYPASS mode. BYPS LED on Bypass module and the SitePro module display indicates "WC" instead of "SSWC" or "SSCC". Note: WC= Working Channel, standalone mode, SSWC=Working Channel, simulcast mode, and SSCC= Control Channel, simulcast mode.

3. Observe the repeater (station) SitePro modules. Verify there is no active control channel.

4. Verify no stations are keyed or producing RF power.

5. Restore the site to normal by returning the LCL/BYPS switch to the OFF position.

6. Verify transmit site is in normal simulcast mode. BYPS LED on Bypass module and SitePro modules indicate either "SSWC" or "SSCC".

7. Repeat steps 1-6 for the remaining "OFF" bypass sites in the simulcast system under test.

Results (Pass/Fail) _____

Tester: _____ Date: _____

Comments: _____

_____

_____

6.3 Site ON - Final Configuration

Execution

Sites intended to be "ON" and active in event of BYPASS must have channels intended to be active set to "Y" for CC, Clear Voice, Digital Voice, and Data fields, and inactive channels set to "N".

1. Create a condition to force BYPASS by switching LCL/BYPS switch on BYPASS Module to the ON position *(at the TX site).*

2. Verify transmit site is in BYPASS mode. BYPS LED on Bypass module and the SitePro module display indicates either "WC" or "CC" instead of "SSWC" or "SSCC".

3. Observe the stations/repeater SitePro modules. Verify there is an active control channel on one of the SitePro modules. The remaining repeater/stations SitePro modules will indicate "WC".

4. Verify the station appearing as control channel is keyed, producing RF power and modulated with control channel data.

5. Verify a terminal radio set to the system programmed for the site in BYPASS with the correct site ID recognizes the site's control channel data.

6. Key the terminal radio on a group call.

7. Verify a working channel assignment is made within the channel group allowed in the personality.

8. Verify the call is heard on a second terminal radio set to the active BYPASS system.

9. Restore the site to normal by returning the LCL/BYPS switch to the OFF position.

10. Verify transmit site is in normal simulcast mode. BYPS LED on Bypass module and SitePro modules indicate either "SSWC" or "SSCC".

11. Repeat sections 2.1.1 and 2.1.2 for the remaining simulcast systems.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.4 Control Point Trunking Reset Control

A properly set up Simulcast BYPASS system will disable (hold in RESET) CPSitePro modules associated with active channels at a TX site operating in BYPASS. This keeps the remaining sites operating in Simulcast mode from being assigned to channels expected to be active at the site in BYPASS. Sites programmed to be OFF in BYPASS will not require any CPSitePro to be held in RESET.

This test will verify that the Control Point SitePro modules will be held in RESET corresponding to the active channels at a site as a result of the TX site being in BYPASS.

NOTE

This procedure requires simultaneous activity at the Control Point and Transmit Site.

Execution

1. Force a TX site that will become active into BYPASS by switching LCL/BYPASS switch on the BYPASS module to the ON position *(at the TX site)*.

2. Verify TX site is in BYPASS mode.

3. Verify transmit site is in BYPASS mode. BYPS LED on Bypass module and the SitePro module display indicates either "WC" or "CC" instead of "SSWC" or "SSCC".

4. Verify the Control Point "E" leads have become "inactive" by observing that the BYPASS LED on the System Bypass board located at the rear of the Common Rack associated with the site in BYPASS is ON.

5. Verify the System Bypass board OVERRIDE LED is OFF for the site in BYPASS, and its RESET ACTIVE LED is ON.

6. Verify the CPSitePro modules on the channels intended to be OFF are held in RESET. (on channel assignments.)

7. Observe the Site Manager monitor screen for the simulcast system. Verify the channels intended to be OFF at the Control Point display GETC Poll Failure as a result of being held in RESET.

8. Restore the site to normal by returning the LCL/BYPS switch to the OFF position *(at the TX site).*

9. Verify the TX site SitePro modules revert to normal Simulcast.

10. Verify the Control Point "E" lead has returned to the "active" state by observing that the LED on the System Bypass board associated with the site in BYPASS is OFF.

11. Verify the System Bypass board OVERRIDE LED is OFF for the site in BYPASS, and its RESET ACTIVE LED is OFF.

12. Verify the CPSitePro modules associated with the site in BYPASS are returned to normal *(Not in RESET).*

13. Verify Site Manager Monitor screen indicates GETC poll failures clear as a result of the CPTC RESET condition being cleared.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7. MAESTRO^{IP} P25 DISPATCH FEATURE SET

These tests assume a valid LID/GID database with aliases defined for the test entities has been set up, privileged and programmed into the console under test. It also assumes radios have been programmed with the above test entities. Tests can be conducted first with the microphone/select speaker and then with the headset.

7.1 Transmitting With a Microphone (Group Calls, I Calls)

Setup

Choose a group to use as a test group

Program a radio with the test group.

Program a console module with the test group.

Review Console User Profile settings for Console under Test (i.e. Audio Indicators).

7.1.1 Talk Group Call

Execution

1. Press the INSTANT TX function (for example right mouse button) on the module with the test group. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the Instant TX key.

2. Press the SELECT button on the module with the test group. Verify that the SELECT indication for that module becomes highlighted.

3. Press the SELECT TX function. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the SELECT TX function.

4. Press the PTT foot pedal. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the foot pedal.

5. Repeat the procedure with an encrypted talk group, if applicable.

7.1.2 Individual (Unit-to-Unit) Call

Execution

1. Program a module with the ID of the test radio. Select the console module with the test unit ID.

555

2. Press the SELECT TX function. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the SELECT TX function.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.2 Receiving Calls (Unit ID Display, Talkgroup ID Display, Aliasing)

Setup

Program the test group into a module.

Set a radio to the test group.

7.2.1 Talk Group Call

Execution

1. Unselect the console module with the test group. Key the radio and verify that the call is heard at the Unselect speaker and that the calling radio ID and the Call Indicator are displayed.

2. Select the console module with the test group. Key the radio. Verify that the call is heard at the select speaker and that the calling radio ID and the Call Indicator are displayed.

3. Key the radio. Verify that the module call light is on, the call is heard at the Select speaker and the calling radio ID is displayed.

4. Repeat the procedure with an encrypted talk group, if applicable.

7.2.2 Individual (Unit-to-Unit) Call

Execution

1. Program a module with the ID of the test radio.

2. Select the console module with the test unit ID. Call the console from the radio (ICALL with Console ID). Verify that the call is heard at the select speaker and that the calling radio ID and the Call Indicator are displayed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.3 Emergency Call and Emergency Alarm

Setup

This test requires a test radio capable of generating and clearing an emergency (i.e. Supervisor Radio).

Execution

1. UNSELECT the test group. Using the test radio, declare an emergency on the test group.
2. Verify the module turns red, the 'EMER' flag is briefly displayed in the module, the ID/Name of the test radio is displayed, the emergency message is displayed in the message window, and the emergency alert tone is heard on the console.
3. Pick the module with the emergency and depress 'Alarm Reset'. Verify the alert tone is silenced on the console, but the emergency is still displayed.
4. Select and transmit on the group with the emergency. Verify the test radio receives the call, and is still in emergency mode.
5. Clear the emergency using the 'EMER CLR' key. Verify the module no longer indicates an emergency.
6. Transmit on the test radio and verify the emergency is cleared and normal group calls have resumed.
7. With the test group selected on the console, declare an emergency on the test group. Verify the console and radio have the same indications as steps 2 to 4.
8. Clear the emergency with the console.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.4 Agency Broadcast (System Wide Call)

Setup

Choose an agency to use as a test group

Program at least two radios with different subfleets but in the same test agency.

Program a console module with the test agency.

Review Console User Profile settings for Console under Test (i.e. Audio Indicators).

Execution

1. Press INSTANT TX on the module with the test agency. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radios. Release the Instant TX key.

2. Press the SELECT button on the module with the test group. Verify that the SELECT indication for that module becomes highlighted.

3. Press the SELECT TX function. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radios. Release the SELECT TX function.

4. Press the PTT foot pedal. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radios. Release the foot pedal.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.5 Alert Tones

Execution

1. Press the SELECT button on the module with the test group. Verify that the SELECT indication for that module becomes highlighted.

2. Press and hold the foot pedal or 'Selected Transmit' key. The test radio will receive the call. While still transmitting, press one of the three alert tone keys (Alert, Pulse, Warble). Verify the alert tone is received by the radio and also heard on the console.

3. While not transmitting, press and hold one of the alert tone keys. Verify the console transmits on the selected group, the test radio receives the call, and the alert tone is heard by the radio and console. When the Alert tone key is released, verify the call drops.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.6 Console Pre-Empt

Setup

Choose a group to use as a test group

Program two radios with the test group.

Program a console module with the test group.

Execution

1. Key the first radio on the test group and hold the call up. Verify that audio is heard at the second radio and the console.

2. Key the console on the test group and hold the second, pre-empting call up. Verify that the XMT indicator is displayed along with the pre-empted caller LID and CALL indicator. Verify that the second radio begins to hear the console audio and not the first radio call. Verify that the pre-empted radio audio is still heard on the pre-empting console.

3. Unkey the first radio. Verify that the pre-empted caller LID and CALL indicators are removed and the pre-empted radio audio is no longer heard on the pre-empting console.

4. Unkey the console. Verify that the call drops.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.7 Simulselect

Setup

Program four test groups.
Have on hand 2 radios programmed to 2 of the test groups and logged on to site.

Execution

1. Create a 4 group Simulselect on the 4 test group modules. Verify that the ACTIVE indicator (i.e. S1 displayed in each module) for SIMULSELECT 1 comes ON and the SELECT indicators of the 4 group modules are ON and highlighted, respectively.

2. Un-select SIMULSELECT 1 and verify that the active indicator goes OFF.

3. Re-activate SIMULSELECT 1. Verify that the ACTIVE indicator comes ON.

4. Modify SIMULSELECT 1 by removing two of the groups in the Simulselect. This results in a two group Simulselect. Verify that the

ACTIVE and SELECT indicators of the two remaining groups are ON and highlighted, respectively and the ACTIVE and SELECT indicators of the two deleted groups are OFF.

5. Set one radio on each of the test groups in the Simulselect and turn scan off. Activate and select SIMULSELECT 1. Key one of the radios on its test group. Verify that the call is heard at the select speaker and not at the other radio.

6. Repeat the previous step, except key the other radio.

7. Transmit from the console on SIMULSELECT 1. Verify that audio is heard at both radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.8 Patch

Setup

Program four test groups.

Have on hand, 2 radios programmed with 2 of the test groups and logged on to sites.

Execution

1. Create a 4 group patch on PATCH 1. Verify that the ACTIVE indicator for PATCH 1 (i.e. P1 indicator in each module) comes ON and the four modules are included in the patch.

2. De-activate PATCH 1 and verify that the ACTIVE indicator goes OFF.

3. Re-activate PATCH 1. Verify that the ACTIVE indicator comes back ON.

4. Modify PATCH 1 by removing two of the groups in the patch. Verify this results in a two group patch. Verify that the patch indicators of the two remaining groups are ON and the patch indicators of the two deleted groups are OFF.

5. Set each radio to a different test group in the patch and turn scan off.

6. Activate and Select PATCH 1.

7. Key one of the radios on its test group. Verify that the call is heard at the other radio and at the select speaker.

8. Repeat the previous step, except key the other radio.

9. Key the console by pressing the transmit bar. Verify that audio is heard at both radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.9 Console to Console Interaction (Intercom and Crossmute)

7.9.1 Console Intercom

1. On Console A, program a module with the console ID of Console B. On Console B, program a module with the console ID of Console A. Select this module on both consoles. Transmit from Console A on the module for Console B.

2. Verify on Console A that 'XMIT' is displayed in the module. Verify that on Console B, 'BUSY' is displayed in the module. Release the transmit from Console A.

3. Answer the call at Console B by transmiting from Console B on the module for Console A.

4. Verify on Console B that 'XMIT' is displayed in the module. Verify that on Console A, 'BUSY' is displayed in the module. Release the transmit from Console B.

7.9.2 Console Crossmute

Setup

Establish two consoles (A and B) to test the Crossmute function. The Consoles must be on the same NSC. Program and select a test group on both consoles.

Execution

1. Place a call on console A on the test group.
2. Verify that console B can hear console A in the select speaker.
3. At console B, mute console A.
4. Place a call on console A on the test group and verify that it cannot be heard at console B.
5. Restore the desired cross mute setup.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.10 Call History

Setup

This tests compares programmed module call activity to the history scroll lists. Utility page, dispatch menu will be selected. Select either the "Select History" or "Unselect History".

Execution

1. Press the 'Scroll Up' and 'Scroll Down' buttons to scroll through the Unselect call history list. Compare these calls with known activity.
2. Press the 'Scroll Up' and 'Scroll Down' buttons to scroll through the selected call history list. Compare these calls with known activity.
3. Press the 'Esc' button to exit the history scroll mode.
4. To monitor call history on a single group use the 'module history' button (on the 'module modify' menu. Use the 'scroll up' and 'scroll down' buttons to scroll through the calls for the picked module. Compare these calls with known activity.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.11 User Definable Screens

Setup

Verify User Definable Screens (UDS) is installed on a Maestro Dispatch Console. This console may be used to develop and verify the custom screen configurations required by the customer dispatch center operations.

Execution

In the C3 Maestro Configuration Editor verify the appropriate message text is defined for the Radio Status message that will be used.
Example:

Number	Type	Message Text
1	RSM	RSM1-TXT
2	RSM	RSM2-TXT
3	RSM	In Route

In the UDS modify Screen File #2 as follows:

A) Use the PAGE pull-down menu and select "BUTTON TEXT and COLOR".
B) Change LABEL TEXT for PAGE button number 1 to "Fire Dispatch".
C) Change LABEL TEXT for PAGE button number 2 to "Police Dispatch".

In the UDS modify Screen File #2 as follows:

A) Use the MODULE pull-down menu and select ADD and RSM to add the previously defined RSM status
B) Position the module where desired on the console screen layout.
Note: Existing modules may need to be deleted to make room for the new RSM modules.

Restart the C3 Maestro application and verify the changes have taken place on the Dispatch Screen.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.12 Call Director Interface

Setup

Dispatch Console equipped, with a Call Director interface, connected to a colocated (i.e., at the dispatch console) telephone line over a customer-furnished phone line & dial/on-hook/off-hook device.

Radio 1 on the same site, communicating on Talkgroup A.

Execution

7.12.1 Answering a Call

Execution

1. Establish a call by dialing the Call Director telephone number and then answering the call at the Console.

2. Verify the phone audio is heard in the select speaker along with select audio.

3. Transmit on the CD TX. Verify the Dispatcher audio is heard on the phone audio and the phone audio is not heard on the select speaker.

4. Release the CD TX. Verify the Dispatcher audio is not heard on the phone audio and the phone audio is heard on the select speaker along with select audio.

5. Select and TX on the module. Verify the Dispatcher audio is heard on the radio, but not on the phone audio.

6. Release the phone line from Call Director equipment. Verify the Console has "hung-up" the phone. No CD audio should be heard in the select speaker, and the CDOH status is not displayed on the status panel.

7. Key a radio on the selected module. Verify the audio is heard in the select speaker.

7.12.2 Patching a Call

A call director patch is activated by pressing <ALT>+<MODULE SELECT> from the keyboard or by the Call Dir. Patch button using the mouse/touch screen, when a module is picked.

Execution

1. Establish a call by dialing the Call Director telephone number and then answering the call at the Console.

2. Verify the phone audio is heard in the select speaker along with select audio.

3. Transmit on the CD TX. Verify the Dispatcher audio is heard on the phone audio and the phone audio is not heard on the select speaker.

4. Release the CD TX. Verify the Dispatcher audio is not heard on the phone audio and the phone audio is heard on the select speaker along with select audio.

5. Select the module and activate the call director patch. Verify phone audio is heard on the select speaker and on the radio and the alias background is green.

6. Key the radio. Verify the radio is heard on the telephone and in the select speaker, phone audio is heard on the select speaker even if the radio is transmitting.

7. Unkey the radio.

8. Deactivate the call director patch. Verify the XMT indication in the module is erased and the alias background is normal.

9. Communicate from the dispatch position over the telephone line.

10. With the telephone call still active, place a call from the same dispatch console position to Radio 1 on Talkgroup A. Verify the telephone call does not drop and the ability to communicate with Radio 1 on Talkgroup A when PTT'ing at the console.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8. HIGH AVAILABILITY FAILOVER TESTS

8.1 Primary VNIC Failover

Setup

Locate the primary NSS1 server. From the root user login screen, initaite a VNIC failover by typing VNICshutdown.

Execution

1. Note that Primary VNIC (NSS1) goes down.
2. Verify that Secondary VNIC (NSS2) becomes Primary.
3. Verify call functionality by making group and individual radio calls.
4. Verify that NSS1 VNIC comes back into operation as the standby VNIC.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.2 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.
3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.3 Individual Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.
2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.
3. Release the PTT on radio 1 and immediately PTT on radio 2.
4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.
5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.
6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.
7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.
8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.4 Secondary VNIC Failover

Setup

Locate the primary NSS2 server. From the root user login screen, initaite a VNIC failover by typing VNICshutdown.

Execution

1. Note that Primary VNIC (NSS2) goes down.
2. Verify that Secondary VNIC (NSS1) becomes Primary.
3. Verify call functionality by making group and individual radio calls.
4. Verify that NSS21 VNIC comes back into operation as the standby VNIC.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.5 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.

3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.

4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.6 Individual Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.

2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.

3. Release the PTT on radio 1 and immediately PTT on radio 2.

4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.

5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.

6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.

7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.

8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.7 Primary Router (bss1) Failover

Setup

Locate the primary bss1 router. From the admin user login screen, initaite a reset to fail the router.

Execution

1. Note the primary bss1 router goes down.
2. Verify the secondary bss2 router becomes Primary by;
3. Verify call functionality by making group and individual radio calls.
4. Verify primary bss1 router comes back into operation after reboot.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.8 Group Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Execution

1. PTT radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
2. Audio should be heard in radios 2 & 3. The ID of radio 1 should be seen at radios 2 and 3.
3. Set radio 3 to (Group C). PTT on radio 1 and talk. The transmit (TX) indicators should turn on at radio 1.
4. Audio should be heard in radio 2 only. The ID of radio 1 should be seen at radio 2 only.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

8.9 Individual Call

Setup

Set radios 1, 2, & 3 to (Group A) per test group structure.

Execution

1. Using the radio 1, select the pre-stored ID of radio 2 or enter the radio 2 ID directly from the keypad, and PTT radio 1.
2. Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.
3. Release the PTT on radio 1 and immediately PTT on radio 2.
4. Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.
5. Using the radio 1, select the pre-stored ID of radio 3 or enter the radio 3 ID directly from the keypad, and PTT radio 1.
6. Verify that radio 3 receives the call and displays the ID of radio 1. Verify that radio 2 remains idle.

7. Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication. Then make the return call from radio 3 back to radio 1.

8. Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

POWER INTERRUPTION

9.1 Power Backup / UPS Verification

Setup

Prior to the execution of this test, ensure any computers or other devices with volatile memory are backed up or are on power circuits not affected by this test.

This test should be executed at all locations where power backup is provided. Record in the comments section the names of locations tested.

Execution

1. From the facility circuit breaker panel, disconnect main power.
2. Verify communication is uninterrupted.
3. After predetermined extent of designed backup power, reapply power.
4. Verify communication is uninterrupted.

Results (Pass/Fail) _____

Tester: _____

Date: _____

Comments: _____

GPS REFERENCE INTERRUPTION

10.1 Site Synchronization / GPS Interruption

Setup

Prior to the execution of this test, ensure that the system does not have any existing conditions that would cause it to enter into Global Bypass during this test.

Execution

1. From the remote site. Disconnect the GPS reference clock.
2. Verify that the site continues to simulcast for one hour.
3. Reconnect GPS reference clock.

Results (Pass/Fail) _____

Tester: _____

Date: _____

Comments: _____

Functional Test Procedures
for
Miami-Dade
MAAT-EN0013 Rev – A

Mutual Aid System

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ABOUT THIS DOCUMENT

This document was specifically prepared for the customer shown below. Each section of this document is individually maintained in the Harris document control system. The revisions of each section are individually listed.

Customer:	Miami-Dade
Prepared By:	Shaun Hancock, Harris Corporation
Total Test Pages:	**15**

DOCUMENT USAGE

Many of the tests in this document will need to be run on multiple pieces of equipment. For instance a console test may be run on three consoles. For tests that need to be run multiple times, log in the comment section of the result box the identifier of the equipment tested. Although specific tests are not included relating to electrical measurements or timing parameters of equipment, these tests and levels are conducted and recorded as part of Harris' standard installation practices. These parameters include but are not limited to:

- Transmit Frequency and Deviation
- Output and Reflected Power
- Receiver Sensitivity
- Receiver Multicoupler Gain (if applicable)
- Receiver Preamplifier Gain (if applicable)
- Time Domain Reflectometry of Transmission Line
- Combiner Loss (if applicable)
- Audio line out
- Audio line in

System parameters and measurements will be provided to Miami-Dade as part of the final documentation package.

SUBSCRIBER UNIT USAGE

All tests for subscriber (terminal) units in this document will be performed with Harris subscriber units unless the test setup identifies another Vendor's subscriber unit to be used for the test.

1. CUSTOMER APPROVAL

This Acceptance Test Procedure has been read and approved for use as the system acceptance test.

Miami-Dade Representative	Harris Corporation – Systems Engineer
Signature	Signature
Printed name and title	Printed name and title
Miami-Dade Representative	Harris Corporation – Project Manager
Signature	Signature
Printed name and title	Printed name and title

2. *SYSTEM ACCEPTANCE*

This Acceptance Test Procedure has been successfully completed.

Customer Representative	Harris
Signature	Signature
Printed name and title	Printed name and title
Date	Date

3. *NETWORK FIRST GATEWAY INTER-OPERABILITY TEST*

3.1 Local Interoperability

Setup

The purpose of this test is to verify correct functionality of the Interoperability Gateway. The Interoperability Gateway connects via 4-wire audio connections in its Digital Voice Unit (DVU) cards to interoperability radio units (mobile or desktop). The Gateway also connects to a router and the Network Switching Center (NSC) to provide multi-site call functionality across the network.

Verify that the following radios and Interoperability Gateway DVU's are setup to communicate as shown.

Portable radio for both the P25 system and the inter-op system are required. The portable is used to send and receive radio communications between the DVUs and corresponding inter-op mobile radio. Test should be performed in encrypted mode if the inter-op talk group is normally encrypted.

All "Inter-Op" radios are GFE equipment unless specifically contracted.

Talk Group	Site	Agency	Transmit (TX) MHz	Receive (RX) MHz	Analog/ Digital	Trunked/ Conventional

Execution

1. Select Inter-op group 1 on the P25 radio.
2. Initiate a call from the P25 radio to group 1 and verify that audio is heard on inter-op group 1 portable.
3. Initiate a call from the inter-op group 1 portable radio to group 1 and verify that audio is heard on the P25 portable.

Talk Group	Agency	DVU #	PASS	FAIL

Execution Cont.

1. Select Inter-op group 1 on the P25 radio.
2. Initiate a call from the P25 radio to group 1 and verify that audio is heard on inter-op group 1 portable.
3. Initiate a call from the inter-op group 1 portable radio to group 1 and verify that audio is heard on the P25 portable.

Talk Group	Agency	DVI/AP	PASS	FAIL

Results (Pass/Fail) _____

Tester: _____ Date: _____

Comments: _____

_____

_____

4. MAESTRO^{IP} P25 DISPATCH FEATURE SET

These tests assume a valid LID/GID database with aliases defined for the test entities has been set up, privileged and programmed into the console under test. It also assumes radios have been programmed with the above test entities. Tests can be conducted first with the microphone/select speaker and then with the headset.

4.1 Transmitting With a Microphone (Group Calls)

Setup

Choose a group to use as a test group

Program a radio with the test group.

Program a console module with the test group.

Review Console User Profile settings for Console under Test (i.e. Audio Indicators).

4.1.1 Talk Group Call

Execution

1. Press the INSTANT TX function (for example right mouse button) on the module with the test group. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the Instant TX key.

2. Press the SELECT button on the module with the test group. Verify that the SELECT indication for that module becomes highlighted.

3. Press the SELECT TX function. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the SELECT TX function.

4. Press the PTT foot pedal. Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard at the radio. Release the foot pedal.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.2 Receiving Calls (Unit ID Display, Talkgroup ID Display, Aliasing)

Setup

Program the test group into a module.

Set a radio to the test group.

4.2.1 Talk Group Call

Execution

1. Unselect the console module with the test group. Key the radio and verify that the call is heard at the Unselect speaker and that the calling radio ID and the Call Indicator are displayed.

2. Select the console module with the test group. Key the radio. Verify that the call is heard at the select speaker and that the calling radio ID and the Call Indicator are displayed.

3. Key the radio. Verify that the module call light is on, the call is heard at the Select speaker and the calling radio ID is displayed.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.3 Simulselect

Setup

Program four test groups.
Have on hand 2 radios programmed to 2 of the test groups and logged on to site.

Execution

1. Create a 4 group Simulselect on the 4 test group modules. Verify that the ACTIVE indicator (i.e. S1 displayed in each module) for SIMULSELECT 1 comes ON and the SELECT indicators of the 4 group modules are ON and highlighted, respectively.

2. Un-select SIMULSELECT 1 and verify that the active indicator goes OFF.

3. Re-activate SIMULSELECT 1. Verify that the ACTIVE indicator comes ON.

4. Modify SIMULSELECT 1 by removing two of the groups in the Simulselect. This results in a two group Simulselect. Verify that the ACTIVE and SELECT indicators of the two remaining groups are ON and highlighted, respectively and the ACTIVE and SELECT indicators of the two deleted groups are OFF.

5. Set one radio on each of the test groups in the Simulselect and turn scan off. Activate and select SIMULSELECT 1. Key one of the radios on its test group. Verify that the call is heard at the select speaker and not at the other radio.

6. Repeat the previous step, except key the other radio.

7. Transmit from the console on SIMULSELECT 1. Verify that audio is heard at both radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

4.4 Patch

Setup

Program four test groups.

Have on hand, 2 radios programmed with 2 of the test groups and logged on to sites.

Execution

1. Create a 4 group patch on PATCH 1. Verify that the ACTIVE indicator for PATCH 1 (i.e. P1 indicator in each module) comes ON and the four modules are included in the patch.
2. De-activate PATCH 1 and verify that the ACTIVE indicator goes OFF.
3. Re-activate PATCH 1. Verify that the ACTIVE indicator comes back ON.
4. Modify PATCH 1 by removing two of the groups in the patch. Verify this results in a two group patch. Verify that the patch indicators of the two remaining groups are ON and the patch indicators of the two deleted groups are OFF.
5. Set each radio to a different test group in the patch and turn scan off.
6. Activate and Select PATCH 1.
7. Key one of the radios on its test group. Verify that the call is heard at the other radio and at the select speaker.
8. Repeat the previous step, except key the other radio.
9. Key the console by pressing the transmit bar. Verify that audio is heard at both radios.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

5. *CONVENTIONAL SIMULCAST TEST*

Setup

This test verifies that the conventional simulcast equipment can communicate to radios and dispatch consoles. The test requires two mobile (or portable) radios programmed with the test frequencies.

Execution

1. Select a physical location that provides full capture of one of the sites.
2. From the first test radio, select and pick channel 1, PTT the radio and speak into the radio.
3. Verify that the second test radio receives the audio from the first radio.
4. PTT the second radio and verify the audio is received at the first radio.
5. Repeat steps 1-4 for remaining channels.
6. Repeat steps 1 through 5 for the other simulcast sites. Ensure that the test is performed in full capture of the site under test.

Results

Record the results on the following data sheet for each site.

Conventional Simulcast Test

Site: _____ Date: _____

Test Evaluator:	Test Observer:
Organization:	Organization:
Receiver Location:	Test Radio 1:
Transmitter Location:	Test Radio 2:

Originating Radio	Channel	Pass/Fail	Remarks
1	1		
2	1		
1	2		
2	2		
1	3		
2	3		
1	4		
2	4		
1	5		
2	5		
1	6		
2	6		
1	7		
2	7		
1	8		
2	8		
1	9		
2	9		
1	10		
2	10		
1	11		
2	11		
1	12		
2	12		
1	13		
2	13		

Results (Pass/Fail) _____

Tester: _____ Date: _____

Comments: _____

_____

_____

6. CONVENTIONAL DISPATCH FEATURE SET

This procedure assumes a Mouse, Desktop MIC, Footswitch, 2 speakers and a Headset are installed when required. These tests assume 2 test radios are being utilized.

6.1 Transmitting With MIC or Headset

Setup

Unplug the headset

Choose a channel to use as a test channel

Program a radio with the test channel.

Program a console module with the test channel.

Execution

1. Press the TX function on the module with the test channel. Verify that the call is heard at the radio. Release the TX key.
2. Press the PTT foot pedal. Verify that the call is heard at the radio. Release the foot pedal.
3. Plug in the headset. Repeat the previous step.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

6.2 Receiving Calls

Setup

Unplug the headset.

Program the test channel into a module.

Set a radio to the test channel.

Execution

1. Unselect the console module with the test channel. Key the radio and verify that the call is heard at the Unselect speaker.

2. Select the console module with the test channel. Key the radio. Verify that the call is heard at the select speaker.

3. Plug in the headset.

4. Select the console module with the test channel. Key the radio. Verify that the call is heard in the headset.

5. Unplug the headset.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7. P25 TALKAROUND MODE FEATURES

7.1 P25/FM Mode Control

Setup

The following test demonstrates backwards compatibility with existing FM conventional radios.

Program portable 3 test radios on a conventional FM Talkaround channel.

Execution

1. PTT radio 1 and talk.
2. Audio should be heard in radios 2 & 3.
3. PTT radio 2 and talk.
4. Audio should be heard in radios 1 & 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

7.2 P25 Conventional Subscriber Interoperability in Talkaround Mode

Setup

The following test demonstrates backwards compatibility with existing FM conventional radios.

Program 3 portable test radios on a conventional FM Talkaround channel. One radio should be from another P25 vendor supplied by the customer, such as a Motorola XTS 5000 radio configured for operation on a P25 Trunking System. The radio will need to be configured to operate on the P25 System infrastructure with matching parameters (i.e. WACN, frequency sets, subscriber ID, etc.).

Execution

1. PTT radio 1 and talk.

2. Audio should be heard in radios 2 & 3.

3. PTT radio 2 and talk.

4. Audio should be heard in radios 1 & 3.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

Coverage Acceptance Test Procedures

for

Miami-Dade

P25 Systems[redacted]

EN0015 Coverage Acceptance Test

Rev – A

594

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ABOUT THIS DOCUMENT

This document was specifically prepared for the customer shown below. Each section of this document is individually maintained in the Harris document control system. The revisions of each section are individually listed.

Customer:	Miami-Dade
Prepared By:	Shaun Hancock, Harris Corporation
Total Test Pages:	**9**

DOCUMENT USAGE

This document describes the Coverage Acceptance Test for Miami-Dade's two P25 simulcast systems, [redacted]

System parameters and measurements will be provided to Miami-Dade as part of the final documentation package.

1. CUSTOMER APPROVAL

This Acceptance Test Procedure has been read and approved for use as the system acceptance test.

Customer Representative	Harris Corporation
Signature	Signature
Printed name and title	Printed name and title

2. *SYSTEM ACCEPTANCE*

This Acceptance Test Procedure has been successfully completed.

Customer Representative	Harris
Signature	Signature
Printed name and title	Printed name and title
Date	Date

3. *AUTOMATED SIGNAL STRENGTH AND BIT ERROR RATE (BER) TEST*

This Acceptance Test Procedure (ATP) is used by Harris for RF coverage verification based on signal strength and Bit Error Rate (BER) measurements. This procedure provides an accurate, statistically valid, repeatable, objective, and cost-effective method to verify coverage performance of Miami-Dade's P25 Systems [redacted]

This ATP is in conformance with the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88-C titled "Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification". TSB-88-C has defined Channel Performance Criterion (CPC) as the specified minimum design performance level in a faded channel, and provides a set of Delivered Audio Quality (DAQ) CPCs that define subjective voice quality performance.

TSB-88-C also defines a service area as a boundary of the geographic area of concern for a user, and states that Validated CPC Covered Area Reliability shall be determined by the percentage of only those test locations within the bounded service area that are predicted to meet or exceed the specified CPC. Harris has provided a Covered Area design for Miami-Dade as defined in TSB-88-C wherein coverage is verified through the performance of a Validated CPC Covered Area Reliability test.

RF coverage using this ATP is verified by measuring talk-out (base to mobile) signal strength and BER throughout the predicted coverage as shown on our maps within Miami-Dade's defined bounded service area, and calculating:

- the % of signal strength measurements that equal or exceed a -106 dBm signal level at a mobile or portable radio required to support a CPC of DAQ 3.4.
- the % of BER measurements that are equal to or better than a BER of 2% required to support a CPC of DAQ 3.4.

3.1 Setup

Harris' TYPHON wireless testing system will be used to measure coverage performance of the Miami-Dade systems. TYPHON consists of four Panther units with multiple measurement receivers manufactured by Berkley Variatronics, known throughout the industry as reliable and accurate test devices that produce repeatable measurement results in conformance with industry standards, to provide RSSI signal strength data for single, multiple and simulcast system sites. TYPHON also includes a GPS receiver to provide accurate position information for each measured data point, a computer with an internal clock that coordinates and records the test data, and roof mounted antennas. For BER measurement TYPHON includes one or more mobile radios and variable attenuators for use when portable coverage is being tested. The accuracy of TYPHON test measurements is maximized through periodic calibration and by virtue of its integral automated hardware and software that minimizes the likelihood of procedural errors.

Each system will be tested separately; [redacted] The TYPHON equipment will concurrently perform both signal strength and BER measurements for each system being tested. The TYPHON equipment (Panther receivers for RSSI measurements, 2 mobile radios - one for mobile BER and one for portable outdoor BER measurements, a variable attenuator set to a 10 dB level to account for portable body losses, and a lap top computer) will be mounted inside a 4-wheel drive passenger van or SUV for testing on paved or dirt roads within the predicted coverage of each system, with the external antennas mounted on the outside and centrally located on the vehicle's roof, with no other equipment installed on the roof. An airboat will be used for testing along interior waterways within the predicted coverage of each system, with a super structure added on which the antennas are mounted and to provide protection from water for the TYPHON equipment and a battery power source that is provided for the equipment. A boat with a superstructure upon which the antennas will be mounted and within which the TYPHON equipment and a battery power source will be located, will be used for testing within the predicted coverage of each system in water areas extending 10-miles from the land out into the Atlantic Ocean.

Each site in the system being tested must be audited prior to taking any measurements to verify the radio system is operating properly. The audits will verify the installed antenna configuration, the power into the antenna, and the frequency of the test transmitter. Harris shall provide all test equipment necessary to perform the audits.

3.2 Drive Route Planning

TSB-88-C recommends coverage verification measurements at a statistically significant number of random test locations, uniformly distributed throughout the service area. This is accomplished by dividing the service area by a grid pattern to aid in the development of a drive test route with an approximately equal distance traveled in each grid.

Harris recommends a 0.5-mile by 0.5-mile grid pattern to obtain an even or uniform distribution of approximately 8000 grids throughout the Miami-Dade jurisdictional boundary service area, including water areas extending 10-miles from land. The grid pattern is overlaid onto street maps and a drive test route determined that will pass through all accessible grids (i.e. have roads) within the predicted composite coverage of [redacted] within the Miami-Dade service area boundary. The grid pattern will also be overlaid on a separate map to develop an airboat drive route along waterways within the predicted coverage and a boat drive route in water areas extending 10-miles from land. The drive routes should pass through each grid at least once but not more than twice, as far as is practically possible. The defined drive route should not pass through tunnels, underpasses, underground garages, or other man made obstructive areas where radio coverage is not planned or expected. If a drive route passes through any of these areas, the TYPHON unit is disabled to prevent the collection of data in these areas.

Signal strength and BER measurements will concurrently be made in all accessible grids within the predicted coverage of the System being tested as shown on the Harris maps that are within the defined Miami-Dade service area boundary. Only that portion of the entire drive route that is within the predicted coverage of [redacted] ill be driven to tes[redacted] Measurements along the drive route that are outside of the predicted coverage of the system being tested, though within the service area boundary, will not be counted. Any areas or accessible grids within the predicted coverage area within the service area boundary that Miami-Dade decides not to test will have coverage scored as a PASS. Inaccessible grids/areas (i.e. have no roads or is not accessible by airboat or boat) within the predicted coverage of a system will be scored as PASS.

3.3 Data Measurements

Signal Strength Measurements

Each site in the simulcast system being tested transmits on the control channel and RSSI measurements of this signal are made at equal distance intervals along the entire drive route; likewise for the control channel at the single multi-site in [redacted] The TYPHON equipment, operating at a 512 Hz sampling rate, will be configured in the '40λ Wave Distance Average' analysis mode. With the test vehicle in motion[1] along the drive route, a local mean signal measurement is made every 40 wavelength distance traveled. By averaging a minimum of 200 data points within each 40 wavelength measurement window, the estimated mean value is within ±1 dB of the actual value with 99% confidence.

BER Measurements

Each site in the simulcast system being tested transmits the data sequences on the same simulcasted working channel, and measurements of this signal are collected with the TYPHON equipment mounted inside the test vehicle as it is driven along the defined test drive route; likewise for a single working channel at the single multi-site in System C. The software in the TYPHON laptop computer will automatically measure and record the data sequences that will be used to determine the BER for each measurement point along the drive route.

3.4 Data Analysis and Acceptance

Signal Strength Measurements

All mean measurement data records collected from the drive test in the predicted coverage area within the service area boundary are post-processed, with data records recorded every 0.1-mile (typically) used in the final analysis.

For each system being tested, the minimum acceptable signal level at a portable radio is adjusted to the mobile measurement reference point using the portable body loss factor shown in Table 1. A comparison is made between the mean measurement points in the service area and this adjusted minimum level, denoted the *adjusted signal threshold*.

[1] Vehicle velocity must not exceed 60 miles per hour to ensure adequate number of points over the measurement window

Points that equal or exceed the *adjusted signal threshold* value are recorded as PASS and those below are recorded as FAIL.

The installed radio system coverage is deemed to meet the coverage requirement if, for each System in Table 1, the ratio of the number of PASS points to the total number of points in the predicted coverage within the service area boundary equals or exceeds the minimum % Validated CPC Covered Area Reliability acceptance criteria that is shown.

Table 1 - Coverage Service Area, Signal Level, and Acceptance Criteria

System	Description	Minimum Required Signal Level (dBm)	Body Loss (dB)	Adjusted Signal Threshold (dBm)	% Validated CPC Covered Area Reliability Acceptance Criteria
Systen Covera Locatic Predicted Mobile at Interim Antenna	Mobile Outdoor	-106 dBm	[redacted]	-106 dBm	95%
Systen Covera Predicted Mobile	Mobile Outdoor	-106 dBm	[redacted]	-106 dBm	95%
Systen Covera Predicted Mobile	Mobile Outdoor	-106 dBm	[redacted]	-106 dBm	95%
Systen Outdoc Antenr Predicted Portable Coverage, at Interim Locations	Portable Outdoor	-106 dBm	10 dB	-96 dBm	95%
Systen Outdoc Predicted Portable Coverage	Portable Outdoor	-106 dBm	10 dB	-96 dBm	95%
Systen Outdoc Predicted Portable Coverage	Portable Outdoor	-106 dBm	10 dB	-96 dBm	95%

BER Measurements

All BER measurement data records collected from the drive test in the predicted coverage area within the defined service area boundary are post-processed and used in the final analysis.

Measurements that have a BER equal to or better than 2% are recorded as PASS; the remainder are recorded as FAIL.

The installed radio system coverage is deemed to meet the coverage requirement if, for each System in Table 2, the ratio of the number of PASS points to the total number of points in the predicted coverage within the service area boundary equals or exceeds the minimum % Validated CPC Covered Area Reliability acceptance criteria that is shown.

Table 2 - Coverage Service Area, Signal Level, and Acceptance Criteria

System	Description	Attenuator Body Loss	% Validated CPC Covered Area Reliability Acceptance Criteria
System Covera Locatio	Predicted Mobile at Interim Antenna	Mobile Outdoor	[redacted]	95%
System Covera	Predicted Mobile	Mobile Outdoor	[redacted]	95%
System Covera	Predicted Mobile	Mobile Outdoor	[redacted]	95%
System Outdoo Antenn	Predicted Portable overage, at Interim ocations	Portable Outdoor	10 dB	95%
System Outdoo	Predicted Portable overage	Portable Outdoor	10 dB	95%
System Outdoo	Predicted Portable overage	Portable Outdoor	10 dB	95%

3.5 Results Presentation

The data records are plotted on a map showing the test grids, the areas tested, and the test results. Separate maps are provided for each System and for the signal strength and BER measurements with different pen colors used to show ranges of measured mean signal levels and measured BER levels. A test report is also provided that summarizes the test results.

30 Day Operational Test Period for Miami-Dade

EN0016
30 Day Operational Test Acceptance Period
Rev – A

605

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ABOUT THIS DOCUMENT

This document was specifically prepared for the customer shown below. Each section of this document is individually maintained in the Harris document control system. The revisions of each section are individually listed.

Customer:	Miami-Dade
Prepared By:	Joe Clevenger, Harris Corporation
Total Test Pages:	**8**

DOCUMENT USAGE

This document describes the 30 Day Operational Test that will be conducted after Functional and Coverage testing is complete on Interim [redacted] and Final [redacted]

1. CUSTOMER APPROVAL

This Acceptance Test Procedure has been read and approved for use as the 30 Day Operational Test.

Customer Representative	Harris Corporation
Signature	Signature
Printed name and title	Printed name and title

2. 30 DAY OPERATIONAL TEST ACCEPTANCE

This Acceptance Test Procedure has been successfully completed.

Customer Representative	Harris
Signature	Signature
Printed name and title	Printed name and title
Date	Date

3. *THIRTY (30)-CALENDAR DAY OPERATIONAL TEST*

3.1 Overview

The Thirty (30)-Calendar Day Operational Test is a standalone performance test designed to demonstrate successful operation of the System over an extended period of time. In order to proceed with the test, the following conditions must be satisfied: (i) installation and optimization of the System must be successfully completed; (ii) all functional and coverage tests must be successfully completed; (iii) the System must be approved for use by the Buyer and by Harris as indicated by signed-off acceptance forms for both the functional and coverage tests; and (iv) preventive maintenance and all other infrastructure related installation must be completed or put on hold until after the test period.

A 30 Day Operational Test will be conducted on [redacted] only.

The test period shall be defined as the time period initially starting on the first day after the successful implementation and completion of the Functional and Coverage Test Plans and running until the System successfully operates for thirty (30) calendar days without a "Major System Failure". During the testing period, detailed records of Hardware and Software failures shall be kept. The failures shall be classified as a "Major System Failure", an "Intermediate System Failure", or a "Minor Failure" (all as defined below). Detailed records shall also be kept of the failure corrections made by Harris to the System.

The Thirty (30)-Calendar Day Operational Test shall be successfully completed upon the completion of a thirty (30) day period without the occurrence of a "Major System Failure". Only the failures identified below shall be considered during the testing period. Failures shall be defined as follows:

(i) Major System Failure - A "Major System Failure" shall be defined as occurring when the System experiences one of the failures of Harris supplied Hardware described below which compromises the System's ability to operate as a wide area trunked radio system. In the event of a "Major System Failure", the test period shall be stopped, Harris shall make the necessary warranty repairs and a new thirty (30) day test shall be commenced.

(ii) Intermediate System Failure - An "Intermediate System Failure" shall be defined as occurring when the System experiences one of the failures of Harris supplied Hardware described below. In the event of an "Intermediate System Failure", the test period shall be stopped, Harris shall make the necessary warranty repairs and the thirty (30) day test period shall be re-started at the point that it was halted and shall continue until a thirty (30) day period occurs without a Major System Failure. For example, if an "Intermediate System Failure" occurs on Day 23 of the test period, warranty repairs shall be made and the test shall re-commence and continue on Day 23. The Thirty (30)-Calendar Day Operational Test shall then be deemed successfully completed when day thirty (30) is completed without the occurrence of a Major System Failure.

(iii) Minor Failures - "Minor Failures" shall be defined as occurring when a failure of Harris supplied Hardware occurs that is considered minor in nature and has no material affect on the overall operation of the System or major System components. In the event of a "Minor Failure", Harris shall commence and complete warranty repairs in a timely manner. The

thirty (30) day test period shall not be stopped or suspended in any way in the event of a "Minor Failure".

(iv) Planned Downtime – "Planned Downtime"

The test period shall not be considered "interrupted" because of mutually agreed upon downtime for System adjustments or System downtime due to causes beyond the reasonable control of Harris and which downtime event would have otherwise been defined as a Major System Failure. If a downtime event occurs, the thirty (30) day test period shall be stopped, Harris shall make the necessary warranty repairs and the thirty (30) day test period shall be re-started at the point that it was halted and shall continue until a thirty (30) day period occurs without a Major System Failure. For example, if "Planned Downtime" occurs on Day 23 of the test period, warranty repairs shall be made and the test shall re-commence and continue on Day 23. The Thirty (30)-Calendar Day Operational Test shall then be deemed successfully completed when day thirty (30) is completed without the occurrence of a Major System Failure.

(v) No Failure – The following occurrences will not constitute a failure:

- Any LMR System issues resulting from failure of the customer supplied microwave or backhaul systems or any other components that are the responsibility of the Customer.
- "Known" non-coverage areas (as identified during Coverage Testing)
- Commercial power failures
- Any LMR System issues resulting from failure of the customer supplied backup power, UPS or generator systems.
- Scheduled preventive maintenance downtime
- Failures due to environmental conditions or acts of God, for which Harris has no control
- Failures due to City/County staff/operator errors

During the Thirty (30)-Calendar Day Operational Test, the Buyer is encouraged to utilize the system for its intended purpose and test all operational modes and equipment configurations to ensure that all features operate properly and that all system anomalies have been identified. The thirty (30) day test will begin by cutting over a mutually agreed upon subset of non-first responder users to the new system not to exceed 100 total users and shall run for thirty (30) days while meeting the following conditions:

3.2 Failure Definitions

Table 1 – System Failure Definitions

Item	Failure Description	Major	Intermediate	Minor
A	Failure of a system control component (as defined in Section 5 below)	X	X	
B	Failure of an item of	X	X	

Item	Failure Description	Major	Intermediate	Minor
	antenna equipment (as defined in Section 6 below)			
C	Simultaneous failure of radio channels at one site: ♦ Failure of ≥ 20% channels ♦ Failure of ≥ 20% of all system channels	X		
D	Simultaneous failure of radio channels at one site: ♦ Failure of < 20% channels ♦ Failure of < 20% of all system channels		X	
E	Concurrent functional failure of dispatch consoles: ♦ Concurrent functional failure of ≥ 25% of the consoles	X		
F	Concurrent functional failure of dispatch consoles: ♦ Concurrent functional failure of < 25% of consoles		X	
G	Failure of a single radio user, talk group, or port controller			X

1.) **System Control Equipment Failures** – "System Control Equipment" in Item (A) in Table 1 above will be defined as: Simulcast control point equipment, voting equipment, simulcast remote transmit equipment, and Console Electronics. A failure of an item of System Control Equipment which results in a loss of greater than 20% of all channels constituting a "Major System Failure" (as set forth in Item (C) of the Table) will be defined as a "Major System Failure." A failure of an item of System Control Equipment that does not result in a loss of channels constituting a Major System Failure (as set forth in Item (D) of the Table) will be defined as an "Intermediate System Failure."

2.) **Antenna Equipment Failure** – "Antenna Equipment" in Item (B) in Table 1 above will be defined as an antenna system. A failure of an item of Antenna Equipment

which results in a loss of channels constituting a "Major System Failure" (as set forth in Item (C) of the Table) will be defined as a "Major System Failure." A failure of an item of Antenna Equipment that does not result in a loss of channels constituting a Major System Failure (as set forth in Item (D) of the Table) will be defined as an "Intermediate System Failure."

3.) **Console Failure** – "Major Console Failure" in Item (E) in Table 1 above will be a failure caused by either: (a) a malfunction resulting in greater than 25% of Console Equipment supplied by Harris; or (b) a simultaneous malfunction of two items of Operator Interface Equipment supplied by Harris. A malfunction will not be deemed a failure if it is the result of: (i) operator error, abuse or physical damage (including, but not limited to, spilled liquids), or (ii) headset problems, (iii) mouse problems, or (iv) keyboard problems, or (v) microwave or fiber link problems, or (vi) any other external induced failure (e.g. a power failure). "Console Equipment" will be defined as the central processing unit (CPU), monitor, audio tower, and link to the Console Electronics and backup control station. "Operator Interface Equipment" will be defined as the keyboard, mouse, trackball and/or touch screen. A "Major System Failure" will also occur if the dispatch center loses the capability to dispatch to the System.

3.3 Procedures

If the Buyer perceives a fault, the Buyer is responsible for notifying Harris within 12 hours of the fault. The Buyer will track and summarize all problem reports related to the system. Buyer and Harris personnel will then determine the nature of the fault, and if the fault is caused solely by Harris equipment and whether it is a "Major System Failure", "Intermediate System Failure" or "Minor Failure". Upon this determination of a Harris equipment fault, Harris will repair the fault at no charge to the Buyer.

In the event of a Major Failure as defined above, the existing thirty (30)-day test period will terminate. Harris will repair any verified operational fault. If the repair can not be made immediately, the Buyer will be notified of the time needed for the repair. Upon completion of repairs, Harris shall notify the Buyer. The Buyer, in conjunction with Harris, shall test the repairs to ensure that the system is operating according to specification. At the completion of the operational test, a new thirty (30)-day test period will begin the following calendar day.

The System has been designed with suitable redundancy in critical subsystems and an adequate number of channels that will ensure continued availability even though certain equipment may fail. Subsystem failures that are protected by redundancy are considered minor and shall not affect system availability if the overall subsystem remains capable of performing its primary function or mission, unless defined as a Major Failure above. Minor failures will be noted and corrected but not counted against system availability.

3.4 Reporting

All system failures will be reported. All failures, major, intermediate and minor, will be recorded in a log detailing the failure. Information provided will include the amount of time that the subsystem or component operated in a failed condition, as well as corrective measures taken to resolve the failure. Within 48 hours after the restoration of any failure condition, the Harris will meet with the Buyer to explain the failure, corrective actions, and steps taken to prevent similar failures in the future. A Failure Modes and Errors Analysis

(FMEA) will be generated each week by Harris. This report will track all failures, as well as the corrective action that was taken to resolve the issue. These written reports will include, as a minimum:

- Model and Serial Number of the equipment affected (Asset number if applicable)
- Original Complaint
- Revised Complaint and/or Trouble Found
- Repairs Made and Parts Used
- Technician Name or Control Number
- Any recommended improvements to the system/subsystem.

A final written report shall be submitted to the Buyer within thirty days after the successful completion of the Thirty (30)-Calendar Day Operational Test. All failures uncovered during this test, will be prioritized, and an Action Plan will be generated which addresses each failure as deemed necessary.

3.5 Acceptance

Upon successful completion of the Thirty (30)-Calendar Day Operational Test, the test will be deemed successful and the acceptance form contained at the beginning of this document will be signed by both parties.

30 Day Combined Systems Operational Test

For Miami-Dade

EN0017
30 Day Combined Systems Operational Test
Rev – A

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ABOUT THIS DOCUMENT

This document was specifically prepared for the customer shown below. Each section of this document is individually maintained in the Harris document control system. The revisions of each section are individually listed.

Customer:	Miami-Dade
Prepared By:	David Gerhard, Harris Corporation
Total Test Pages:	**8**

DOCUMENT USAGE

This document describes the 30 Day Combined Systems Operational Test that will be conducted after Functional and Coverage testing is complete on [redacted]

1. CUSTOMER APPROVAL

This Acceptance Test Procedure has been read and approved for use as the 30 Day Combined Systems Operational Test.

Customer Representative	Harris Corporation
Signature	Signature
Printed name and title	Printed name and title

2. 30 DAY COMBINED SYSTEMS OPERATIONAL TEST ACCEPTANCE

This Acceptance Test Procedure has been successfully completed.

Customer Representative	Harris
Signature	Signature
Printed name and title	Printed name and title
Date	Date

3. THIRTY (30)-CALENDAR DAY COMBINED SYSTEMS OPERATIONAL TEST

3.1 Overview

The Thirty (30)-Calendar Day Combined Systems Operational Test is a standalone performance test designed to demonstrate successful operation of the combined Systems over an extended period of time. In order to proceed with the test, the following conditions must be satisfied: (i) installation and optimization of all Sub-System must be successfully completed; (ii) all functional and coverage tests must be successfully completed; (iii) the System must be approved for use by the Buyer and by Harris as indicated by signed-off acceptance forms for both the functional and coverage tests; and (iv) preventive maintenance and all other infrastructure related installation must be completed or put on hold until after the test period.

The test period shall be defined as a 30-calendar period starting immediately after all sub components are completed and tested and running until the Combined Systems successfully operates for thirty (30) calendar days without a "Major System Failure". During the testing period, detailed records of Hardware and Software failures shall be kept. The failures shall be classified as a "Major System Failure", an "Intermediate System Failure", or a "Minor Failure" (all as defined below). Detailed records shall also be kept of the failure corrections made by Harris to the System.

The Thirty (30)-Calendar Day Combined Systems Operational Test shall be successfully completed upon the completion of a thirty (30) day period without the occurrence of a "Major System Failure". Only the failures identified below shall be considered during the testing period. Failures shall be defined as follows:

(i) Major System Failure - A "Major System Failure" shall be defined as occurring when the System experiences one of the failures of Harris supplied Hardware described below which compromises the System's ability to operate as a wide area trunked radio system. In the event of a "Major System Failure", the test period shall be stopped, Harris shall make the necessary warranty repairs and a new thirty (30) day test shall be commenced.

(ii) Intermediate System Failure - An "Intermediate System Failure" shall be defined as occurring when the System experiences one of the failures of Harris supplied Hardware described below. In the event of an "Intermediate System Failure", the test period shall be stopped, Harris shall make the necessary warranty repairs and the thirty (30) day test period shall be re-started at the point that it was halted and shall continue until a thirty (30) day period occurs without a Major System Failure. For example, if an "Intermediate System Failure" occurs on Day 23 of the test period, warranty repairs shall be made and the test shall re-commence and continue on Day 23. The Thirty (30)-Calendar Day Combined Systems Operational Test shall then be deemed successfully completed when day thirty (30) is completed without the occurrence of a Major System Failure.

(iii) Minor Failures - "Minor Failures" shall be defined as occurring when a failure of Harris supplied Hardware occurs that is considered minor in nature and has no material affect on the overall operation of the System or major System components. In the event of a "Minor

Failure", Harris shall commence and complete warranty repairs in a timely manner. The thirty (30) day test period shall not be stopped or suspended in any way in the event of a "Minor Failure".

(iv) Planned Downtime – "Planned Downtime"

The test period shall not be considered "interrupted" because of mutually agreed upon downtime for System adjustments or System downtime due to causes beyond the reasonable control of Harris and which downtime event would have otherwise been defined as a Major System Failure. If a downtime event occurs, the thirty (30) day test period shall be stopped, Harris shall make the necessary warranty repairs and the thirty (30) day test period shall be re-started at the point that it was halted and shall continue until a thirty (30) day period occurs without a Major System Failure. For example, if "Planned Downtime" occurs on Day 23 of the test period, warranty repairs shall be made and the test shall re-commence and continue on Day 23. The Thirty (30)-Calendar Day Combined Systems Operational Test shall then be deemed successfully completed when day thirty (30) is completed without the occurrence of a Major System Failure.

(v) No Failure – The following occurrences will not constitute a failure:

- Any LMR System issues resulting from failure of the customer supplied microwave or backhaul systems or any other components that are the responsibility of the Customer.
- "Known" non-coverage areas (as identified during Coverage Testing)
- Commercial power failures
- Any LMR System issues resulting from failure of the customer supplied backup power, UPS or generator systems.
- Scheduled preventive maintenance downtime
- Failures due to environmental conditions or acts of God, for which Harris has no control
- Failures due to City/County staff/operator errors

During the Thirty (30)-Calendar Day Combined Systems Operational Test, the Buyer is encouraged to utilize the system for its intended purpose and test all operational modes and equipment configurations to ensure that all features operate properly and that all system anomalies have been identified.

3.2 Failure Definitions

Table 1 – System Failure Definitions

Item	Failure Description	Major	Intermediate	Minor
A	Failure of a system control component (as defined in Section 5 below)	X	X	
B	Failure of an item of antenna equipment	X	X	

Item	Failure Description	Major	Intermediate	Minor
	(as defined in Section 6 below)			
C	Simultaneous failure of radio channels at one site: ♦ Failure of ≥ 20% channels ♦ Failure of ≥ 20% of all system channels	X		
D	Simultaneous failure of radio channels at one site: ♦ Failure of < 20% channels ♦ Failure of < 20% of all system channels		X	
E	Concurrent functional failure of dispatch consoles: ♦ Concurrent functional failure of ≥ 25% of the consoles	X		
F	Concurrent functional failure of dispatch consoles: ♦ Concurrent functional failure of < 25% of consoles		X	
G	Failure of a single radio user, talk group, or port controller			X
H	Network Failure	X		
I	Feature Failure		X	

1.) **<u>System Control Equipment Failures</u>** – "System Control Equipment" in Item (A) in Table 1 above will be defined as: Simulcast control point equipment, voting equipment, simulcast remote transmit equipment, and Console Electronics. A failure of an item of System Control Equipment which results in a loss of greater than 20% of all channels constituting a "Major System Failure" (as set forth in Item (C) of the Table) will be defined as a "Major System Failure." A failure of an item of System Control Equipment that does not result in a loss of channels constituting a Major System Failure (as set forth in Item (D) of the Table) will be defined as an "Intermediate System Failure."

2.) **Antenna Equipment Failure** – "Antenna Equipment" in Item (B) in Table 1 above will be defined as an antenna system. A failure of an item of Antenna Equipment which results in a loss of channels constituting a "Major System Failure" (as set forth in Item (C) of the Table) will be defined as a "Major System Failure." A failure of an item of Antenna Equipment that does not result in a loss of channels constituting a Major System Failure (as set forth in Item (D) of the Table) will be defined as an "Intermediate System Failure."

3.) **Console Failure** – "Major Console Failure" in Item (E) in Table 1 above will be a failure caused by either: (a) a malfunction resulting in greater than 25% of Console Equipment supplied by Harris; or (b) a simultaneous malfunction of two items of Operator Interface Equipment supplied by Harris. A malfunction will not be deemed a failure if it is the result of: (i) operator error, abuse or physical damage (including, but not limited to, spilled liquids), or (ii) headset problems, (iii) mouse problems, or (iv) keyboard problems, or (v) microwave or fiber link problems, or (vi) any other external induced failure (e.g. a power failure). "Console Equipment" will be defined as the central processing unit (CPU), monitor, audio tower, and link to the Console Electronics and backup control station. "Operator Interface Equipment" will be defined as the keyboard, mouse, trackball and/or touch screen. A "Major System Failure" will also occur if the dispatch center loses the capability to dispatch to the System.

3.3 Procedures

If the Buyer perceives a fault, the Buyer is responsible for notifying Harris within 12 hours of the fault. The Buyer will track and summarize all problem reports related to the system. Buyer and Harris personnel will then determine the nature of the fault, and if the fault is caused solely by Harris equipment and whether it is a "Major System Failure", "Intermediate System Failure" or "Minor Failure". Upon this determination of a Harris equipment fault, Harris will repair the fault at no charge to the Buyer.

In the event of a Major Failure as defined above, the existing thirty (30)-day test period will terminate. Harris will repair any verified operational fault. If the repair can not be made immediately, the Buyer will be notified of the time needed for the repair. Upon completion of repairs, Harris shall notify the Buyer. The Buyer, in conjunction with Harris, shall test the repairs to ensure that the system is operating according to specification. At the completion of the operational test, a new thirty (30)-day test period will begin the following calendar day.

The System has been designed with suitable redundancy in critical subsystems and an adequate number of channels that will ensure continued availability even though certain equipment may fail. Subsystem failures that are protected by redundancy are considered minor and shall not affect system availability if the overall subsystem remains capable of performing its primary function or mission, unless defined as a Major Failure above. Minor failures will be noted and corrected but not counted against system availability.

3.4 Reporting

All system failures will be reported. All failures, major, intermediate and minor, will be recorded in a log detailing the failure. Information provided will include the amount of time that the subsystem or component operated in a failed condition, as well as corrective measures taken to resolve the failure. Within 48 hours after the restoration of any failure

condition, the Harris will meet with the Buyer to explain the failure, corrective actions, and steps taken to prevent similar failures in the future. A Failure Modes and Errors Analysis (FMEA) will be generated each week by Harris. This report will track all failures, as well as the corrective action that was taken to resolve the issue. These written reports will include, as a minimum:

- Model and Serial Number of the equipment affected (Asset number if applicable)
- Original Complaint
- Revised Complaint and/or Trouble Found
- Repairs Made and Parts Used
- Technician Name or Control Number
- Any recommended improvements to the system/subsystem.

A final written report shall be submitted to the Buyer within thirty days after the successful completion of the Thirty (30)-Calendar Day Combined Systems Operational Test. All failures uncovered during this test, will be prioritized, and an Action Plan will be generated which addresses each failure as deemed necessary.

3.5 Acceptance

Upon successful completion of the Thirty (30)-Calendar Day Combined Systems Operational Test, the test will be deemed successful and the acceptance form contained at the beginning of this document will be signed by both parties.

HARRIS

65 Building Mandatory Testing
for
Miami-Dade

SAT-EN0018 Rev – A

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ABOUT THIS DOCUMENT

This document was specifically prepared for the customer shown below. Each section of this document is individually maintained in the Harris document control system. The revisions of each section are individually listed.

Customer: Miami-Dade
Prepared By: David Gerhard, Harris Corporation
Total Test Pages:

DOCUMENT USAGE

Results will be provided to Miami-Dade as part of the final documentation package.

1. *CUSTOMER APPROVAL*

This Acceptance Test Procedure has been read and approved for use as the system acceptance test.

Miami-Dade Representative	Harris Corporation – Systems Engineer
Signature	Signature
Printed name and title	Printed name and title
Miami-Dade Representative	Harris Corporation – Project Manager
Signature	Signature
Printed name and title	Printed name and title

2. *SYSTEM ACCEPTANCE*

This Acceptance Test Procedure has been successfully completed.

Customer Representative	Harris
Signature	Signature
Printed name and title	Printed name and title
Date	Date

3. 65 BUILDINGS

The list below was provided by the county as mandatory buildings to test.

A. Mall Facilities

1. [redacted]
2. [redacted]
3. [redacted]
4. [redacted]
5. [redacted]
6. [redacted]

B. Sport Event Facilities

7. [redacted]
8. [redacted]
9. [redacted]

C. Port Facilities

10. [redacted]

D. Airport Facilities

11. [redacted]

E. Evacuation Facilities

12. [redacted] sity
ous

F. Hospital Facilities

13. [redacted]
14.
15.
16.

G. MDPD Facilities

17. [redacted]
18.
19.
20.
21.
22.

23. [redacted]

24.

25.

H. Municipal Police Departments

26. [redacted]

27.

28.

29.

30.

31.

32.

33.

34.

35.

36.

37.

38. [redacted]
39.
40.
41.
42.
43.
44.
45.
46.
47.
48.
49.
50.
51.
52.
53.

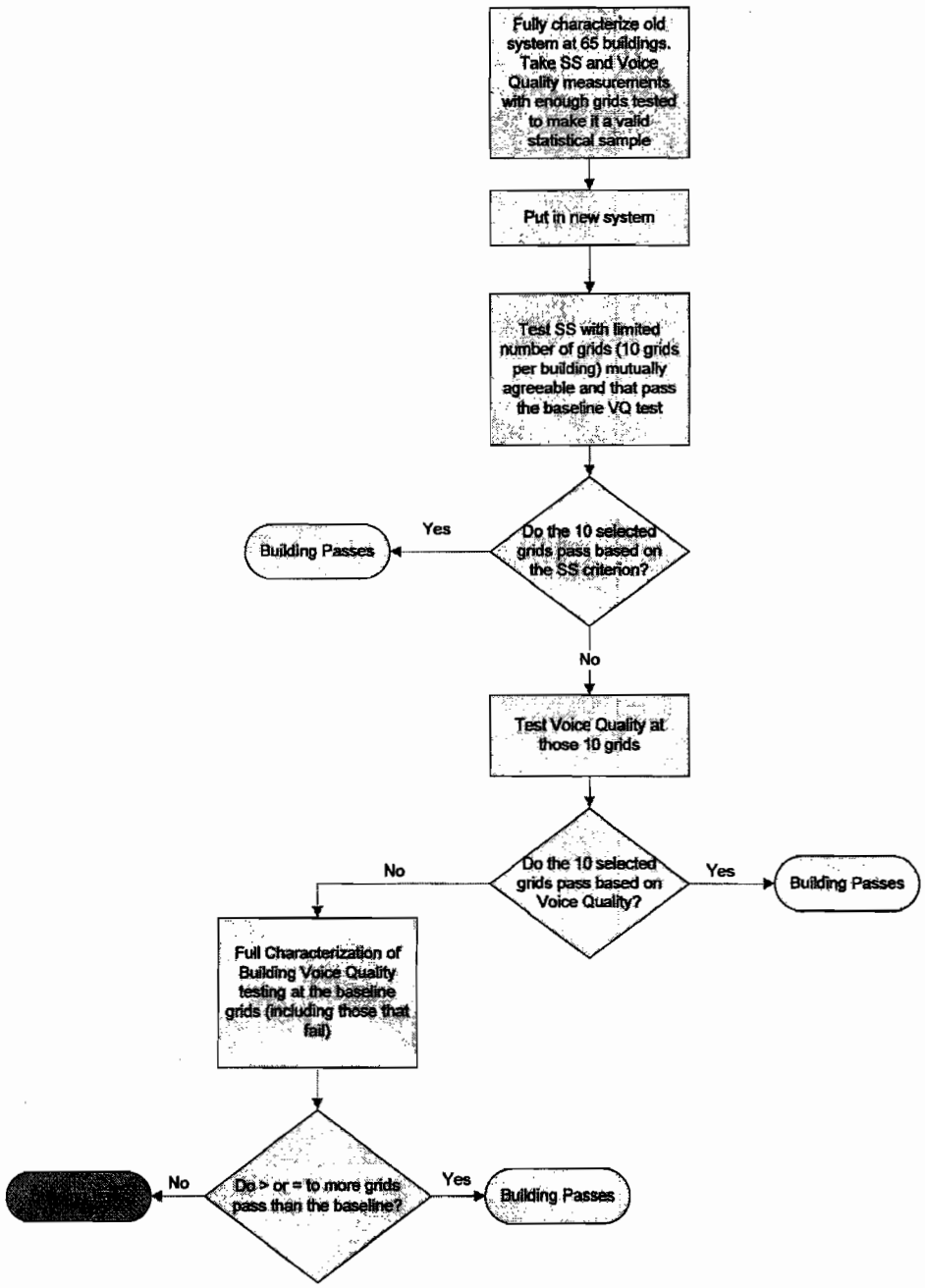
54. [redacted]
55.
56.
57.

I. High Schools

58. [redacted]
59.
60.
61.
62.
63.
64.
65.

4. TEST PROCEDURE

The flow chart on the next page is a visual representation of the test procedure that will be used to baseline the existing EDACS system and to perform the new P25 65 building testing.



4.1 Baseline the existing EDACS System

In order to properly characterize the new system and determine if building coverage is equal to or better than the existing system, full characterization of the existing EDACS system inside Miami-Dade's selected 65 buildings is required.

At each of Miami-Dade's 65 selected buildings, Signal Strength measurements and DAQ 3.4 Voice Quality testing will be recorded with enough data points as deemed necessary to ensure a statistically relevant sample. The number of points (grids per building) that make up a statistically relevant sample size for each building will be determined by DDR.

Each grid tested must be clearly identified and recorded with digital pictures, marks on walls, tape on floor or whatever means we collectively agree so that these points can be returned to years down the road for testing and characterization of the new system.

Harris will be performing Signal Strength and Voice Quality testing in accordance with Harris' standard methodology for conducting such tests.

Miami-Dade and Harris have mutually agreed that any grid that currently fails DAQ 3.4 Voice Quality testing during this baseline procedure will be duly noted and not be used when conducting the tests described in Sections 4.2 and 4.3.

4.2 Signal Strength Testing of the New System (10 Test Grids)

Following the conclusion of the 30-day test of New System B, retuning/replacing any BDAs in any of the selected 65 buildings (per the contract) and utilizing System B, each building will be tested for Signal Strength at 10 mutually agreeable grids as depicted in the flow chart.

A building will be deemed to have passed if all of the 10 selected test grids have equal to or greater Signal Strength than that determined during the baseline.

If one or more points prove to have less Signal Strength, then further testing is needed as described in Section 4.3

As mentioned previously, a test grid that currently fails DAQ 3.4 (as determined during the system baseline exercise) Voice Quality testing will NOT be used as a test grid under this 10 grid test.

Also note that if a building or location has a BDA today, the new system will be tested with the BDA fully operational. Responsibility for BDAs is defined in the contract.

4.3 Voice Quality Testing of the New System (10 Test Grids)

If a building fails the testing described in Section 4.2, then further testing will be conducted.

DAQ 3.4 Voice Quality testing will be conducted at each of the same 10 test grids that had been used to check Signal Strength.

A building will be deemed to have passed if 100% of the test grids pass the Voice Quality test (VQ at a minimum of DAQ 3.4).

If one or more test grids do not pass the Voice Quality test, then further testing will be performed as described in Section 4.4.

As mentioned previously, a test grid that currently fails DAQ 3.4 (as determined during the system baseline exercise) Voice Quality testing will NOT be used as a test grid under this 10 grid test.

4.4 Voice Quality Testing of the New System (Full Characterization)

If a building fails the testing described in Section 4.3, then further testing will be conducted.

DAQ 3.4 Voice Quality testing will be conducted at ALL of the grids tested under the baseline characterization of the old system.

A building will be deemed to have passed if greater than or equal to "n" test grids pass DAQ 3.4 Voice Quality testing, where "n" is the number of grids tested in that building under the baseline characterization.

In this test scenario, even test grids that failed the baseline test for DAQ 3.4 Voice Quality testing will be examined because the goal is to be "equal to or better" than the old system.

4.5 DAQ 3.4 Voice Quality Test Procedure

Since Voice Quality testing is subjective, it will require representatives from both the County and Harris to determine if a test grid passes or fails. The procedure below outlines how this testing will be conducted.

DAQ Levels

The Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88-C, titled "Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification"

has defined Channel Performance Criterion (CPC) as the specified minimum design performance level in a faded channel, and provides a set of Delivered Audio Quality (DAQ) CPCs that define subjective Voice Quality performance applicable to both analog voice and digital voice systems. These DAQ definitions are provided in Table 1.

Table 1 - Delivered Audio Quality Scale Definitions

Delivered Audio Quality	Subjective Performance Description
DAQ 5.0	Speech easily understood.
DAQ 4.5	Speech easily understood. Infrequent Noise/Distortion.
DAQ 4.0	Speech easily understood. Occasional Noise/Distortion.
DAQ 3.4	Speech understandable with repetition only rarely required. Some Noise/Distortion.
DAQ 3.0	Speech understandable with slight effort. Occasional repetition required due to Noise/Distortion.
DAQ 2.0	Understandable with considerable effort. Frequent repetition due to Noise/Distortion.
DAQ 1.0	Unusable, speech present but unreadable.

RF coverage using this procedure is characterized by evaluating the Voice Quality of digital voice calls to/from a portable radio at locations (points). At each location, a call is placed from the portable user to the dispatcher (an inbound call), as well as from the dispatcher to the portable user (an outbound call). The inbound and outbound call at each location is evaluated using the DAQ definitions in Table 1.

Equipment and Preparation

Portable radios from Miami-Dade's existing inventory will be used for the Voice Quality calls. Coverage testing will be conducted with the portable radios used for the test deployed in a manner that is consistent with the County's normal use of the radio.

Prior to performing the 65 Mandatory Building characterization, each site must be audited to verify that the radio system is operating properly. The audits will verify the antenna configuration, the power into the antenna, the antenna installation, and the frequency of the test transmitter. Valid system optimization paperwork from Systen[redacted]nstallation will be considered adequate for this purpose if the timeframe from optimization has not exceeded 6 months.

Voice Quality Characterization

Voice Quality characterization requires two Harris representatives and two Miami-Dade representatives. One Harris and one Miami-Dade representative will be the Field team, go to each agreed upon test grid within a building,

perform the inbound calls, and evaluate the outbound calls. The second Harris and Miami-Dade representatives will be the Base team, will remain at the dispatch location, evaluate the inbound calls, and perform the outbound calls.

At each agreed upon test grid, with the portable to dispatch (inbound) and the dispatch to portable (outbound) calls are performed. Per TSB-88-C, if the message is not understood on the first attempt the portable user is allowed to move 3-feet within the grid in any direction and the calls can be repeated one time.

The portable digital Voice Quality characterization calls within each grid consist of a short message representative of typical public safety call duration's and includes the identification of the location being tested. The suggested inbound message is "GRID or POINT NUMBER XXX", followed by a short sentence or two from a newspaper or periodical such as "USA Today". To ensure that the message is understood, the dispatcher then repeats the inbound message. The dispatcher will then make a similar outbound call. The suggested outbound message is "CONFIRMING GRID or POINT XXX", followed by a different short sentence or two from a newspaper or periodical such as "USA Today". The Field team will then repeat the dispatcher's outbound message.

Each of the four representatives evaluates the calls using the Table 1 DAQ definitions and records the DAQ score for each location using the template in Table 2. A DAQ score is made separately for the inbound and outbound calls at each location based on the DAQ score from both evaluators for each call direction.

Analysis and Preparation

Characterization reports will be provided that include:

- the number of grids
- the location within each grid
- a copy of the Table 2 inbound or outbound evaluation template used by each evaluator
- the DAQ score for each grid for each call direction

Table 2 – Voice Quality Evaluation Template

Coverage Characterization for: Miami-Dade County Date: _____

Check the link used: ☐ Digital Voice ☐ Base to Portable (outbound)
☐ Portable to Base (inbound)

Harris Evaluator:	Miami-Dade Evaluator:
Organization:	Organization:
Test Radio:	Test Frequency:

Service Area Grid Number	Harris Score	Miami-Dade Score	Remarks	DAQ Score

(One row for each grid/location)

HARRIS

Helicopter Coverage
Acceptance Test Procedures
for
Miami-Dade County

642

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REVISION HISTORY

REV #	DATE	DESCRIPTION OF CHANGES
0		
A		
B		
C		
D		
E		
F		
G		
H		

1. CUSTOMER APPROVAL

This Acceptance Test Procedure has been read and approved for use as the system acceptance test.

Customer Representative	Harris Corporation
Signature	Signature
Printed name and title	Printed name and title

2. *SYSTEM ACCEPTANCE*

This Acceptance Test Procedure has been successfully completed.

Customer Representative	Harris
Signature	Signature
Printed name and title	Printed name and title
Date	Date

3. HELICOPTER VOICE QUALITY TEST

This Acceptance Test Procedure (ATP) is used by Harris for verification of helicopter coverage based on the evaluation of digital voice quality.

This ATP is in conformance the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88-C, titled "Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification". TSB-88-C has defined Channel Performance Criterion (CPC) as the specified minimum design performance level in a faded channel, and provides a set of Delivered Audio Quality (DAQ) CPCs that define subjective voice quality performance applicable to both analog voice and digital voice systems. These DAQ definitions are provided in Table 1.

Table 1 - Delivered Audio Quality Scale Definitions

Delivered Audio Quality	Subjective Performance Description
DAQ 5.0	Speech easily understood.
DAQ 4.5	Speech easily understood. Infrequent Noise/Distortion.
DAQ 4.0	Speech easily understood. Occasional Noise/Distortion.
DAQ 3.4	Speech understandable with repetition only rarely required. Some Noise/Distortion.
DAQ 3.0	Speech understandable with slight effort. Occasional repetition required due to Noise/Distortion.
DAQ 2.0	Understandable with considerable effort. Frequent repetition due to Noise/Distortion.
DAQ 1.0	Unusable, speech present but unreadable.

TSB-88-C also defines a service area as a boundary of the geographic area of concern for a user, and states that Validated CPC Covered Area Reliability shall be determined by the percentage of only those test locations within the bounded service area that are predicted to meet or exceed the specified CPC. Harris has proposed a Covered Area design for Miami-Dade County as defined in TSB-88-C wherein coverage is verified through the performance of a Validated CPC Covered Area Reliability test.

RF coverage using this ATP is verified by evaluating the voice quality of digital voice test calls to/from a P25 radio installed in a helicopter at test locations throughout the predicted coverage as shown on our aircraft coverage maps within the County's defined bounded service area. Helicopter Coverage Maps will be provided by the Detailed Design Review. At each test location, a test call is placed from the helicopter user to the dispatcher (an inbound call), as well as from the dispatcher to the helicopter user (an outbound call). The inbound and outbound test call at each location is graded using the DAQ definitions in Table 1. Scores that equal or exceed the County's specified CPC of DAQ 3.4 are considered acceptable (PASS), and those lower than DAQ 3.4 are not acceptable (FAIL).

3.1 Test Equipment and Preparation

Harris will utilize radios installed by the County, from the County's radio inventory in existing helicopters. The radios will be configured to operate on the [redacted]

Miami-Dade County is responsible for providing the test helicopter and flight personnel.

Harris will provide up to two days of support to perform the aircraft Testing.

Prior to performing the tests, each site must be audited to verify that the radio system is operating properly. The audits will verify the antenna configuration, the power into the antenna, the antenna installation, and the frequency of the test transmitter. Harris shall provide all test equipment necessary to perform the site audits.

3.2 Test Planning

TSB-88-C recommends coverage verification at a statistically significant number of random test locations, uniformly distributed throughout the service area. To accomplish this, the service area is divided by a grid pattern as an aid to test planning.

Harris recommends a 2-mile by 2-mile grid pattern to obtain an even or uniform distribution of approximately 500 test grids throughout the County's service area. The grid pattern is overlaid onto maps and a flight path determined that will pass through all accessible grids (i.e. do not interfere with FAA restrictions) that have their center point within the County's defined service area boundary.

All accessible grids in the predicted coverage area as shown on our maps within the County's defined service area will be tested. The voice quality test calls within each grid will be made as soon as the helicopter enters a grid and will be completed prior to exiting the grid. Any grids that the County decides not to test, or there is insufficient time to test, will have coverage scored as a PASS in the reliability calculations. Inaccessible grids, i.e. have no authorized flight path, will be scored as a PASS or FAIL based upon the mean predicted signal level within the grid

3.3 Grading of Test Locations

The digital voice quality test requires two Harris representatives and two County representatives. One Harris and one County representative will be the Field team, travel the flight route, perform the inbound calls, and grade the outbound calls. The second Harris and County representatives will be the Base team, will remain at the dispatch location, grade the inbound calls, and perform the outbound calls.

The digital voice test call within each grid consists of a short message representative of typical public safety call duration's and includes the identification of the location being tested. The suggested inbound test message is "TESTING GRID NUMBER XXX", followed by a short sentence or two from a newspaper or periodical such as "USA Today". To ensure that the message is understood, the dispatcher then repeats the inbound test message. The dispatcher will then make a similar outbound test call. The suggested outbound test message is "CONFIRMING GRID XXX", followed by a different short sentence or two from a newspaper or periodical such as "USA Today". The field

team will then repeat the dispatcher's test message. Within each grid, if the message is not understood on the first attempt, it can be repeated one time. Dependent on the size of the test grid and the aircraft speed, the test aircraft can be driven through the test grid a second time and the voice quality test call repeated.

Each of the four representatives grades the test call using the Table 1 DAQ definitions and records the test score for each test location using the template in Table 3. PASS or FAIL determination is made separately for the inbound and outbound calls at each location. For each call direction, a test location is deemed to PASS if it meets or exceeds the County's requirement for DAQ 3.4 voice quality from both graders. If both graders agree that the voice quality does not meet the defined DAQ 3.4 criteria, then that test location fails for the direction being graded. If a score differs between testers at a location that results in a failing score from only one tester, that location will need to be tested again to determine the cause of the discrepancy. If the discrepancy cannot be rectified, then that grid will be set aside for discussion and evaluation.

3.4 Test Analysis and Acceptance

The data logged by the four representatives on the grading template is then analyzed to determine whether the individual test grid meets the DAQ 3.4 definition.

An individual test grid is determined to PASS if both the inbound and outbound calls at that grid have been scored as a PASS.

The aircraft digital voice quality test is deemed to meet the coverage requirements if the percentage of test grids in the predicted coverage area that receive a PASS score equals or exceeds the County's minimum % Validated CPC Covered Area Reliability acceptance criteria that is shown.

Table 2 - Coverage Service Area and Acceptance Criteria

Aircraft Service Area Definition	Description	% Validated CPC Covered Area Reliability Acceptance Criteria
Predicted Helicopter Coverage within the Miami-Data County Jurisdictional Boundary	Digital voice	95%

3.5 Results Presentation

A test report is provided that includes:

- the number of test grids
- the location tested within each grid
- a copy of the Table 3 inbound or outbound grading template used by each grader
- the PASS/FAIL score for each test grid/location for each call direction
- the % PASS calculation for the service area
- a statement of overall test acceptance or failure of coverage.

Results		(Pass/Fail)	_____
Tester:	_____	Date:	_____
Comments:	_____		
	_____		
	_____		

Table 3 – Helicopter Coverage Voice Quality Test Grading Template

Coverage Test Data for: Miami-Dade County Date: _____

Requirement: DAQ 3.4

Check the link used: ☐ Digital Voice ☐ Base to Helicopter (outbound)
☐ Helicopter to Base (inbound)

Harris Evaluator:	County Evaluator:
Organization:	Organization:
Test Radio:	Test Frequency:

Service Area Test Grid Number	Harris Grade	County Grade	Remarks	PASS / FAIL Score

(One row for each test grid/location)

Appendix L – Responsibility Matrix

* *Indicates* [redacted]
** *Indicates* [redacted] *wer modification or construction*
*** *Indicates* [redacted]

Project Task	Harris	Miami-Dade	Comments
System			
RF System (P25, Mutual Aid, Transit Data)	X		
Backhaul System (fiber, T1, Mobile Microwave {RDCSs})		X	
Backhaul System (microwave)		X	If the County exercises the Option for microwave from Harris, then this will become Harris' responsibility
Program C3 Maestro[IP] Consoles	X	X	Harris to program consoles, County to provide console personalities
Deliver demark specs to MDC for backhaul	X		
Site locations		X	
Antenna locations	X	X	Harris to identify desired antenna locations, the County to provide the space for the antennas.
Provide outputs from [redacted]	X		
Use [redacted] data to complete licensing forms		X	
Frequency Coordination and Licensing		X	In conjunction with Sprint-Nextel
Desktop Control Station antennas	X		All Public Safety antenna systems will be replaced, all others re-used
Staging			
Stage RF System	X		
Conduct pre-Factory Acceptance Testing	X		
Conduct Factory Acceptance Testing (FAT)	X	X	MDC to witness
Sign-off FAT	X	X	
Logistics			
Provide ship to address	X		
Provide storage space	X		
Receive equipment	X		
Inventory equipment	X	X	
Property tag		X	
Process equipment returns	X	X	
Site Development			
Secure site location use		X*	

Project Task	Harris	Miami-Dade	Comments
Conduct site surveys	X **	X	For Harris, this is related to tower modifications, tower construction, and [redacted] if required.
Ensure building space at site	X *	X	
Secure site zoning, if necessary		X	
Obtain site plots	X *	X	As required
Obtain architectural drawings		X	
Obtain PE approval	X**	X	For Harris, this is related to tower modifications, tower construction, and [redacted]f required.
Secure building permits	X		
Provide access road		X	The County will be responsible for ensuring adequate access to ALL sites such that tractor trailers, cranes, etc can be used.
Clear site and grade	X **		
Provide soil boring & results study	X **	X	For Harris, this is related to tower modifications, tower construction, and [redacted] required.
Provide erosion control	X *		
Test compaction, break test	X *		
Provide shelter foundation	X *		
Provide & install ice bridge	X *		
Provide & install waveguide ladder	X *		
Provide Backhaul System Test Results (fiber, T1, Mobile Microwave [redacted]		X	To ensure latency, jitter and bandwidth requirements are met
Provide Backhaul System Test Results (microwave)		X	If the County exercises the Option for microwave from Harris, then this will become Harris' responsibility
Provide site compound rock/fabric	X *		
Provide & install fence		X	
Provide landscaping	X *	X	
Tag existing Telco circuits		X	
Measure or provide documentation for existing ground systems and correct, if necessary		X	
Electrical			
Provide sufficient primary electrical at site		X	
Provide H Frame and meter		X	
Provide electric from H-frame to shelter	X *	X	
Provide shelter ground at new site	X *		
Install meter base		X	

Project Task	Harris	Miami-Dade	Comments
Install/wire new UPSs	X		Installation only applies to cases where a new UPS will be furnished...where existing UPS, Harris will wire only
Install new breakers and panels for P25 System	X		
Wire AC from electric panels to cabinet /racks	X		
Provide generator and transfer panel at existing sites, except Palmetto Rail Yard and Richmond		X	
Provide generator and transfer panel at [redacted]	X		
Wire generator and transfer panel fo[redacted] and [redacted]	X		
Wire generator and transfer panel except fo[redacted]		X	
Provide shelter AC lightning protection	X *	X	
Provide new RF line lightning protection	X		For new antenna systems associated with the P25 Phase 1 Communications System.
Ground all Harris-provided equipment per specifications	X		
Make all equipment AC power connections (per the SOW)	X		
Provide building ground point		X	For all existing shelters and buildings, the demarcation point for the grounds will be inside the shelter or building where the equipment will reside
Obtain electrical permits	X		
Towers			
Provide towers for all sites		X	
Provide tower structure analysis for existing sites	X		
Obtain FAA approval		X	If it is deemed that the towers need extensions in order to accommodate new RF system or backhaul
Obtain construction permits for tower modifications	X		If it deemed that the towers need extensions or tower foundations are inadequate to accommodate the new RF system or backhaul
Make tower or tower foundation modifications if necessary	X		Financial responsibility as outlined in the Contract
Provide FAA as-built notification		X	If it is deemed that the towers need extensions in order to accommodate the equipment

Project Task	Harris	Miami-Dade	Comments
Provide antenna side arm mounts for RF System	X		
Provide microwave dish mounts for Backhaul System		X	If the County exercises the Option for Harris to provide microwave, this will become Harris' responsibility
Install antenna systems and feed lines for new RF system	X		Does not include any microwave, fiber or any other backhaul medium work
Install tower top amplifiers	X		Tower top amplifiers will be provided for all sites except [redacted]
Install RF lines/cables for new RF System	X		
Shelters			
Ensure space for equipment in existing shelters/buildings		X	
Provide shelter/building structural analysis		X	
Upgrade shelter/building if analysis proves the work necessary		X	
Provide adequate HVAC	X *	X	
Provide two 3-ton HVAC units at Richmond and one 4-ton at K&B	X		
Provide shelter foundation	X *	X	
Provide & install shelters	X *	X	
Generators			
Provide generator pads	X ***	X	For Harris, this applies to [redacted]
Provide generators	X ***	X	For Harris, this applies to [redacted]
Install generators and fuel lines	X ***	X	For Harris, this applies to [redacted] and [redacted]
Conduct start-up and test of generators	X ***	X	For Harris, this applies to [redacted] and [redacted]
Provide propane tank	X ***	X	For Harris, this applies to [redacted] and [redacted]
Provide standard generator alarms	X ***		For Harris, this applies to [redacted] and [redacted]
Provide fuel		X	
Installation			
Transport equipment to site	X		
Place equipment into position and secure	X		
Install cable tray, conduit or wire way	X		
Wire between cabinets/racks	X		
Make RF jumpers for combiners/multicouplers	X		
Remove old EDACS equipment and wiring, excluding AC circuits	X		

Project Task	Harris	Miami-Dade	Comments
Connect to backhaul	X		
Testing			
Optimize RF System backbone equipment operation	X		
Conduct pre-functional testing of the RF System	X		
Conduct functional ATP of the RF System	X	X	Witnessed by the County
Sign-off functional ATP of the RF System	X	X	
Conduct coverage ATP of the RF System	X	X	
Prepare coverage ATP Report	X		
Review and sign-off coverage ATP Report	X	X	
30 Operational Tests as defined in the ATP	X	X	
Optimize, test, and sign-off Backhaul System		X	Harris will not be responsible for testing of microwave (unless the County exercises the Option for Harris to provide microwave), fiber, T1, etc.
Permits			
Obtain FCC license		X	
Obtain FAA approval		X	
Obtain construction permits	X**		For Harris, this is related to any construction work requiring permits performed by Harris or its subcontractors.
Obtain building permits	X**		For Harris, this is related to any work requiring permits performed by Harris or its subcontractors.
Obtain site plots	X**		For Harris, this is related to any site work requiring this effort that is performed by Harris or its subcontractors.
Obtain architectural drawings	X**		For Harris, this is related to tower modifications, tower construction, and [redacted] required.
Obtain PE approval	X**		For Harris, this is related to any work performed by Harris or its subcontractors which require this approval.
Training			
Develop detailed training plan	X	X	
Provide System Admin Training	X		
Provide Dispatch Training	X		
Provide User Training	X		
Provide Maintenance Training	X		
Identify train-the-trainer experts		X	

Project Task	Harris	Miami-Dade	Comments
Cutover			
Develop detailed cutover plan	X	X	
Develop detailed talk group structures		X	
Develop personalities		X	
Load users in the UAS		X	
Provide Personality Testing		X	
Personality Standard Testing	X	X	
Provide Programming Locations		X	
Provide Programming Schedules	X	X	
Program Radios 50% Touch 1		X	
Program Radios 50% Touch 1	X		
Mobile Installs 50% Touch 1		X	
Mobile Installs 50% Touch 1	X		
CS Installs and Programming Touch 1 50%		X	
CS Installs and Programming Touch 1 50%	X		
Program Radios Touch 2, Approximately 75%		X	
Program Radios Touch 2, Approximately 25%	X		
Provide equipment technical manuals	X		
Provide system "As-Built" documentation	X		
Develop P25 Subscriber Unit Configurable Options Settings	X	X	Determine which features can be programmed in each P25 subscriber unit being provided
Miscellaneous			
Provide Subscriber Unit Quantities for orders to Sprint		X	
Witness and sign-off mobile installations performed by Harris		X	
Program and/or install subscribers aboard fixed-wing or rotary aircraft		X	
Provide Harris Vehicle Inventory for mobile installs		X	
Provide Accessory Quantities for orders to Sprint		X	
Inventory Used Radio Equipment for Return to Sprint	X	X	Miami-Dade approves all returns
Provide Required Power a[redacted] (VCE)		X	
Provide Required Power at [redacted] for Cutover Activities (Dual Consoles)		X	
Provide Adequate Console Furniture at Dispatch Centers if Required for IP Consoles		X	
Return all applicable replaced equipment to Sprint	X	X	Miami-Dade signs off on all equipment for return

Project Task	Harris	Miami-Dade	Comments
Documentation			
Provide site equipment floor plan drawings	X		
Provide site equipment rack drawings	X		
Provide tower antenna layout drawings	X		
Provide System Optimization Procedure	X		
Provide equipment technical manuals	X		
Provide Global Bypass Configuration Change Documentation	X		
Provide Detailed Design Review Documentation	X		
Provide system block drawings	X		

APPENDIX M – PRELIMINARY PROJECT SCHEDULE

ID	Task Name		Duration Working Days	Start	Finish
1	Miami [redacted]		1868 days	Mon 1/4/10	Fri 1/1/10
2	C [redacted]		1 day	Mon 1/4/10	Mon 1/4/10
3	P [redacted]		81 days	Tue 1/5/10	Tue 4/27/10
4	[redacted]		6 wks	Tue 1/5/10	Mon 2/15/10
5	[redacted]		1 day	Tue 1/19/10	Tue 1/19/10
6	[redacted]		1 day	Tue 2/16/10	Tue 2/16/10
7	[redacted]		2 days	Wed 2/24/10	Thu 2/25/10
8	[redacted]		1 day	Fri 2/26/10	Fri 2/26/10
9	[redacted]		1 day	Fri 2/26/10	Fri 2/26/10
10	[redacted]		5 wks	Fri 2/26/10	Thu 4/1/10
11	[redacted]		1 wk	Fri 4/2/10	Thu 4/8/10
12	[redacted]		1 day	Fri 4/9/10	Fri 4/9/10
13	[redacted]		2 days	Mon 4/19/10	Tue 4/20/10
14	[redacted]		0 days	Tue 4/27/10	Tue 4/27/10
15	C [redacted]		100 days	Wed 4/28/10	Tue 9/14/10
16	[redacted]		10 wks	Wed 4/28/10	Tue 7/6/10
17	[redacted]		5 days	Wed 6/16/10	Tue 6/22/10
18	[redacted]		2 days	Wed 6/23/10	Thu 6/24/10
19	[redacted]		2 days	Fri 6/25/10	Mon 6/28/10
20	[redacted]		5 wks	Wed 7/7/10	Tue 8/10/10
21	[redacted]		5 wks	Wed 8/11/10	Tue 9/14/10
22	S [redacted]		330 days	Tue 9/14/10	Tue 12/20/11
23	[redacted]		0 days	Tue 9/14/10	Tue 9/14/10
24	[redacted]		80 days	Wed 9/15/10	Tue 12/7/10
25	[redacted]		10 wks	Wed 9/15/10	Tue 11/23/10
26	[redacted]		10 wks	Wed 9/15/10	Tue 11/23/10
27	[redacted]		2 days	Wed 11/24/10	Thu 11/25/10
28	[redacted]		2 days	Wed 11/24/10	Thu 11/25/10
29	[redacted]		7 days	Fri 11/26/10	Mon 12/6/10
30	[redacted]		7 days	Fri 11/26/10	Mon 12/6/10
31	[redacted]		1 day	Tue 12/7/10	Tue 12/7/10
32	[redacted]		1 day	Tue 12/7/10	Tue 12/7/10
33	[redacted]		265 days	Wed 9/16/10	Tue 9/6/11
34	[redacted]		10 wks	Wed 9/15/10	Tue 11/23/10
35	[redacted]		10 wks	Wed 9/15/10	Tue 11/23/10
36	[redacted]		37 wks	Wed 11/24/10	Tue 9/9/11
37	[redacted]		37 wks	Wed 11/24/10	Tue 9/9/11
38	[redacted]		4 wks	Wed 9/10/11	Tue 9/6/11
39	[redacted]		4 wks	Wed 9/10/11	Tue 9/6/11
40	[redacted]		160 days	Wed 9/16/10	Tue 4/12/11
41	[redacted]		20 wks	Wed 9/15/10	Tue 2/1/11
42	[redacted]		10 wks	Wed 2/2/11	Tue 4/12/11
43	[redacted]	MDC Inventory Stickers	75 days	Wed 9/7/11	Tue 12/20/11
44	M [redacted]		260 days	Wed 4/28/10	Tue 4/26/11
45	[redacted]	CS82 and Consoles	200 days	Wed 4/28/10	Tue 2/1/11
46	[redacted]		5 days	Wed 4/28/10	Tue 5/4/10
47	[redacted]		5 days	Wed 5/5/10	Tue 5/11/10
48	[redacted]		10 wks	Wed 5/12/10	Tue 7/20/10
49	[redacted]		8 wks	Wed 7/21/10	Tue 9/14/10

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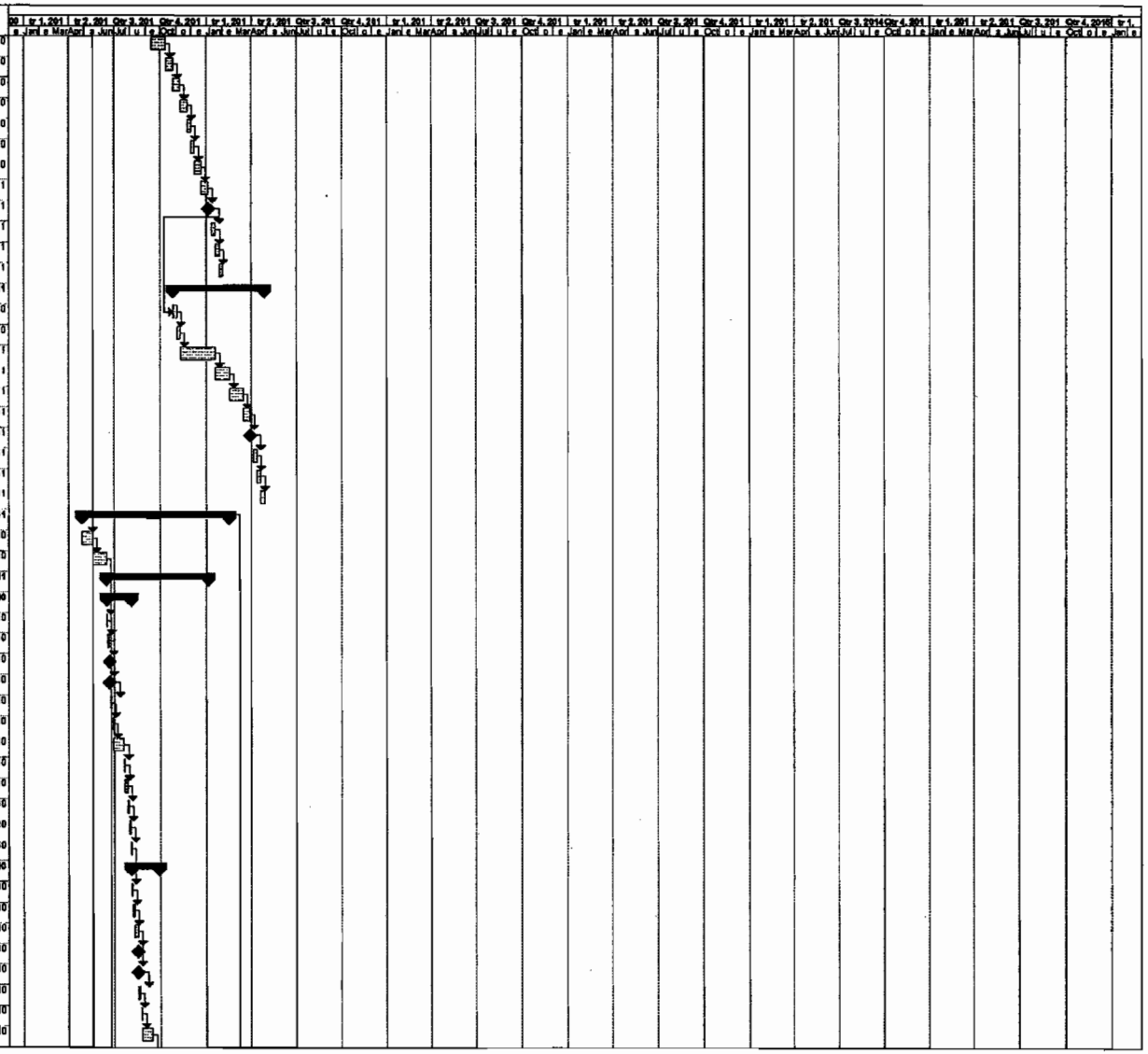
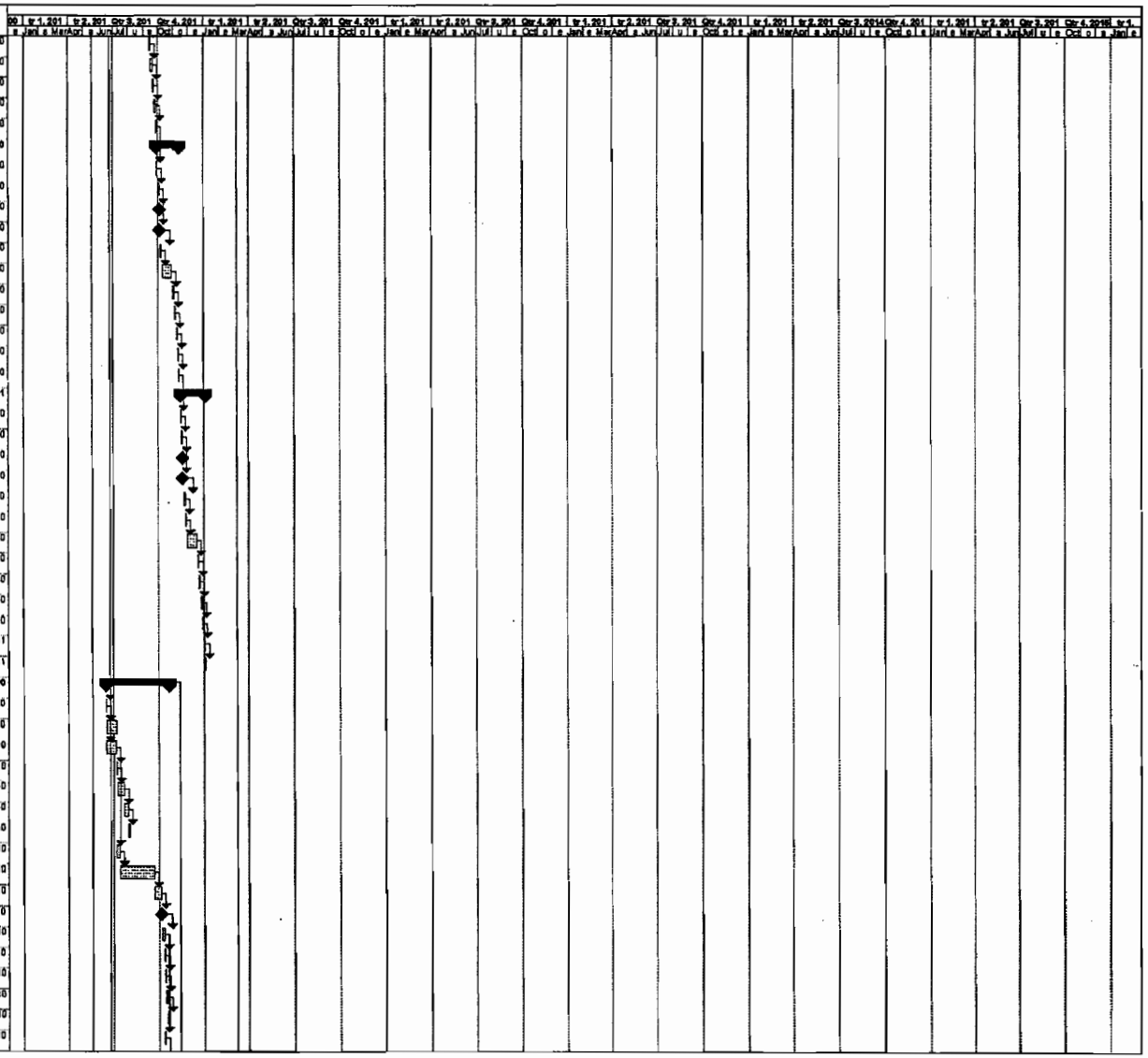
Appendix M
Preliminary Project Schedule
Page 1 of 10

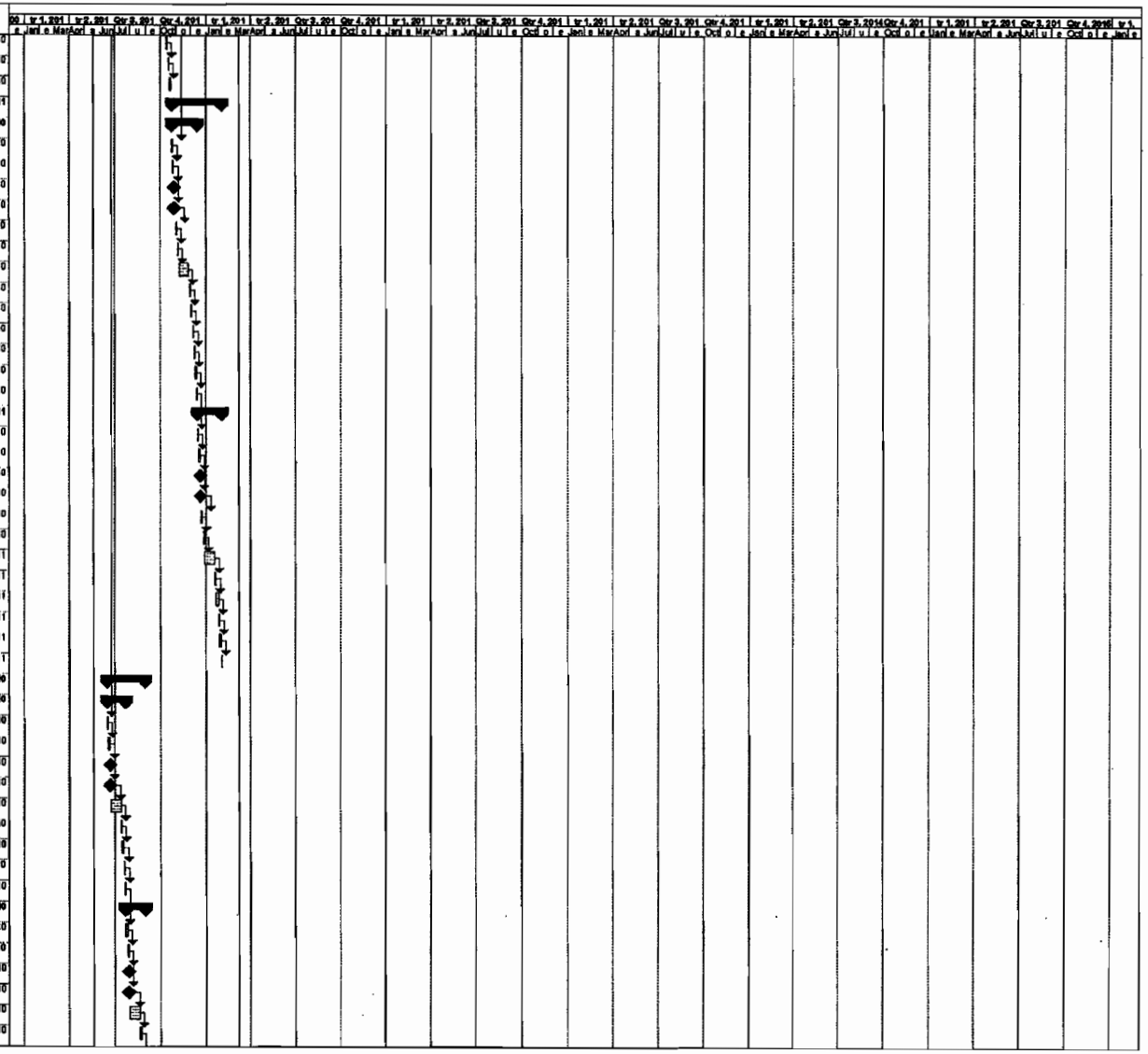
ID	Task	Duration Working Days	Start	Finish
50	[redacted]	4 wks	Wed 9/15/10	Tue 10/12/10
51	[redacted]	2 wks	Wed 10/13/10	Tue 10/26/10
52	[redacted]	2 wks	Wed 10/27/10	Tue 11/9/10
53	[redacted]	2 wks	Wed 11/10/10	Tue 11/23/10
54	[redacted]	5 days	Wed 11/24/10	Tue 11/30/10
55	[redacted]	5 days	Wed 12/1/10	Tue 12/7/10
56	[redacted]	2 wks	Wed 12/8/10	Tue 12/21/10
57	[redacted]	2 wks	Wed 12/22/10	Tue 1/4/11
58	[redacted]	0 days	Tue 1/4/11	Tue 1/4/11
59	[redacted]	1 wk	Wed 1/12/11	Tue 1/18/11
60	[redacted]	1 wk	Wed 1/19/11	Tue 1/25/11
61	[redacted]	1 wk	Wed 1/26/11	Tue 2/1/11
62	[redacted]	130 days	Wed 10/27/10	Tue 4/26/11
63	[redacted]	5 days	Wed 10/27/10	Tue 11/2/10
64	[redacted]	5 days	Wed 11/3/10	Tue 11/9/10
65	[redacted]	10 wks	Wed 11/10/10	Tue 1/18/11
66	[redacted]	4 wks	Wed 1/19/11	Tue 2/15/11
67	[redacted]	4 wks	Wed 2/16/11	Tue 3/15/11
68	[redacted]	2 wks	Wed 3/16/11	Tue 3/29/11
69	[redacted]	0 days	Tue 3/29/11	Tue 3/29/11
70	[redacted]	1 wk	Wed 4/6/11	Tue 4/12/11
71	[redacted]	1 wk	Wed 4/13/11	Tue 4/19/11
72	[redacted]	1 wk	Wed 4/20/11	Tue 4/26/11
73	[redacted]	200 days	Wed 4/26/10	Mon 2/14/11
74	[redacted]	3 wks	Wed 4/28/10	Tue 5/18/10
75	[redacted]	4 wks	Wed 5/19/10	Tue 6/15/10
76	[redacted]	148 days	Wed 5/19/10	Tue 12/7/10
77	[redacted]	30 days	Wed 8/18/10	Tue 9/3/10
78	[redacted]	2 days	Wed 8/18/10	Thu 8/19/10
79	[redacted]	2 days	Fri 8/18/10	Mon 8/21/10
80	[redacted]	1 day	Tue 8/22/10	Tue 8/22/10
81	[redacted]	1 day	Tue 8/22/10	Tue 8/22/10
82	[redacted]	3 days	Wed 8/23/10	Fri 8/25/10
83	[redacted]	2 days	Mon 8/26/10	Tue 8/26/10
84	[redacted]	3 wks	Wed 8/30/10	Tue 7/20/10
85	[redacted]	2 days	Wed 7/21/10	Thu 7/22/10
86	[redacted]	3 days	Fri 7/23/10	Tue 7/27/10
87	[redacted]	2 days	Wed 7/28/10	Thu 7/29/10
88	[redacted]	2 days	Fri 7/30/10	Mon 8/2/10
89	[redacted]	1 day	Tue 8/3/10	Tue 8/3/10
90	[redacted]	40 days	Wed 8/4/10	Tue 9/28/10
91	[redacted]	2 days	Wed 8/4/10	Thu 8/5/10
92	[redacted]	2 days	Fri 8/6/10	Mon 8/9/10
93	[redacted]	5 days	Tue 8/10/10	Mon 8/16/10
94	[redacted]	1 day	Tue 8/17/10	Tue 8/17/10
95	[redacted]	1 day	Tue 8/17/10	Tue 8/17/10
96	[redacted]	3 days	Wed 8/18/10	Fri 8/20/10
97	[redacted]	2 days	Mon 9/23/10	Tue 9/24/10
98	[redacted]	3 wks	Wed 9/25/10	Tue 9/14/10



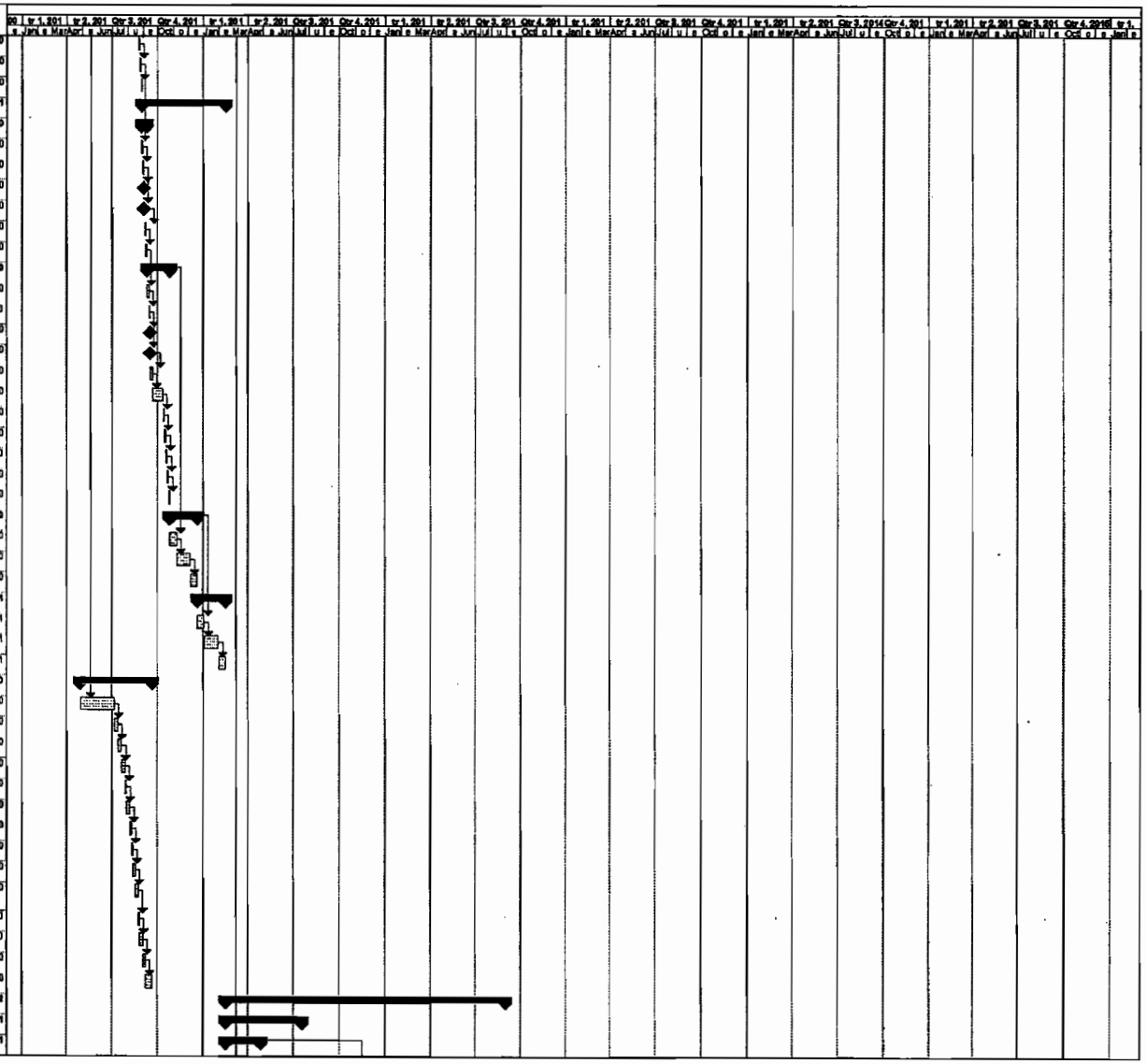
ID	Task Name	Duration Working Days	Start	Finish
98	[redacted]	2 days	Wed 9/15/10	Thu 9/16/10
100		3 days	Fri 9/17/10	Tue 9/21/10
101		2 days	Wed 9/22/10	Thu 9/23/10
102		2 days	Fri 9/24/10	Mon 9/27/10
103		1 day	Tue 9/28/10	Tue 9/28/10
104		33 days	Wed 9/29/10	Fri 11/12/10
105		2 days	Wed 9/29/10	Thu 9/30/10
106		2 days	Fri 10/1/10	Mon 10/4/10
107		1 day	Tue 10/5/10	Tue 10/5/10
108		1 day	Tue 10/5/10	Tue 10/5/10
109		3 days	Wed 10/6/10	Fri 10/8/10
110		3 wks	Mon 10/11/10	Fri 10/29/10
111		2 days	Mon 11/1/10	Tue 11/2/10
112		3 days	Wed 11/3/10	Fri 11/5/10
113		2 days	Mon 11/8/10	Tue 11/9/10
114		2 days	Wed 11/10/10	Thu 11/11/10
115		1 day	Fri 11/12/10	Fri 11/12/10
116		37 days	Mon 11/15/10	Tue 1/4/11
117		2 days	Mon 11/15/10	Tue 11/16/10
118		2 days	Wed 11/17/10	Thu 11/18/10
119		1 day	Fri 11/19/10	Fri 11/19/10
120		1 day	Fri 11/19/10	Fri 11/19/10
121		3 days	Mon 11/22/10	Wed 11/24/10
122		2 days	Thu 11/25/10	Fri 11/26/10
123		3 wks	Mon 11/29/10	Fri 12/17/10
124		2 days	Mon 12/20/10	Tue 12/21/10
125		3 days	Wed 12/22/10	Fri 12/24/10
126		2 days	Mon 12/27/10	Tue 12/28/10
127		2 days	Wed 12/29/10	Thu 12/30/10
128		2 days	Fri 12/31/10	Mon 1/3/11
129		1 day	Tue 1/4/11	Tue 1/4/11
130		63 days	Wed 6/16/10	Fri 10/22/10
131		1 day	Wed 6/16/10	Wed 6/16/10
132		3 wks	Thu 6/17/10	Wed 7/7/10
133		3 wks	Wed 6/18/10	Tue 7/6/10
134		2 days	Wed 7/7/10	Thu 7/8/10
135		2 wks	Fri 7/9/10	Thu 7/22/10
136		1 wk	Fri 7/23/10	Thu 7/29/10
137		2 days	Fri 7/30/10	Mon 8/2/10
138		1 wk	Wed 7/7/10	Tue 7/13/10
139		10 wks	Wed 7/14/10	Tue 9/21/10
140		2 wks	Wed 9/22/10	Tue 10/5/10
141		1 day	Wed 10/6/10	Wed 10/6/10
142		3 days	Thu 10/7/10	Mon 10/11/10
143		2 days	Tue 10/12/10	Wed 10/13/10
144		1 day	Thu 10/14/10	Thu 10/14/10
145		2 days	Fri 10/15/10	Mon 10/18/10
146		1 day	Tue 10/19/10	Tue 10/19/10
147		2 days	Tue 10/12/10	Wed 10/13/10



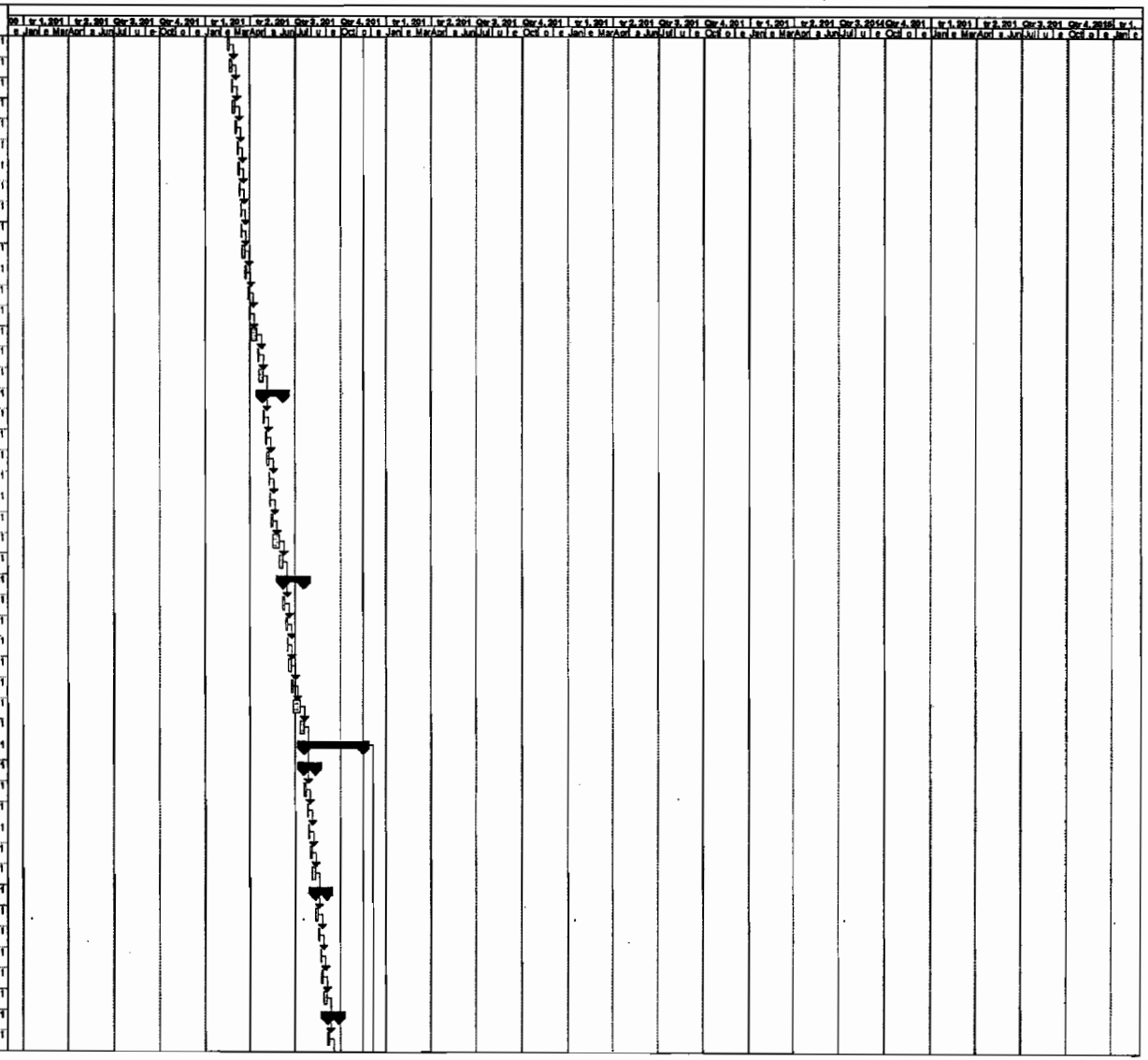
ID	Task	Duration Working Days	Start	Finish
148	[redacted]	2 days	Thu 10/14/10	Fri 10/15/10
149	[redacted]	2 days	Mon 10/18/10	Tue 10/19/10
150	[redacted]	3 days	Wed 10/20/10	Fri 10/22/10
151	[redacted]	72 days	Mon 10/25/10	Tue 2/1/11
152	[redacted]	37 days	Mon 10/25/10	Tue 12/14/10
153	[redacted]	2 days	Mon 10/25/10	Tue 10/26/10
154	[redacted]	2 days	Wed 10/27/10	Thu 10/28/10
155	[redacted]	1 day	Fri 10/29/10	Fri 10/29/10
156	[redacted]	1 day	Fri 10/29/10	Fri 10/29/10
157	[redacted]	3 days	Mon 11/1/10	Wed 11/3/10
158	[redacted]	2 days	Thu 11/4/10	Fri 11/5/10
159	[redacted]	3 wks	Mon 11/8/10	Fri 11/26/10
160	[redacted]	2 days	Mon 11/29/10	Tue 11/30/10
161	[redacted]	3 days	Wed 12/1/10	Fri 12/3/10
162	[redacted]	2 days	Mon 12/6/10	Tue 12/7/10
163	[redacted]	2 days	Wed 12/8/10	Thu 12/9/10
164	[redacted]	2 days	Fri 12/10/10	Mon 12/13/10
165	[redacted]	1 day	Tue 12/14/10	Tue 12/14/10
166	[redacted]	30 days	Wed 12/15/10	Tue 2/1/11
167	[redacted]	2 days	Wed 12/15/10	Thu 12/16/10
168	[redacted]	2 days	Fri 12/17/10	Mon 12/20/10
169	[redacted]	1 day	Tue 12/21/10	Tue 12/21/10
170	[redacted]	1 day	Tue 12/21/10	Tue 12/21/10
171	[redacted]	3 days	Wed 12/22/10	Fri 12/24/10
172	[redacted]	2 days	Mon 12/27/10	Tue 12/28/10
173	[redacted]	3 wks	Wed 12/29/10	Tue 1/18/11
174	[redacted]	2 days	Wed 1/19/11	Thu 1/20/11
175	[redacted]	3 days	Fri 1/21/11	Tue 1/25/11
176	[redacted]	2 days	Wed 1/26/11	Thu 1/27/11
177	[redacted]	2 days	Fri 1/28/11	Mon 1/31/11
178	[redacted]	1 day	Tue 2/1/11	Tue 2/1/11
179	[redacted]	64 days	Wed 6/16/10	Mon 9/06/10
180	[redacted]	27 days	Wed 6/16/10	Thu 7/22/10
181	[redacted]	2 days	Wed 6/16/10	Thu 6/17/10
182	[redacted]	2 days	Fri 6/18/10	Mon 6/21/10
183	[redacted]	1 day	Tue 6/22/10	Tue 6/22/10
184	[redacted]	1 day	Tue 6/22/10	Tue 6/22/10
185	[redacted]	3 wks	Wed 6/23/10	Tue 7/13/10
186	[redacted]	2 days	Wed 7/14/10	Thu 7/15/10
187	[redacted]	2 days	Fri 7/16/10	Mon 7/19/10
188	[redacted]	2 days	Tue 7/20/10	Wed 7/21/10
189	[redacted]	1 day	Thu 7/22/10	Thu 7/22/10
190	[redacted]	27 days	Fri 7/23/10	Mon 9/06/10
191	[redacted]	2 days	Fri 7/23/10	Mon 7/26/10
192	[redacted]	2 days	Tue 7/27/10	Wed 7/28/10
193	[redacted]	1 day	Thu 7/29/10	Thu 7/29/10
194	[redacted]	1 day	Thu 7/29/10	Thu 7/29/10
195	[redacted]	3 wks	Fri 7/30/10	Thu 8/19/10
196	[redacted]	2 days	Fri 8/20/10	Mon 8/23/10



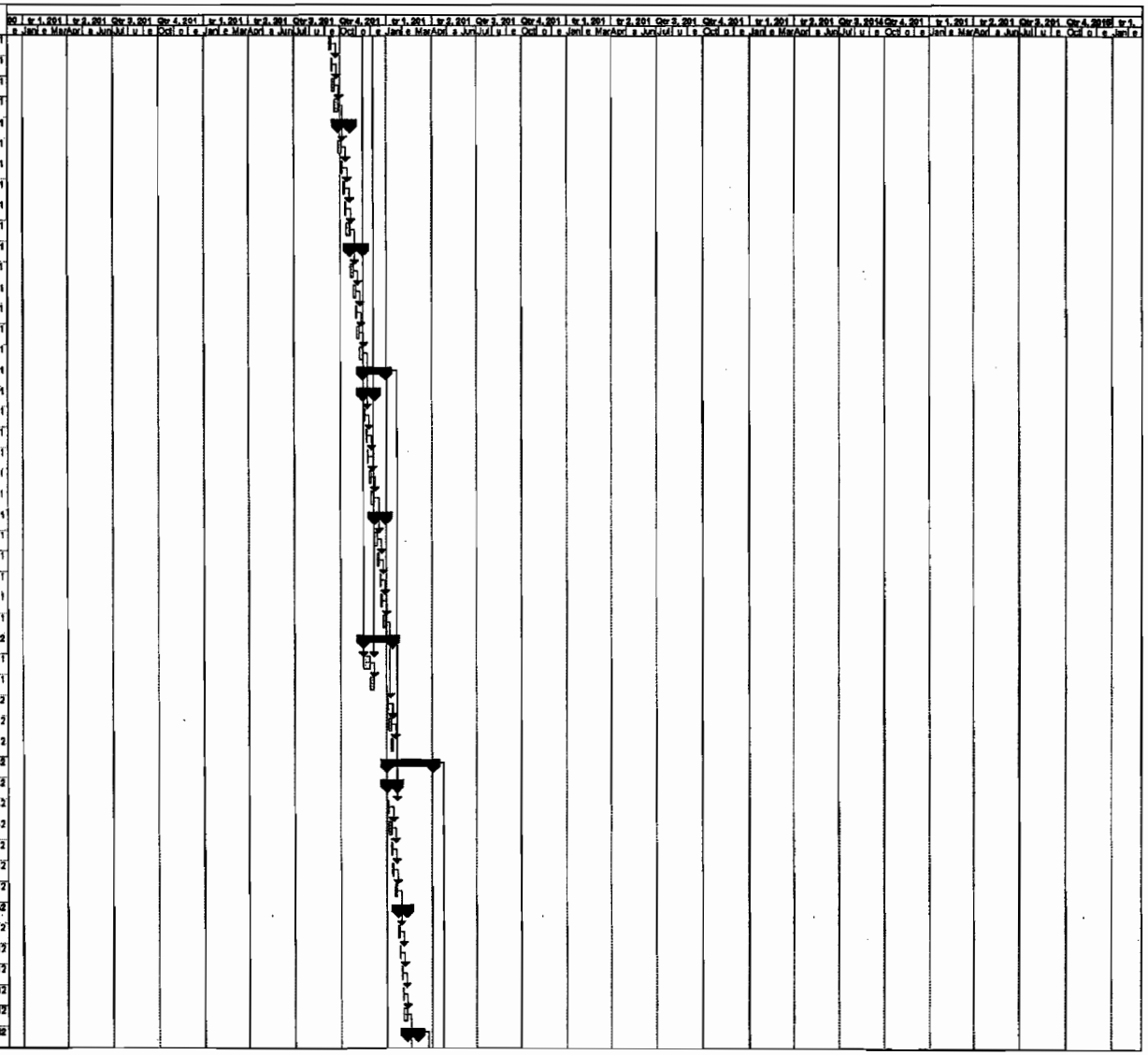
ID	Task Name	Duration Working Days	Start	Finish
197	[redacted]	2 days	Tue 8/24/10	Wed 8/25/10
198	[redacted]	2 days	Thu 8/26/10	Fri 8/27/10
199	[redacted]	1 day	Mon 8/30/10	Mon 8/30/10
200	[redacted]	121 days	Mon 8/30/10	Mon 2/14/11
201	[redacted]	0 days	Mon 8/30/10	Thu 9/9/10
202	[redacted]	2 days	Mon 8/30/10	Tue 8/31/10
203	[redacted]	2 days	Wed 9/1/10	Thu 9/2/10
204	[redacted]	1 day	Fri 9/3/10	Fri 9/3/10
205	[redacted]	1 day	Fri 9/3/10	Fri 9/3/10
206	[redacted]	1 day	Mon 9/6/10	Mon 9/6/10
207	[redacted]	3 days	Tue 9/7/10	Thu 9/9/10
208	[redacted]	32 days	Fri 9/10/10	Mon 10/25/10
209	[redacted]	2 days	Fri 9/10/10	Mon 9/13/10
210	[redacted]	2 days	Tue 9/14/10	Wed 9/15/10
211	[redacted]	1 day	Thu 9/16/10	Thu 9/16/10
212	[redacted]	1 day	Thu 9/16/10	Thu 9/16/10
213	[redacted]	3 days	Fri 9/17/10	Tue 9/21/10
214	[redacted]	3 wks	Wed 9/22/10	Tue 10/12/10
215	[redacted]	2 days	Wed 10/13/10	Thu 10/14/10
216	[redacted]	2 days	Fri 10/15/10	Mon 10/18/10
217	[redacted]	2 days	Tue 10/19/10	Wed 10/20/10
218	[redacted]	2 days	Thu 10/21/10	Fri 10/22/10
219	[redacted]	1 day	Mon 10/25/10	Mon 10/25/10
220	[redacted]	40 days	Tue 10/26/10	Mon 12/20/10
221	[redacted]	10 days	Tue 10/26/10	Mon 11/8/10
222	[redacted]	4 wks	Tue 11/9/10	Mon 12/6/10
223	[redacted]	2 wks	Tue 12/7/10	Mon 12/20/10
224	[redacted]	40 days	Tue 12/21/10	Mon 2/14/11
225	[redacted]	10 days	Tue 12/21/10	Mon 1/3/11
226	[redacted]	4 wks	Tue 1/4/11	Mon 1/31/11
227	[redacted]	2 wks	Tue 2/1/11	Mon 2/14/11
228	[redacted]	104 days	Wed 4/28/10	Mon 9/20/10
229	[redacted]	10 wks	Wed 4/28/10	Tue 7/6/10
230	[redacted]	5 days	Wed 7/7/10	Tue 7/13/10
231	[redacted]	5 days	Wed 7/14/10	Tue 7/20/10
232	[redacted]	5 days	Wed 7/21/10	Tue 7/27/10
233	[redacted]	2 days	Wed 7/28/10	Thu 7/29/10
234	[redacted]	1 wk	Fri 7/30/10	Thu 8/5/10
235	[redacted]	2 days	Fri 8/6/10	Mon 8/9/10
236	[redacted]	3 days	Tue 8/10/10	Thu 8/12/10
237	[redacted]	2 days	Fri 8/13/10	Mon 8/16/10
238	[redacted]	5 days	Tue 8/17/10	Mon 8/23/10
239	[redacted]	2 days	Tue 8/24/10	Wed 8/25/10
240	[redacted]	5 days	Thu 8/26/10	Wed 9/1/10
241	[redacted]	3 days	Thu 9/2/10	Mon 9/6/10
242	[redacted]	2 wks	Tue 9/7/10	Mon 9/20/10
243	[redacted]	404 days	Tue 2/15/11	Fri 6/21/12
244	[redacted]	110 days	Tue 2/15/11	Mon 7/18/11
245	[redacted]	51 days	Tue 2/15/11	Tue 4/26/11



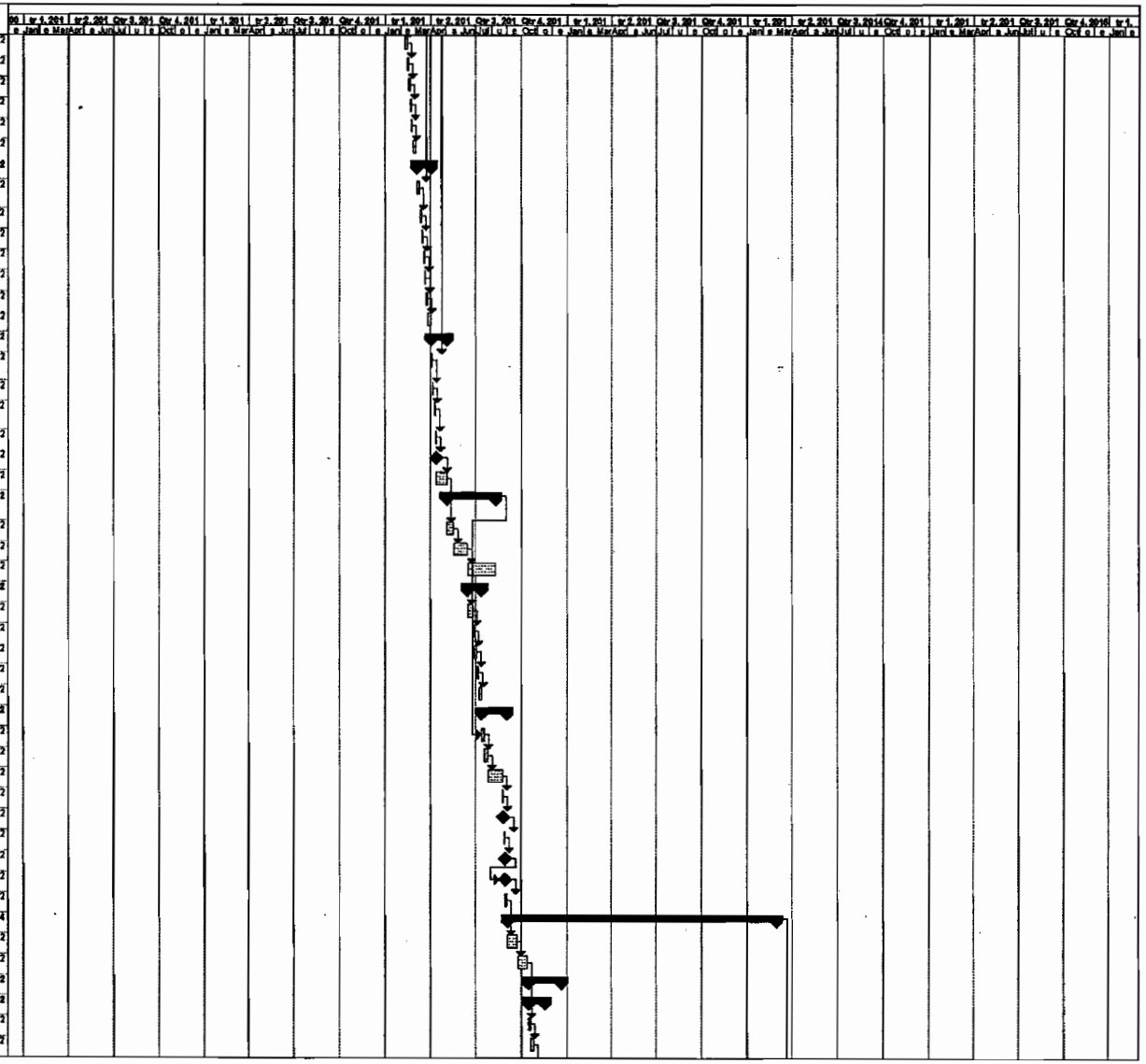
ID	Task Name	Duration Working Days	Start	Finish
246	Install Primary Network Switch	5 days	Tue 2/15/11	Thu 2/17/11
247	[redacted]	3 days	Fri 2/18/11	Tue 2/22/11
248	[redacted]	2 days	Wed 2/23/11	Thu 2/24/11
249	[redacted]	3 days	Fri 2/25/11	Tue 3/1/11
250	[redacted]	3 days	Wed 3/2/11	Fri 3/4/11
251	[redacted]	2 days	Mon 3/7/11	Tue 3/8/11
252	[redacted]	2 days	Wed 3/9/11	Thu 3/10/11
253	[redacted]	1 day	Fri 3/11/11	Fri 3/11/11
254	[redacted]	1 day	Mon 3/14/11	Mon 3/14/11
255	[redacted]	1 day	Tue 3/15/11	Tue 3/15/11
256	[redacted]	4 days	Wed 3/16/11	Mon 3/21/11
257	[redacted]	4 days	Tue 3/22/11	Fri 3/25/11
258	[redacted]	3 days	Mon 3/28/11	Wed 3/30/11
259	[redacted]	2 days	Thu 3/31/11	Fri 4/1/11
260	[redacted]	2 wks	Mon 4/4/11	Fri 4/15/11
261	[redacted]	2 days	Mon 4/18/11	Tue 4/19/11
262	[redacted]	1 wk	Wed 4/20/11	Tue 4/26/11
263	[redacted]	20 days	Wed 4/27/11	Mon 6/6/11
264	[redacted]	3 days	Wed 4/27/11	Fri 4/29/11
265	[redacted]	3 days	Mon 5/2/11	Wed 5/4/11
266	[redacted]	3 days	Thu 5/5/11	Mon 5/9/11
267	[redacted]	1 day	Tue 5/10/11	Tue 5/10/11
268	[redacted]	2 days	Wed 5/11/11	Thu 5/12/11
269	[redacted]	2 days	Fri 5/13/11	Mon 5/16/11
270	[redacted]	2 wks	Tue 5/17/11	Mon 5/30/11
271	[redacted]	1 wk	Tue 5/31/11	Mon 6/6/11
272	[redacted]	30 days	Tue 6/7/11	Mon 7/18/11
273	[redacted]	4 days	Tue 6/7/11	Fri 6/10/11
274	[redacted]	3 days	Mon 6/13/11	Wed 6/15/11
275	[redacted]	1 day	Thu 6/16/11	Thu 6/16/11
276	[redacted]	5 days	Fri 6/17/11	Thu 6/23/11
277	[redacted]	2 days	Fri 6/24/11	Mon 6/27/11
278	[redacted]	2 wks	Tue 6/28/11	Mon 7/11/11
279	[redacted]	1 wk	Tue 7/12/11	Mon 7/18/11
280	[redacted]	95 days	Tue 7/19/11	Mon 11/14/11
281	[redacted]	17 days	Tue 7/19/11	Wed 8/10/11
282	[redacted]	4 days	Tue 7/19/11	Fri 7/22/11
283	[redacted]	3 days	Mon 7/25/11	Wed 7/27/11
284	[redacted]	2 days	Thu 7/28/11	Fri 7/29/11
285	[redacted]	3 days	Mon 8/1/11	Wed 8/3/11
286	[redacted]	1 wk	Thu 8/4/11	Wed 8/10/11
287	[redacted]	17 days	Thu 8/11/11	Fri 9/2/11
288	[redacted]	4 days	Thu 8/11/11	Tue 8/16/11
289	[redacted]	3 days	Wed 8/17/11	Fri 8/19/11
290	[redacted]	2 days	Mon 8/22/11	Tue 8/23/11
291	[redacted]	3 days	Wed 8/24/11	Fri 8/26/11
292	[redacted]	1 wk	Mon 8/29/11	Fri 9/2/11
293	[redacted]	17 days	Mon 9/5/11	Tue 9/27/11
294	[redacted]	4 days	Mon 9/5/11	Thu 9/8/11



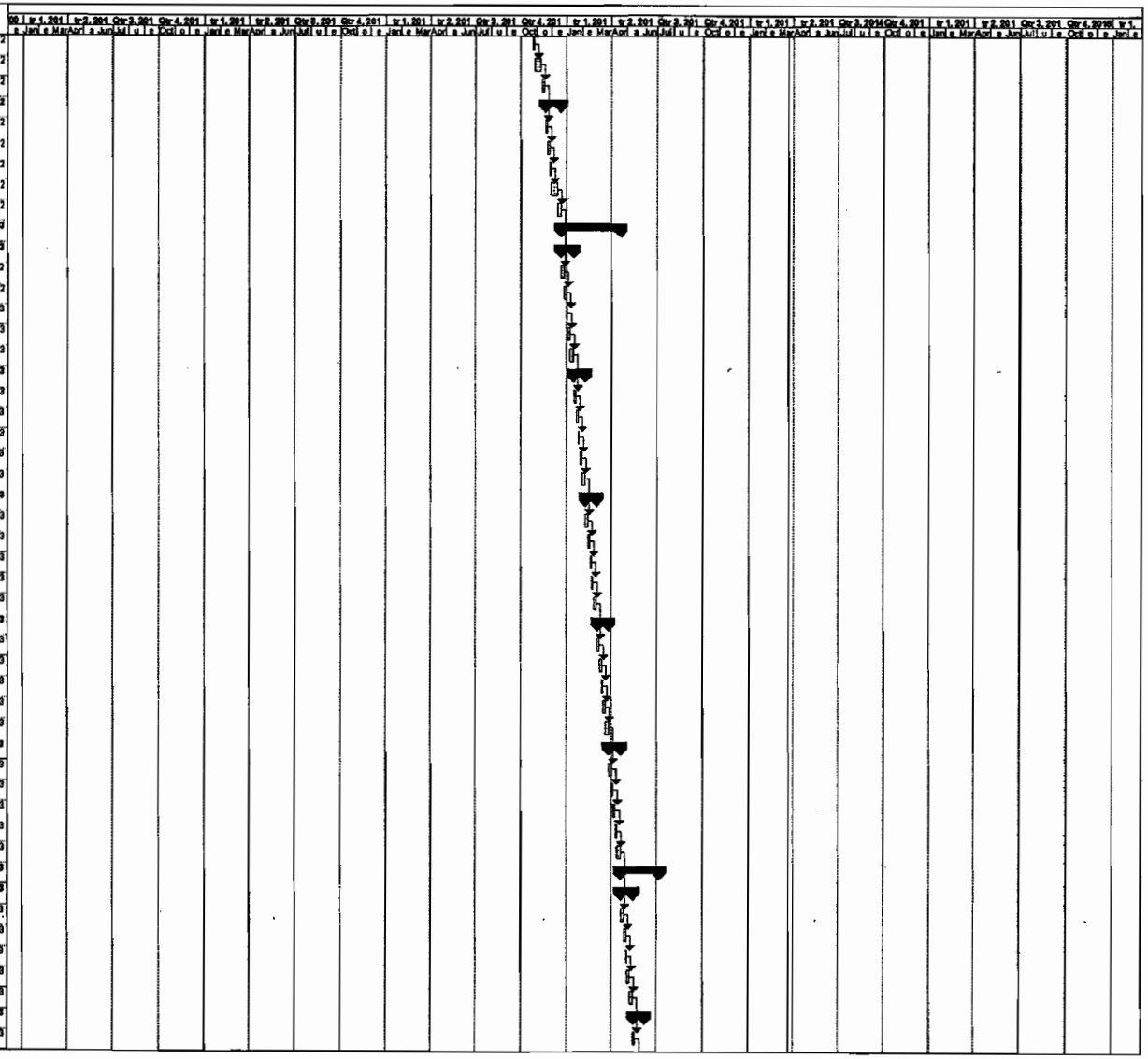
ID	Task Name	Duration Working Days	Start	Finish
295	[redacted]	3 days	Fri 9/9/11	Tue 9/13/11
296	[redacted]	2 days	Wed 9/14/11	Thu 9/15/11
297	[redacted]	3 days	Fri 9/16/11	Tue 9/20/11
298	[redacted]	1 wk	Wed 9/21/11	Tue 9/27/11
299	[redacted]	17 days	Wed 9/28/11	Thu 10/20/11
300	[redacted]	4 days	Wed 9/28/11	Mon 10/3/11
301	[redacted]	3 days	Tue 10/4/11	Thu 10/6/11
302	[redacted]	2 days	Fri 10/7/11	Mon 10/10/11
303	[redacted]	3 days	Tue 10/11/11	Thu 10/13/11
304	[redacted]	1 wk	Fri 10/14/11	Thu 10/20/11
305	[redacted]	17 days	Fri 10/21/11	Mon 11/14/11
306	[redacted]	4 days	Fri 10/21/11	Wed 10/26/11
307	[redacted]	5 days	Thu 10/27/11	Mon 10/31/11
308	[redacted]	2 days	Tue 11/1/11	Wed 11/2/11
309	[redacted]	3 days	Thu 11/3/11	Mon 11/7/11
310	[redacted]	1 wk	Tue 11/8/11	Mon 11/14/11
311	[redacted]	34 days	Tue 11/15/11	Fri 12/30/11
312	[redacted]	17 days	Tue 11/15/11	Wed 12/7/11
313	[redacted]	4 days	Tue 11/15/11	Fri 11/18/11
314	[redacted]	3 days	Mon 11/21/11	Wed 11/23/11
315	[redacted]	2 days	Thu 11/24/11	Fri 11/25/11
316	[redacted]	3 days	Mon 11/28/11	Wed 11/30/11
317	[redacted]	1 wk	Thu 12/1/11	Wed 12/7/11
318	[redacted]	17 days	Thu 12/8/11	Fri 12/30/11
319	[redacted]	4 days	Thu 12/8/11	Tue 12/13/11
320	[redacted]	3 days	Wed 12/14/11	Fri 12/16/11
321	[redacted]	2 days	Mon 12/19/11	Tue 12/20/11
322	[redacted]	3 days	Wed 12/21/11	Fri 12/23/11
323	[redacted]	1 wk	Mon 12/26/11	Fri 12/30/11
324	[redacted]	43 days	Tue 11/15/11	Thu 1/12/12
325	[redacted]	10 days	Tue 11/15/11	Mon 11/28/11
326	[redacted]	5 days	Tue 11/29/11	Mon 12/5/11
327	[redacted]	3 days	Mon 1/2/12	Wed 1/4/12
328	[redacted]	3 days	Thu 1/5/12	Mon 1/9/12
329	[redacted]	3 days	Tue 1/10/12	Thu 1/12/12
330	[redacted]	66 days	Mon 1/2/12	Mon 4/2/12
331	[redacted]	16 days	Mon 1/2/12	Fri 1/20/12
332	[redacted]	4 days	Mon 1/2/12	Thu 1/5/12
333	[redacted]	2 days	Fri 1/6/12	Mon 1/9/12
334	[redacted]	2 days	Tue 1/10/12	Wed 1/11/12
335	[redacted]	2 days	Thu 1/12/12	Fri 1/13/12
336	[redacted]	1 wk	Mon 1/16/12	Fri 1/20/12
337	[redacted]	14 days	Mon 1/23/12	Thu 2/9/12
338	[redacted]	3 days	Mon 1/23/12	Wed 1/25/12
339	[redacted]	2 days	Thu 1/26/12	Fri 1/27/12
340	[redacted]	2 days	Mon 1/30/12	Tue 1/31/12
341	[redacted]	2 days	Wed 2/1/12	Thu 2/2/12
342	[redacted]	1 wk	Fri 2/3/12	Thu 2/9/12
343	[redacted]	16 days	Fri 2/10/12	Fri 3/2/12



ID	Task Name	Duration Working Days	Start	Finish
344	[redacted]	3 days	Fri 2/10/12	Tue 2/14/12
345	[redacted]	2 days	Wed 2/15/12	Thu 2/16/12
346	[redacted]	2 days	Fri 2/17/12	Mon 2/20/12
347	[redacted]	2 days	Tue 2/21/12	Wed 2/22/12
348	[redacted]	2 days	Thu 2/23/12	Fri 2/24/12
349	[redacted]	1 wk	Mon 2/27/12	Fri 3/2/12
350	[redacted]	21 days	Mon 3/5/12	Mon 4/2/12
351	[redacted]	5 days	Mon 3/5/12	Fri 3/9/12
352	[redacted]	3 days	Mon 3/12/12	Wed 3/14/12
353	[redacted]	2 days	Thu 3/15/12	Fri 3/16/12
354	[redacted]	2 days	Mon 3/19/12	Tue 3/20/12
355	[redacted]	2 days	Wed 3/21/12	Thu 3/22/12
356	[redacted]	2 days	Fri 3/23/12	Mon 3/26/12
357	[redacted]	1 wk	Tue 3/27/12	Mon 4/2/12
358	[redacted]	22 days	Tue 4/3/12	Thu 5/3/12
359	[redacted]	3 days	Tue 4/3/12	Thu 4/5/12
360	[redacted]	1 day	Fri 4/6/12	Fri 4/6/12
361	[redacted]	3 days	Mon 4/9/12	Wed 4/11/12
362	[redacted]	1 day	Thu 4/12/12	Thu 4/12/12
363	[redacted]	0 days	Thu 4/12/12	Thu 4/12/12
364	[redacted]	3 wks	Fri 4/13/12	Thu 5/3/12
365	[redacted]	70 days	Fri 5/4/12	Thu 8/9/12
366	[redacted]	2 wks	Fri 5/4/12	Thu 5/17/12
367	[redacted]	4 wks	Fri 5/18/12	Thu 6/14/12
368	[redacted]	6 wks	Fri 6/15/12	Thu 8/9/12
369	[redacted]	20 days	Fri 6/15/12	Thu 7/12/12
370	[redacted]	7 days	Fri 6/15/12	Mon 6/25/12
371	[redacted]	3 days	Tue 6/26/12	Thu 6/28/12
372	[redacted]	3 days	Fri 6/29/12	Tue 7/3/12
373	[redacted]	3 days	Wed 7/4/12	Fri 7/6/12
374	[redacted]	4 days	Mon 7/9/12	Thu 7/12/12
375	[redacted]	30 days	Fri 7/13/12	Fri 8/31/12
376	[redacted]	3 days	Fri 7/13/12	Tue 7/17/12
377	[redacted]	5 days	Wed 7/18/12	Tue 7/24/12
378	[redacted]	22 days	Wed 7/25/12	Thu 8/23/12
379	[redacted]	1 day	Fri 8/24/12	Fri 8/24/12
380	[redacted]	0 days	Fri 8/24/12	Fri 8/24/12
381	[redacted]	2 days	Mon 8/27/12	Tue 8/28/12
382	[redacted]	0 days	Tue 8/28/12	Tue 8/28/12
383	[redacted]	0 days	Tue 8/28/12	Tue 8/28/12
384	[redacted]	3 days	Wed 8/29/12	Fri 8/31/12
385	[redacted]	590 days	Mon 9/3/12	Fri 2/28/14
386	[redacted]	3 wks	Mon 9/3/12	Fri 9/21/12
387	[redacted]	3 wks	Mon 9/24/12	Fri 10/12/12
388	[redacted]	40 days	Mon 10/15/12	Thu 12/20/12
389	[redacted]	20 days	Mon 10/15/12	Fri 11/16/12
390	[redacted]	4 days	Mon 10/15/12	Thu 10/18/12
391	[redacted]	4 days	Fri 10/19/12	Wed 10/24/12



ID	Task Name	Duration Working Days	Start	Finish
392	[redacted]	2 days	Thu 10/25/12	Fri 10/26/12
393		2 wks	Mon 10/29/12	Fri 11/9/12
394		1 wk	Mon 11/12/12	Fri 11/16/12
395		24 days	Mon 11/19/12	Thu 12/20/12
396		4 days	Mon 11/19/12	Thu 11/22/12
397		3 days	Fri 11/23/12	Tue 11/27/12
398		2 days	Wed 11/28/12	Thu 11/29/12
399		2 wks	Fri 11/30/12	Thu 12/13/12
400		1 wk	Fri 12/14/12	Thu 12/20/12
401		66 days	Fri 12/21/12	Thu 4/18/13
402		17 days	Fri 12/21/12	Mon 1/14/13
403		4 days	Fri 12/21/12	Wed 12/26/12
404		3 days	Thu 12/27/12	Mon 12/31/12
405		2 days	Tue 1/1/13	Wed 1/2/13
406		3 days	Thu 1/3/13	Mon 1/7/13
407		1 wk	Tue 1/8/13	Mon 1/14/13
408		17 days	Tue 1/15/13	Wed 2/6/13
409		4 days	Tue 1/15/13	Fri 1/18/13
410		3 days	Mon 1/21/13	Wed 1/23/13
411		2 days	Thu 1/24/13	Fri 1/25/13
412		3 days	Mon 1/28/13	Wed 1/30/13
413		1 wk	Thu 1/31/13	Wed 2/6/13
414		17 days	Thu 2/7/13	Fri 3/1/13
415		4 days	Thu 2/7/13	Tue 2/12/13
416		3 days	Wed 2/13/13	Fri 2/15/13
417		2 days	Mon 2/18/13	Tue 2/19/13
418		3 days	Wed 2/20/13	Fri 2/22/13
419		1 wk	Mon 2/25/13	Fri 3/1/13
420		17 days	Mon 3/4/13	Tue 3/26/13
421		4 days	Mon 3/4/13	Thu 3/7/13
422		3 days	Fri 3/8/13	Tue 3/12/13
423		2 days	Wed 3/13/13	Thu 3/14/13
424		3 days	Fri 3/15/13	Tue 3/19/13
425		1 wk	Wed 3/20/13	Tue 3/26/13
426		17 days	Wed 3/27/13	Thu 4/18/13
427		4 days	Wed 3/27/13	Mon 4/1/13
428		3 days	Tue 4/2/13	Thu 4/4/13
429		2 days	Fri 4/5/13	Mon 4/8/13
430		3 days	Tue 4/9/13	Thu 4/11/13
431		1 wk	Fri 4/12/13	Thu 4/18/13
432		66 days	Fri 4/19/13	Fri 7/26/13
433		17 days	Fri 4/19/13	Mon 6/13/13
434		4 days	Fri 4/19/13	Wed 4/24/13
435		3 days	Thu 4/25/13	Mon 4/29/13
436		2 days	Tue 4/30/13	Wed 5/1/13
437		3 days	Thu 5/2/13	Mon 5/6/13
438		1 wk	Tue 5/7/13	Mon 5/13/13
439		17 days	Tue 5/14/13	Wed 6/5/13
440		4 days	Tue 5/14/13	Fri 5/17/13



Appendix N – Factory Load Demonstration Test

Introduction/Purpose

As part of Miami-Dade's transition from their present EDACS system to a new P25 system, Miami-Dade has requested a system loading capability demonstration. This demonstration will be performed while the system is in the staging facility in Lynchburg, Virginia. Representatives of Miami-Dade are welcome to view the demonstration. The demonstration will be used to show that the new P25 system has call handling capabilities that are adequate to meeting the County's present loading conditions.

General Procedure

The following actions form the basis of the loading demonstration. This procedure is considered preliminary. The final procedure will be mutually agreed upon at the time of the Detailed Design Review.

- Harris will devise a means by which system loading can be simulated. Harris envisions an equipment setup that will allow the random generation of calls similar to that which would be experienced by the fielded system. To make the demonstration as realistic as possible, Harris proposes to generate such call loading through the system's air link – that is, the calls would be generated by terminal radios, thus demonstrating the full call process as would be experienced by a system user. Miami-Dade terminal radios will be used to generate the inbound calls under the control of a "simulation computer," a device that would be appropriately programmed to simulate a range of conditions relative to system loading.
- Harris will perform the loading demonstration on the first simulcast system ([redacted] that will be assembled in the Harris staging area.
- Miami-Dade will provide CSD busy hour data to Harris for the loading demonstration.
- Harris will analyze the data provided by Miami-Dade to determine the call and loading characteristics of Miami-Dade's present EDACS system under typical busy hour loading conditions.
- Harris will simulate those conditions determined above. The simulation will, to the best of Harris' capability, replicate such parameters as:
    - Calls per Hour
    - Call (user) Profiles
- The demonstration will be run for a suitable length of time to collect enough data so as to constitute a valid evaluation period. Data collection for an hour is considered to be sufficient for this purpose.
- The data resulting from the running of the simulation would be collected from the System Management System. Management system reports will then be made available for examination by Miami-Dade County representatives. It is expected that the areas of interest and comparison to the existing EDACS system will be –
    - Verification of Loading Conditions
    - Grade of Service (GOS)
    - System Queuing

Results

All results will be formalized in the form of a final report that would be placed into the system documentation. The information gathered as a result of having performed this demonstration will form the basis of system acceptance for this assessment criterion.

EXHIBIT B - PRICING SCHEDULE

Exhibit B – Pricing Schedule

A. Equipment, Parts, Components, Professional Services, and RF Integrity Services

Throughout the term of the Contract the Contractor shall provide the County with at least a twenty-five percent (25%) discount off of the currently published list price as defined in Article 45 of the Contract terms and conditions. Please refer to Harris product website:
http://www.pspc.harris.com/products/p25/Default.asp

ENGINEERING SERVICES

E/C	Model No.	List Price ($)	Description
N	YVSN1S	1,210.00	RF INTEGRITY SERVICE Daily rate for Engineering services to predict RF coverage from designated transmission site.
N	YVSN3C	605.00	COVERAGE MAP
N	YASP1C	1,400.00	SYSTEM ENGINEERING Daily rate for System Engineering Services.
V	MAYA-NSN6I	2,400.00	SERVICE, HARRIS SENIOR SYSTEM ENGINEERING Daily rate for Senior System Engineering Services.
N	YBSP1M	1,400.00	PROJECT MANAGEMENT Daily rate for Project Management to assist implementing customer projects.
V	MAYB-NSN6I	2,400.00	SERVICE, HARRIS SENIOR PROJECT MANAGEMENT Daily rate for Senior Project Management to assist implementing customer projects.
N	YVSN3A	1,400.00	DATA SYSTEM ENGINEER Daily rate for Data System Engineer.
N	YVSN1X	7,850.00	DATA LAB VERIFICATION, 1 WEEK Weekly rate for access and support to verify applications on Harris' Radio systems.
N	YVSN1Y	605.00	DATA LAB SETUP Mandatory fee to prepare the Data Lab for verification testing.
N	YVSN1Z	1,200.00	DATA LAB RETURN VISIT, PER DAY Daily fee for return visits to Data Lab when additional verification testing is required.
N	YVSN3B	1,000.00	DATA SYSTEM ENGINEER T & L Necessary System Engineering travel and living expense to support site visits.
N	YSSN1T	1,200.00	SENIOR SYSTEM TECHNICIAN Daily rate for Senior Technicians to perform installation, testing, system alignment or evaluate special applications. Travel and living will be billed in addition to this fee.
N	YSSN1U	1,000.00	SYSTEM TECHNICIAN Daily rate for Technicians to perform installation, testing, system alignment or evaluate special applications. Travel and living will be billed in addition to this daily rate.
N	YSSN1V	800.00	TECHNICIAN DAILY RATE Daily rate for Technicians to perform installation or maintenance services. Travel and living will be billed in addition to this daily rate.

B. Optional System Components and Subsystems

Microwave System – Not to Exceed Amount (NTE) $3,000,000
OpenSky Subsystem – Not to Exceed Amount (NTE) $4,000,000

C. EDACS FX Software -- $120,000 annually

D. P25 FX Software

Extension Option 1 – $196,000

Extension Option 2 – $205,800

Extension Option 3 – $216,090

E. SUMS Plus (requires purchase of P25 FX Software Agreement)

Extension Option 1 – $117,600

Extension Option 2 – $123,480

Extension Option 3 – $129,654

F. Emergency Response Services

The following outlines HARRIS's Continuity of Operations Plan:

Upon notification of the potential for a man made or natural disaster:

- Contact the appropriate Customer personnel to review their disaster recovery plan
- Activate HARRIS's Emergency Ops Center in Lynchburg – 24x7 coverage
- Dispatch field personnel to customer sites to check site conditions, generator operation and fuel and UPS operation – repair/replenish as needed
- Put HARRIS in State service personnel on stand by for 24x7 emergency response
- Put out of state HARRIS Regional Service Centers and key suppliers on stand by for emergency call out
- Prepare spare /emergency radios for activation on the network
- Condition/charge spare/emergency batteries for use with portables

During the disaster:

- Maintain communication with customer personnel if possible
- Continue to monitor Network alarm and performance status
- Within personnel safety guidelines, dispatch field personnel to respond to catastrophic or major system failures
- Document and prioritize other failures to be addressed during recovery period

Recovery Period

- In conjunction with customer personnel review status of the communications system and prioritize recovery actions according to criticality
- Dispatch field service teams with necessary spares
- Assist in the restoration power to sites.
- Assist in the repair of tower structures and tower mounted equipment
- At critical sites where towers were lost arrange for temporary towers or cranes to mount micro wave and / or antennas
- At critical sites where the shelter and fixed equipment has been damaged beyond repair assess the option of relocating a site from a non critical, low traffic area to expedite recovery in the critical area
- As required, program, activate on system and distribute spare radios to emergency personnel coming from outside the region

The actual time to restore communications and the associated cost for material and labor will depend on the magnitude of the damage and the amount of equipment lost and/or damaged. Typically, material and personnel can be dispatched within 24 hours of an emergency request.

The emergency efforts will be billed at the Time and material rates in effect at the time the service is rendered. Travel and Living expenses are subject to section 112.061 of the Florida statutes, Per diem and Travel Expenses of Public Officers, Employees, and Authorized Persons.

ADDENDUM TO EXHIBIT B

STATEMENTS OF WORK FOR OPTIONAL SYSTEM COMPONENTS AND SUBSYSTEMS

Transit Conversion to OpenSky

Statement of Intent

This document is to be used as a basic outline of the equipment that Harris will supply and level of effort that Harris will apply to converting Miami-Dade Transit's (Transit) currently operating Voice/Data communications system to a new communications system. A more thoroughly detailed Statement of Work and List of Equipment, to be supplied by Harris, will be furnished by the time of Harris' Customer Design Review (CDR).

General Information

Miami-Dade is in the process of replacing their current voice communications system with a new P25 standards-based voice communications system. In so doing, the currently provided voice communications support (through the EDACS system) of Miami-Dade Transit's communications to its Revenue Service Vehicles (Buses, Trains and People Movers) will no longer be provided, necessitating changes to Transit's current communications infrastructure. Several alternative equipment configurations were considered, but the one that best suits Transit's needs is that which is based on Harris' OpenSky Voice/Data communication system.

The steps to be taken, and the equipment supplied in accomplishing this change to a new Transit communications infrastructure are based on the assumption that Transit will simultaneously procure and install a new CAD/AVL system. In fact, the choice to move to an OpenSky-based communications infrastructure was made so as to facilitate this procurement, due to the relative ease of interfacing between the CAD/AVL and OpenSky devices (base stations and mobile radios). In addition, it is well understood that the continued support of the devices (CC3s and VLUs) that form the interfaces between the currently operating CAD/AVL system and the current EDACS radio communications equipment is not indefinitely sustainable.

Application of OpenSky technology will consolidate Transit's currently bifurcated communication system approach (separate but linked voice and data communication systems) onto one common system that will provide communications capability between Transit Dispatchers and Transit Bus, Rail and People Mover transportation systems (Revenue Service Vehicles). The OpenSky infrastructure, to be furnished by Harris, will provide the communications link between the fixed end CAD/AVL system that will be provided by Transit and the various types of Revenue Service Vehicles that Transit operates.

As a general statement of project scope, Harris proposes to provide the communications pipeline that will form the link between Transit's new CAD/AVL system, Transit Dispatch Operators and Revenue Service Vehicles. Harris' responsibilities in supplying this communications pipeline equipment include the provision and / or integration of the following –

1. Base station radio equipment that will operate on the 800 MHz data channels currently used by Transit for data communications (recognizing that these channels are being rebanded)
2. Control, switching and management infrastructure supporting of the operation of the 800 MHz RF equipment

3. Mobile radio equipment to be installed in Revenue Service Vehicles (supplied by Harris under a different contract)
4. Dispatch Communication Console equipment (equipment will be supplied under the Miami-Dade's P25 radio system upgrade project) that will facilitate voice communications between Dispatch Operators, Revenue Service Vehicle Operators and other Transit personnel.

The OpenSky equipment provided by Harris supports data communications using TCP/IP as a data communications protocol. Voice communications capability is also supported on the same infrastructure – voice being transported as data packets throughout the system.

System Design

As noted, Harris is proposing a combined Voice/Data communications system based on the use of OpenSky. The system will be configured as a three RF site system using the same three radio sites that are in use today for Transit's data system. Each of the three sites will reside on a common IP network (the VIDA network – Voice, Interoperability, Data, and Access) along with a central switch that forms the "hub" of the communications system. To this switch will be connected all of Transit's 16 dispatch consoles. The switch will also be the point to which Transit's new CAD/AVL system will be connected.

Site locations and the equipment (proposed to be supplied by Harris) located at each of these sites are as follows –

1. [redacted] – Three 800 MHz Voice/Data Repeaters, supplied in an N+1 Hot Standby configuration, with 2 additional stations provided (bringing the site total to six) in a manual switch "warm" standby configuration; Network Switching Equipment; Regional Network Management System, Eight Dispatch Consoles ***
2. [redacted] – One 800 MHz Voice/Data Repeater, supplied in an N+1 Hot Standby configuration
3. [redacted] – Two 800 MHz Voice/Data Repeaters, supplied in an N+1 Hot Standby configuration, with 1 additional station provided (bringing the site total to four) in a manual switch "warm" standby configuration

*** *Note:* All of Transit's [redacted] are being replaced under the Miami-Dade's P25 radio system upgrade contract. These consoles are physically located at various Transit facilities including [redacted] and [redacted] All Transit console equipment will be integrated into the new OpenSky communications system, allowing these consoles to operate not only on the OpenSky system, but also on the P25 system.

System Operation

When completed, Transit's new communication system will operate primarily through the new OpenSky system, providing Voice communications capability between Transit Dispatch Operators and Revenue Service Vehicle operators. The OpenSky system will also support data communications from/to Transit's new CAD/AVL system and Revenue Service Vehicles. Voice communication capability to non-Revenue Service Vehicles will be provided via Miami-Dade's P25 communication system. These units will have the ability to conduct unit-to-unit (group or individual) calls, as well as

having the ability to communicate with Transit Dispatch Operators. Communications that may need to be conducted between units operating on the P25 system and those on the OpenSky system will be possible through Transit Dispatch Operator coordination.

Site Interconnectivity

Connection among the sites on the VIDA network will be achieved through the use of circuits/bandwidth on Miami-Dade's existing Microwave (MW)/Fiber Optic (FO) network. The basic requirement is for the two "remote" repeater sites, Interama and RNAS, to be connected to the central switching center, located at [redacted] Harris will supply the routing / interface equipment to connect these remote sites to the MW/FO at the T1 level. The bandwidth and other details related to site interconnectivity will be supplied in future detailed design documentation.

CAD/AVL

As previously noted, this Transit communications system upgrade is predicated upon the concurrent replacement of Transit's present CAD/AVL system. This is an essential aspect of the upgrade process since no effort on the part of Harris has been contemplated in regard to the interface of the existing CAD/AVL system to the new OpenSky system. Further, Harris views this situation as a two-way street, and does not contemplate the interface of the new CAD / AVL system to the existing (separated) Voice and Data communications systems.

Transit is viewed by Harris as being completely responsible for the procurement of the new CAD/AVL system. However, Harris does anticipate working closely with Transit in the following areas:

- During the CAD/AVL procurement to provide information necessary to properly specify what is needed of the new CAD/AVL system so as to facilitate the proper interface of the CAD/AVL system with the Harris VIDA network and OpenSky terminal equipment.
- During the planning stages of the project to ensure coordination of the two installations, including the planning for system test and cutover,
- During the installation of the two systems to furnish support specific to the Harris VIDA network, and OpenSky terminal equipment to promote the operation of a system that works as a whole Voice/Data communications system similar to that provided by Transit's current system. However, Harris has assumed that tasks associated with integrating CAD/AVL equipment with radio system equipment are to be the responsibility of the CAD/AVL vendor.
- During the testing/acceptance phase of the project. Harris will perform those tests necessary to demonstrate that its OpenSky system performance meets the to-be-agreed-upon criteria with Transit (i.e. – coverage and various functional characteristics). Acceptance of the OpenSky system will be based solely on those equipment and system performance characteristics that will be agreed upon between Transit and Harris. Acceptance of the OpenSky system will not be tied to Transit's final acceptance of the CAD/AVL system.

RF Coverage

Harris is proposing to install OpenSky radio infrastructure equipment in a configuration and at locations currently in use. Harris understands Transit's use of its current system and the coverage requirements of the new system. To meet Transit's coverage requirements, Harris proposes the following operation:

- **For Revenue Service Vehicles** (Buses, Trains, People Movers) – Voice/Data radio coverage will be provided to these types of vehicles through the new OpenSky infrastructure. Coverage prediction maps detailing the coverage of this system will be provided. These maps will demonstrate the ability of the OpenSky system to provide the radio coverage necessary to serve Transit's Revenue Vehicle Fleet. Harris understands this coverage service area to be that which is depicted in the Transit Route Map provided to Harris by Transit on October 22, 2009 and labeled "Miami-Dade Transit System." This map depicts the routes of Transit's bus fleet; Trains and People Mover routes are a subset of the bus coverage requirement and are fully contained within the bus service area. Harris' preliminary coverage predictions indicate that the service area, defined in the referenced map, is completely contained within the area predicted to have coverage to buses operating within that defined area. Harris' final coverage prediction maps will show that Transit's Revenue Service Vehicles that operate within the defined service area will be provided radio coverage for Voice/Data operation. A Coverage Acceptance Test will be conducted to demonstrate coverage compliance and will form one aspect of Transit RF system acceptance.
- **For Non-Revenue Service Vehicles** (Maintenance, Supervisor Vehicles, assumed to be sedans) – Voice radio coverage will be provided to these vehicles through the use of Miami-Dade's P25 radio communication system. As such, coverage to these types of vehicles will be defined by the coverage footprint for mobile radio operation, defined in the coverage prediction maps, provided to Miami-Dade. A Coverage Acceptance Test will be conducted as part of Miami-Dade's overall acceptance procedure. The results of that Coverage Acceptance Test will be used as demonstration of compliance to this aspect of Transit system coverage requirement.
- **Coverage Acceptance Testing** – As noted above, Harris will conduct a coverage acceptance test that will be based on the automated collection of Signal Strength and Bit Error Rate data. This data collection exercise will be conducted on the system while the system is in its interim antenna configuration. Coverage prediction plots indicate that with the antenna systems in this interim state (lower antenna heights than those that will be used in the final antenna system configuration), that there is adequate coverage to meet the coverage requirement. Successful completion of the Coverage ATP, with the antennas in the interim position, will constitute acceptance of the system from a coverage standpoint. A second data collection exercise (performance of a second Coverage ATP) is not included in this proposal.

Scope of Effort

The following section describes in more detail the scope of Harris responsibilities, and the equipment to be provided.

RF Sites

[redacted]

Harris will supply and install the following equipment –

- 3 channels of OpenSky repeater equipment, one Hot-Standby station, and two additional stations operating in a "Warm-Standby" mode. Stations will be configured to operate in the two-slot TDMA mode.
- OpenSky site common equipment that supports the operation of the site and its connection to the network.
- Antenna equipment that will allow the connection of the OpenSky station receivers to the existing System [redacted] eceive antennas through existing spare ports in the System [redacted] multicouplers.
- Transmit antenna system equipment that will allow each of the 3 primary channels to operate through a common transmit antenna; each of the Hot-Standby and Warm-Standby stations will operate through a separate transmit antenna. In short, two compete transmit antennas will be provided at this location, to be installed at a location on the roof of the [redacted] yet to be determined.

[redacted]

Harris will supply and install the following equipment –

- 2 channels of OpenSky repeater equipment, one Hot-Standby station, and one additional station operating in a "Warm-Standby" mode. Stations will be configured to operate in the two-slot TDMA mode.
- OpenSky site common equipment that supports the operation of the site and its connection to the network.
- Antenna system equipment that will allow the connection of the OpenSky station receivers to the existing System A/B receive antennas through existing spare ports in the System [redacted] multicouplers.
- Transmit antenna system equipment that will allow each of the 2 primary channels to operate through a common transmit antenna; each of the Hot-Standby and Warm-Standby stations will operate through a separate transmit antenna. In short, two complete transmit antenna systems will be provided at this location, to be installed at a location on the roof of the RNAS building, yet to be determined.

  Note: Harris has proposed this antenna configuration of antennas so as to avoid having to place additional loading on this tower structure – a tower that appears from previously performed tower surveys to be quite crowded and possibly loaded to capacity. Harris views this as an interim step in the installation process and anticipates that once system acceptance has been achieved, that Transit system antennas will be relocated to a final configuration on

the tower, similar to that which exists today, including connection to final System A/B receiver antenna system.

Harris will supply and install the following equipment –

- 1 channel of OpenSky repeater equipment, the channel configured as a Hot-Standby pair. The station will be configured to operate in the two-slot mode.
- OpenSky site common equipment that supports the operation of the site and its connection to the network.
- Antenna system equipment that will allow the connection of the OpenSky station receivers to the planned interim System receive antenna through spare ports in the interim System multicoupler.
- Antenna system equipment that will allow the connection of the OpenSky station transmitters to existing data system Tx antennas.

  Note: Harris has proposed this antenna configuration of antennas so as to avoid having to place additional loading on this tower structure – a tower that appears from previously performed tower surveys to be quite crowded in the locations of choice and possibly loaded to capacity. Harris views this as an interim step in the installation process and anticipates that once system acceptance has been achieved, that Transit system antennas will be relocated to a final configuration on the tower, similar to that which exists today, including connection to final System receiver antenna system.

Network Switching & Management System

Harris will supply and install the following equipment –

- Network Switching Equipment will be provided that will exclusively serve the Transit communications network. This network switch will be provided in a High Availability (Hot Standby) configuration. (Unlike the configuration of Miami Dade's P25 switch, which is a "split" High Availability switch, Transit's switch -- main and standby units -- will both be located in th uipment room.)
- Interconnectivity between Transit's Network Switch and Miami-Dade's Network Switch. Such a configuration will provide autonomy between Transit and Miami-Dade system operations, support the decoupled installation process, facilitate cutover, and facilitate maintenance procedures, while at the same time providing the necessary level of interconnectivity between Transit and Miami-Dade communications such that Transit Dispatch, Maintenance and Supervisory personnel will be able to intercommunicate on the P25 radio system, and vice-versa.
- Connection to Miami-Dade's P25 System's Network Management Infrastructure will be established. A Network Management subsystem known as a "Regional Network Manager (RNM)" will be provided at this location. The workstation tied to this RNM will allow Transit the ability to control and monitor various aspects of the Transit communications system.

Note: The Network Switching Server is the device through which the interface to the CAD / AVL system will occur. Harris anticipates the provision of its standard Switching Server hardware and software. It is the complete responsibility of Transit's CAD / AVL vendor to configure its equipment to work with the Harris equipment.

Dispatch Console Equipment

[redacted]

Harris will integrate and test the operation of the following equipment –

- [redacted]

  As previously noted -- All of [redacted] operational consoles are being replaced under Miami-Dade's P25 radio system upgrade contract. These consoles are physically located at various Transit facilities, including; [redacted] consoles). All Transit console equipment will be integrated into the new OpenSky communications system, allowing these consoles to operate not only on the OpenSky system, but also on the P25 system.

Terminal (Mobile) Radio Equipment

- No Terminal equipment is to be supplied under this proposal. All terminal equipment that will operate with the newly proposed OpenSky Transit system will be procured through another purchasing agreement.
- Harris proposes to install [redacted] Transit designated vehicles so as to facilitate the testing and acceptance processes.
- All remaining units of Transit's mobile fleet will be installed by others.

Site Development – General

While a considerable amount of design effort has gone into the placement of antennas at the three locations where RF equipment is to be installed, other aspects of site development have not yet been addressed. To properly address all aspects of the installation of Transit's new OpenSky radio system infrastructure, additional engineering planning, possibly including site surveys of the sites planned for use, will be required. Until this additional planning effort can be completed, the following assumptions related to site development have been made.

- Adequate primary power to support the operation of all newly proposed equipment exists at all locations.
- Additional provisions for Backup power for either the RF equipment or site common equipment have not been made. This consideration is left for a future engineering exercise to provide a level of backup power to meet Transit's specifications.
- Adequate space exists at each location to physically place the equipment racks for all newly supplied equipment.
- Adequate cooling exists at each location to support the operation of all newly supplied equipment.

- An adequate number of cable entry ports exist at each location to allow installation of any new antenna systems proposed.
- Harris will perform those activities necessary to "finalize" the installation of antenna systems at each of the 3 RF installation sites. This includes the relocation of interim antennas to their final locations, and also the de-installation of any existing (currently operational) Transit antenna that will be deemed no longer necessary.

System Acceptance & Cutover

While there are many details to be worked out with regard to bringing the replacement RF system on-line, some general statements regarding how system acceptance and cutover will occur are worth mentioning.

- System Acceptance for the OpenSky infrastructure is considered to be a separate event from the acceptance of the CAD/AVL system. An acceptance test will be devised that will allow the evaluation of the OpenSky communications system to the degree necessary to determine its suitability for use as a data transport system over which the CAD/AVL system operation will operate. Once that agreed upon Acceptance Test has been successfully concluded, the OpenSky system will have been deemed accepted.
- The Acceptance of the OpenSky system is envisioned to have occurred well before the acceptance of the CAD/AVL system.
- As previously noted, a sufficiently comprehensive Functional and Coverage Acceptance Test Plan that will demonstrate the complete acceptability of the OpenSky communication system for its intended use will be prepared and agreed upon.
- System Acceptance will be conducted with a small fleet of Revenue Service Vehicles equipped with OpenSky terminal radio equipment. System Acceptance will be accomplished before all OpenSky terminal radio equipment will have been installed in all Revenue Service Vehicles.
- System Cutover will be an incremental process. This cutover process will require that for a period of time, both old and new CAD/AVL -- radio system pairs will be required to be in simultaneous operation. Parallel system operation will continue for the length of time that it takes for all Revenue Service Vehicle terminal radio installations to be completed, and for all acceptance procedures to be successfully concluded. Parallel operation refers only to infrastructure equipment and not to terminal equipment.

CAD/AVL Support

Harris will provide the following services as part of this effort in support of Miami Dade Transit's current CAD/AVL System as long as the resources that are currently providing this support continue to be available in the future. This support will be included for a period of two (2) years following the election of Miami Dade Transit to purchase an OpenSky system for use by the County or upon Contract Execution as mutually agreed to between the parties.

Provide 24/7 on-call support.

- Provide on-site support on request with travel expense reimbursement.
- Monitor Center Software sub-system outbound messaging flow rates.
- Monitor Center Software sub-system CC-3 failover timing.
- Monitor Center and CAD Software sub-systems event-driven instances.
- Monitor Center and CAD Software sub-systems vehicle de-assignments.
- Monitor CAD sub-system server and client software performance.
- Advise on methods to check data in Quarterly Schedule Updates.
- Advise on methods to use ESRI shapefiles for AVL map and route data.
- Advise on CAD sub-system server and client issues identified by MDT.
- Advise on converting OpenVMS workstations to linux-based systems.
- Advise on converting AlphaServers to Itanium-based hardware.
- Assist in support of an OpenVMS version upgrade.
- Assist in resolving Daylight Saving Time issues.
- Assist in improving VLU software reporting of last Departure Timepoint.
- Assist in implementing VLU software search for next Timepoint.
- Assist in implementing TCH Start button replacement with Logoff button.
- Update CAD/AVL system documentation when applicable.

In addition, spare parts can be provided upon receipt of a purchase order. Previous deliveries of spare parts and software upgrades that have not been paid must be paid in full prior to any future orders and deliveries. In particular,

1. Three (3) 9 GB SCSI Hard Drive replacements for AVL workstations. ($180.00)

OPTIONAL – Microwave Network

Introduction

Harris has based the proposal for its P25 Phase 1 network on backhaul connectivity provided by Miami-Dade. Miami-Dade has represented that its backhaul network will consist of a new OC-3 dual ring microwave network by Harris Stratex Networks, Inc. (Stratex) and additional Miami-Dade provided fiber optic routes. Microwave connectivity will offer T1 circuits while fiber routes will provide Ethernet connections. Harris assumes that it will leverage Miami-Dade's new Stratex Microwave system and fiber optic network for backhaul of the P25 Communications Network and Mutual Aid System. These facilities are in addition to the existing Miami-Dade microwave path between Palm Springs North and Miccosukee, which will be reused by the P25 Communications Network and Mutual Aid System.

Provision of the microwave network by Miami-Dade is time critical in the deployment of the P25 Phase 1 network. To date, Miami-Dade has not procured its new microwave network. Therefore, in an effort to facilitate the deployment of this critical infrastructure, Harris offers an OPTIONAL microwave network for Miami-Dade's consideration, which will be tailored specifically to accommodate the P25 Communications Network and Mutual Aid System, and Miami-Dade's existing T1 circuits currently accommodated by Miami-Dade's existing microwave network, except for any EDACS connectivity.

The OPTIONAL microwave network will be installed in parallel with the existing Miami-Dade microwave system but will replace the existing network once cutover to the P25 Communications Network and Mutual Aid System occurs and EDACS is decommissioned. "Parallel" does not necessarily mean parallel paths but that old and new systems will exist concurrently for the period of time within which the P25 Phase 1 Network is deployed by Harris and accepted by Miami-Dade.

System Description

It is Harris' intention to subcontract to Stratex for the OPTIONAL microwave network. Accordingly, Harris will furnish a dual ring OC3 microwave network consisting of a north ring and a south ring. Additionally, a single spur path will serve Miami International Airport from the north ring. Table A identifies all sites comprising the OPTIONAL microwave network.

Table A – Microwave Sites

Ring	Sites
North Ring	▪ [redacted]

Ring	Sites
	▪ [redacted]
South Ring	▪ [redacted]
	▪
	▪
	▪
	▪
Spur Path	▪ [redacted]

The System Layout (route plan) of the OPTIONAL microwave network is provided in Appendix A. While sharing a common routing between [redacted]e north and south rings are essentially independent of each other so that each may retain its entire OC-3 capacity. As needed, circuits emanating in either ring will be cross-connected at [redacted]r routing to sites in the adjacent ring or to [redacted] along the spur path.

In all there are 11 microwave paths serving 10 sites. All paths with the following exceptions utilize non-protected RF terminal equipment:

- [redacted] Space Diversity
- [redacted] – Space Diversity
- [redacted]ndby

Owing to the route diversity inherent in protected ring architecture, communications will be retained should a failure be experienced in non-protected RF terminal equipment by automatic rerouting of switched-ring paths.

Equipment and Installation Summary

Table B summarizes the equipment proposed for the OPTIONAL microwave network.

Table B - Microwave Network Equipment

Quantity	New Equipment
▪ 4	▪ Eclipse IRU600 NP Terminal
▪ 4	▪ Eclipse IRU600 SD Terminal
▪ 7	▪ Eclipse IRU600 NP Repeater
▪ 2	▪ Eclipse IRU600 MHSB Terminal
▪ 10	▪ Digital Orderwire
▪ 26	▪ Microwave Antenna System
▪ 10	▪ Automatic Dehydrator and Gas Distribution
▪ 10	▪ SONET MUX
▪ 1	▪ Synchronization Timing System
▪ 10	▪ DC Power Plant (8-Hour Reserve, 24-Hour Recharge)
▪ 1	▪ Network Management System w/ (1) NMS Workstation
▪ Lot	▪ Spares (Radio, OW, Dehydrator, MUX, Rectifier Modules)

Radio Equipment

The OPTIONAL microwave network as proposed to Miami-Dade will consist of Stratex Eclipse IRU600 radios operating at 6 GHz in four different equipment configurations – Non-Protected Terminal, Space Diversity Terminal, Non-Protected Repeater, and Monitored Hot-Standby Terminal. Radio equipment will be installed as follows:

- Provide and install cable ladder or tray, if required.
- Install new racks. Bolt to floor and attach to overhead supports.
- Run wiring as follows:
  - Ground, from racks to ground distribution in room
  - DC wiring, from radio rack to charger DC distribution panel
  - DS1 cabling from radios to DS1 jackfields or other CIP
  - Ethernet cabling from radios to routers or other CIP
  - Dehydrator dry contacts and radio alarm inputs to punch blocks
- Connect a waveguide flex section between each radio antenna port and antenna system waveguides.

Transmission Engineering

Using a combination of analytical techniques and path surveys, the proposed microwave paths will be verified. At the conclusion of the path analysis and the path surveys, a microwave path survey report will be provided to Miami-dade. Included in this report are the path calculations and the profiles, as well as recommendations for antenna type and placement. Preliminary path loss and fade margin calculations for the proposed microwave paths along with path profiles are provided in Appendix B.

PATH SURVEY

Physical path surveys will be commissioned by Harris to identify the geographical location of sites, and antenna, waveguide length and tower requirements. Path surveys optimize the antenna height requirements by identifying obstructions and reflections along the microwave path.

FREQUENCY COORDINATION

Frequency coordination will be commissioned by Harris and is performed to minimize interference among internal or external microwave radio sources for the proposed network.

FCC LICENSE PREPARATION

On behalf of Miami-Dade, Harris will commission the preparation of FCC License Application Form 601 with the appropriate technical data. Information including site location, radio type and frequency will be prepared and filed on line via FCC Universal Licensing System (ULS).

Antenna Systems

Pressurized antenna systems will be employed for operation in the 6 GHz microwave band. Antennas will be single or dual polarized as necessary and rated for 155 mph winds. Transmission lines will consist of elliptical waveguide, pressure windows connectors for antenna and equipment ends, and flex-twist sections for connection to microwave radios. Antenna systems will be installed as follows:

- Provide and install a standard tower leg pipe mount.
- Furnish and install any required steel support members for side braces. (*)
- Penetrate the building wall or roof and install any necessary waveguide ports and entry plate(s).
- Install the waveguide boot at the waveguide entry plate.
- Install antennas and radomes at specified centerlines.
- Install waveguide runs, hanger kits and ground kits per the manufacturer's specification.
- Terminate waveguide runs.

- Install pressurization equipment and set the system pressure to 4psi.
- Perform antenna alignment. Performance objective is + 2 db of the Stratex path calculation sheet.

  (*) Note - It is assumed that antennas can be installed using standard pipe mount clamped around tower leg and antenna side struts secured to tower members without any other hardware than standard collar assemblies supplied with side struts. Supply and installation of any additional hardware will be subject to separate quote.

DC Power Equipment

DC power equipment will consist of redundant modular rectifiers operating in an "n+1" configuration and 10-year battery plants. Power plants provide for an 8-hour reserve time from AC power failure and a 24-hour recharge time once AC power has been restored. All DC power equipment will be rack-mounted. DC power equipment will be installed as follows:

- Provide DC circuit breakers within the charger distribution panel to support the optionally supplied equipment.
- Install charger racks. Bolt to floor and attach to overhead supports.
- Install battery into charger rack
- Provide and run wiring:
  - Battery to charger
  - Charger rack ground to the station ground ring or bus bar
  - Charger Minor/Minor alarm dry contacts to punch block

Testing

Once the OPTIONAL microwave network equipment is installed and operational, field-testing will commence. Each hop will be individually tested to ensure performance of the microwave equipment meets the manufacturer's specifications.

RADIO HOP TEST RESPONSIBILITIES

- Record TX/RX local oscillator frequency from keypad.
- Record transmitter power from keypad.
- Perform (1) one hour Bit-Error-Rate Test (BERT) on the primary equipment and record results.
  Performance Objective: 1 x 10^{-10} BER one-way, under no fade conditions.
- Perform (1) one hour BERT on standby equipment and record the results.

Performance Objective: 1 x 10^{-10} BER one-way, under no fade conditions.

- On protected systems, simulate a failure of the primary equipment and verify switching to standby equipment.
- Verify the operation of all local alarm and control points.

DIGITAL MULTIPLEX RESPONSIBILITIES

- Verify the operation/ continuity of all of the VF channels.
- Verify the operation of the multiplexer alarm points.

SYSTEM TEST RESPONSIBILITIES

- Once each hop has been successfully tested, the multi-hop system will be tested on an end-to-end basis.
- Check T1 continuity as per T1 plan.
- For loop systems, verify loop protection switching.
- Perform a one-way BERT at DS1 level for (12) twelve-hours under no fade conditions on primary equipment.
- Perform a one-way BERT at DS1 level for (4) four-hours on standby equipment.

  Definition: BER not to exceed the test objective of N x 10-10, where "N" is equal to the number of radio hops. (I.e.; for single hop looped at one end, N=2; for two hops looped at one end, N=4.)
- Perform orderwire voice and signaling test, using a handset or headset.
- Submit System Acceptance Test Data to Miami-Dade for review and acceptance.

ALARM REPORTING

- Radio dry contact inputs will be wired to a 66 block for customer Miami-Dade alarms with 25' maximum cabling.
- To verify radio alarm inputs, connect each alarm input to ground and check that it reports.

NETWORK MANAGEMENT SYSTEM (ProVision)

- Install ProVision Network Management System at Miami-Dade specified site and connect to microwave radio port.
- Harris has provided for monitoring and connection of certain housekeeping alarms via the P25 Phase 1 network management system. To the extent that Miami-Dade desires to carry additional alarms via the microwave network management system, Miami-Dade shall wire housekeeping alarms to punch blocks and cross connect to microwave radio alarm inputs.

- Simulate non destructive alarms at sites and check that they are reported to ProVision.
- Miami-Dade shall customize ProVision alarm designations.

Assumptions

The following assumptions apply to this Statement of Work for the OPTIONAL microwave network and directly affect the proposed design offered to Miami-Dade.

Harris Assumes:

- The ne[redacted] will be constructed prior to the installation of the microwave equipment.

- The [redacted] ill be constructed prior to the installation of the microwave system. If the tower and shelter construction has not been completed prior to installation of the microwave system, this will result in a second mobilization for installation at additional costs.

- All noted assumptions in the P25 Phase 1 Communications System Statement of Work.

- The sites will be accessible for installation work on 10 hour days, 6 days per week. Harris recognizes that Miami-Dade must accompany contractors on site work, but as this is a critical path item to the implementation of the new P25 Phase 1 Communications System, this proposed working hour provision is necessary for timely implementation.

- Installation will not be delayed due to inclement weather, inaccessible site(s), or construction. Harris will work with Miami-Dade to establish an installation schedule around hurricane season, so as to limit the risk of installation delays. Delays in installation due to inclement weather, inaccessible sites(s), or construction will result in additional costs.

- All of the proposed microwave paths are feasible. A physical path survey will be commissioned by Harris to determine feasibility. If a proposed path is not feasible, an alternative route will be required and will result in additional costs.

- All proposed microwave paths are licensable. FCC restrictions may require the use of high performance antennas at additional costs.

- There is sufficient tower capacity for all of the noted antenna system selections, loads and heights with the exception of [redacted] Path performance is contingent on antenna mounting position feasibility and space availability. It is known today that [redacted] o not have sufficient structural capacity to facilitate the installation of additional antenna systems. The process of addressing these deficiencies is detailed in the Contract.

- Miami-Dade will cut over any circuits required, with the exception of mutual aid, the 700MHz and 800MHz equipment procured under the PSIC grant, and the new P25 Phase 1 Communications System.

- There is sufficient site power, site backup power, and HVAC for all of the new microwave equipment. It is Miami-Dade's responsibility to correct any deficiencies found.

- Miami-Dade will accept the microwave network immediately upon passing of the microwave acceptance tests, and all service affecting punch list items have been cleared.

- Immediately upon acceptance of the microwave network, Miami-Dade will assume the responsibility for its maintenance and repair. To facilitate maintenance and repair by Miami-Dade, Harris will:

  - Provide for a microwave equipment warranty extending four (4) years from date of microwave network acceptance for all active electronic components. This warranty features advanced replacement of warranty items.
  - Provide for field training for up to 12 Miami-Dade microwave equipment technicians on IRU-600 microwave radios.
  - Provide for field training for up to 12 Miami-Dade microwave equipment technicians on SONET MUX.
  - Provide for field training of up to 12 Miami-Dade microwave equipment technicians on ProVision Network Management System.
  - Provide factory training of Miami-Dade system administrators on ProVision Network Management System with travel expense borne by Miami-Dade.

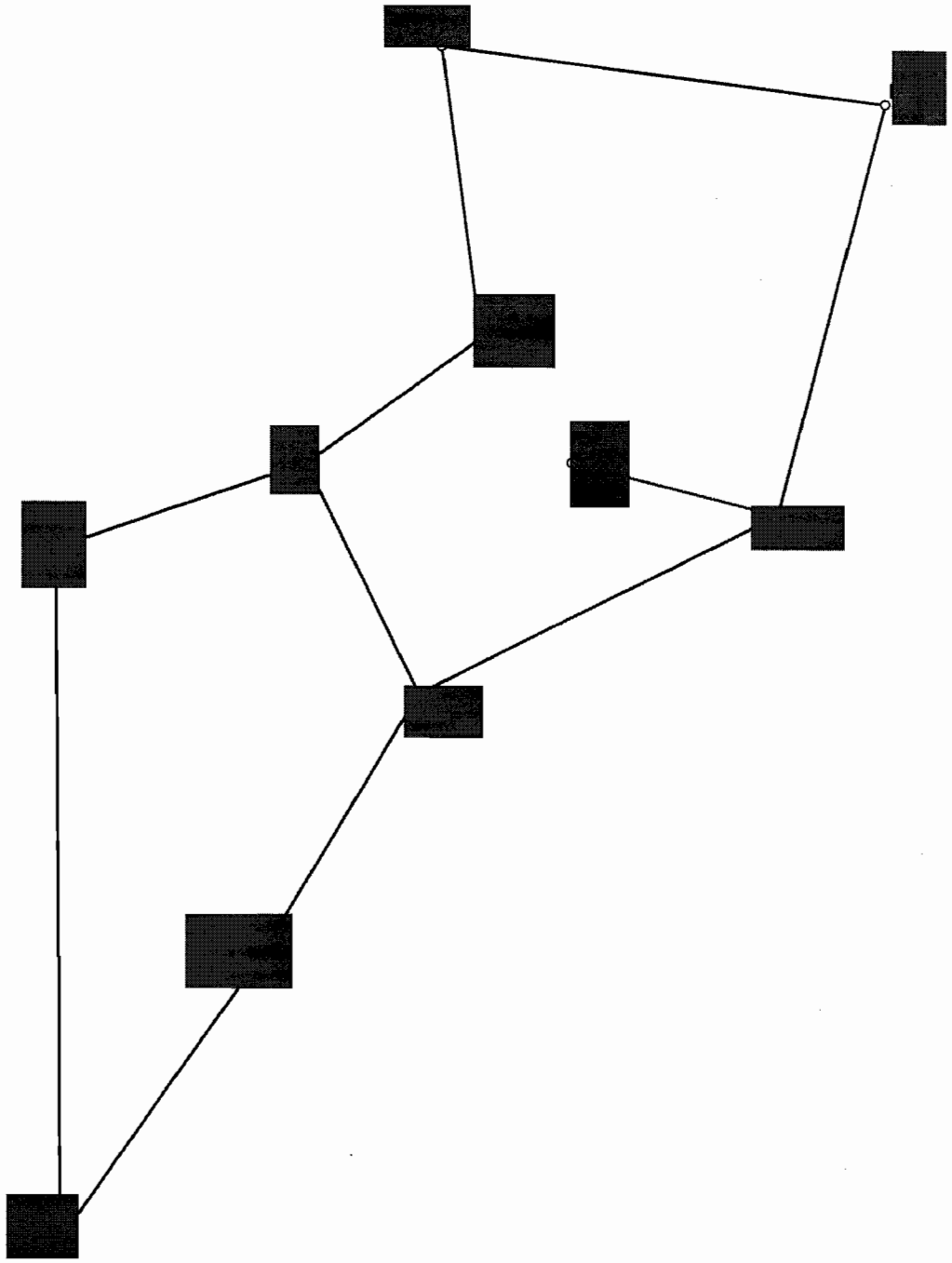
- Following cutover and acceptance of the P25 Phase 1 Communications Network, Harris will assist Miami-Dade in decommissioning Miami-Dade's existing microwave system currently supporting EDACS, except that the spur path between [redacted] shall remain intact and be used to satisfy the backhaul connectivity requirements for the P25 Phase 1 Communications Network and Mutual Aid System. Participation in the decommissioning process by Harris will be an additional mobilization effort for Harris.

  - Miami-Dade will power down microwave equipment racks being decommissioned.

- Harris will disconnect all RF transmission lines, DC wiring, and signal cabling from the existing microwave equipment racks.
- Harris will remove decommissioned microwave racks from equipment shelters.
- Harris will remove decommissioned microwave antennas, mounts, and transmission lines from Miami-Dade antenna structures.
- Harris will transport the decommissioned microwave racks and microwave antenna systems to Miami-Dade specified storage location in the greater Miami-Dade area. No packaging or crating of the removed equipment will be provided by Harris.
- To the extent desired by Miami-Dade, Miami-Dade will remove DC wiring and signal cabling associated with the decommissioned microwave system.

APPENDIX A

System Map



ISSUE	ENG NAME	DATE
A	JM	06-28-2006

SCALE:

0 5

miles

LEGEND:

IRU 600 L6 128QAM
6.2 GHz, 1xOC-3 SP
NP

IRU 600 L6 128QAM
6.2 GHz, 1xOC-3 SP
MHS-SD

IRU 600 L6 128QAM
6.2 GHz, 1xOC-3 SP
MHS

harris stratex

Harris Stratex Networks, Inc

MACOM
Dade County
System Layout

ENG BY: JM	REV
DWN BY:	DATE: 06-28-2006
SYSTEM ID: 5487-5478	Page 1 of 1

SL-A81659

Harris Stratex Networks Confidential and Proprietary Information

5487-5478/jma/091103:1040

696

APPENDIX B

Preliminary Path Calculations and Profiles

697A

Harris Stratex Networks
Harris Stratex Networks, inc

Path Loss and Fade Margin Calculations
For Line-of-Sight Microwave Systems
Version 5.0.0

Date: 22-Jul-2006
Rev. Date: 02-Nov-2009
Engineer: JM

Customer/Project: MACOM - Dade County
Path ID: MMF-1

Equipment Type: IRU 600 L6 128QAM
Protection Type: Non Protected

Capacity: 1xOC-3 SP
Frequency: 6.175 GHz (FCC)
Band Width: 30 MHz 60/6X Static

Site Name: [redacted]

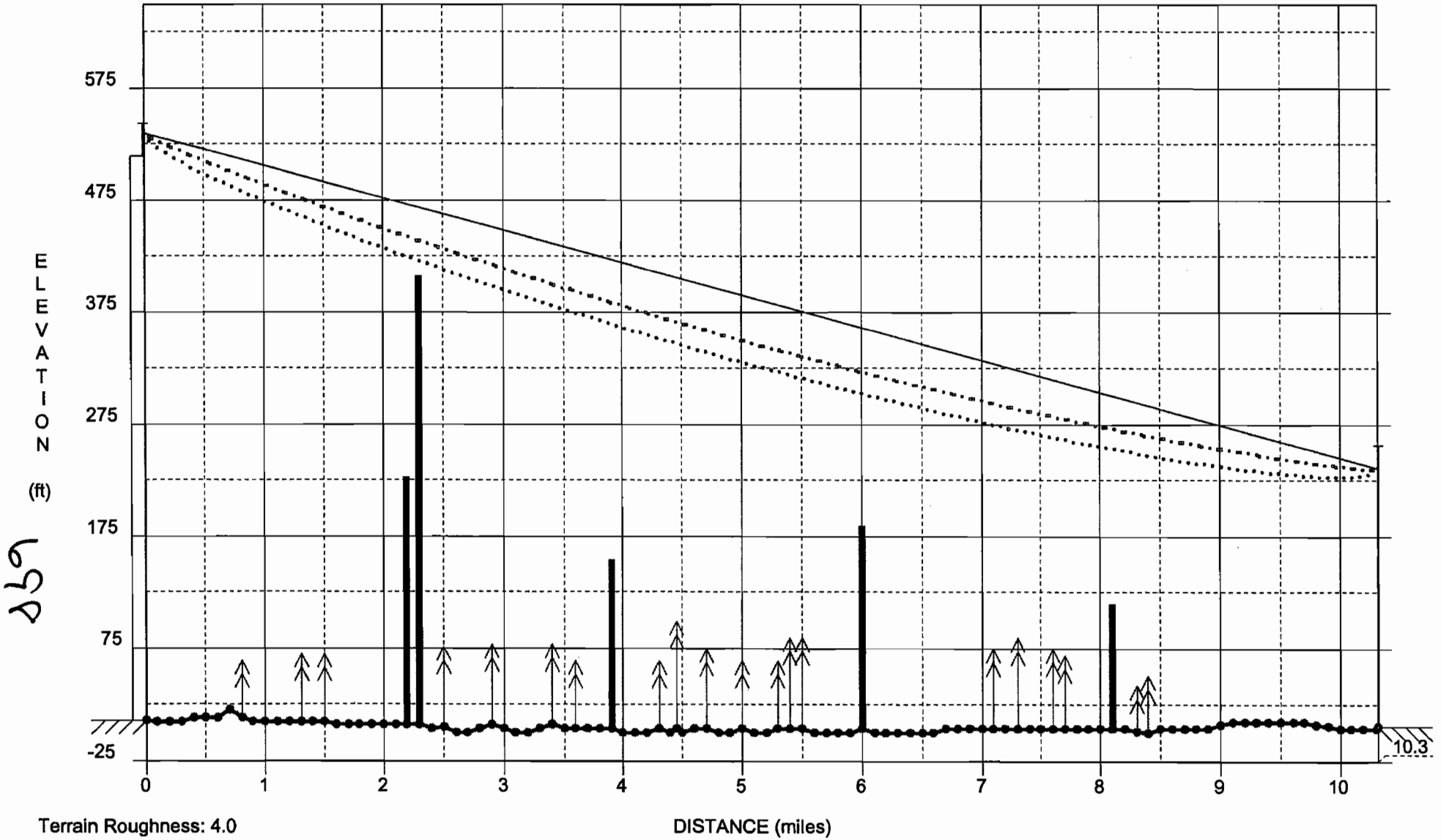
Path Length:		10.32 mi	
Free Space Loss:		132.68 dB	
Atmospheric Absorption:		0.15 dB	
Diffraction Loss:		0.00 dB	
Transmission Line Type:	Elliptical		Elliptical
Transmission Line Length:	175.00 ft		265.00 ft
Transmission Line Loss:	2.07 dB		3.13 dB
Transmit-Only Pads:	0.00 dB		0.00 dB
Jumper / Flex Loss:	0.27 dB		0.27 dB
Main Antenna Radome Loss:	**0.60 dB**		**0.60 dB**
Transmitter ACU Loss:		0.00 dB	
Receiver ACU Loss:		0.00 dB	
Misc/Common Line Pads:	**1.00 dB**		**1.00 dB**
TOTAL LOSSES:		141.76 dB	
Antenna Size:	8.0 ft		8.0 ft
Antenna Centerline:	525.0 ft		230.0 ft
Antenna Gain:	40.8 dB		40.8 dB
Antenna Type:	PAR8-59		PAR8-59
Effective Radiated Power (EIRP):	67.4 dBm		66.3 dBm
Transmitter Power, GUARANTEED:		High Power (30.5 dBm)	
TOTAL GAINS:		112.1 dB	
Unfaded Received Signal Level:		-29.7 dBm (+/- 2dB)	
Required Level For 10-6 BER:		-73.0 dBm	
Flat Fade Margin:		43.3 dB	
Dispersive Fade Margin:		51.0 dB	
Composite Fade Margin:		42.7 dB	
Multipath Outage Probability:		0.000006060	
Multipath Outage:		73.1 sec/year	
Percent Reliability:		99.99977 %	

WARNING: - EIRP limitation due to short path length EIRP not to exceed 84.6 dBm

c = 6.58 X = 2.0 w = 20.0 (Vigants 1975)

Temperature = 75.0 °F
Slope Equalizer? Std

Unfaded Receive Signal Level (at radio/transmission line interface): -29.7 dBm (+/- 2dB)



Terrain Roughness: 4.0

[redacted]

ID: MMF-1	Freq = 6.175 GHz	06-Mar-2008
MACOM		
Dade County		
Harris Stratex Networks	..... = 1.00 F1 @ K = 1.33	
Harris Stratex Networks, Inc	- . - = 0.30 F1 @ K = 0.67	
	= 0.60 F1 @ K = 1.33	

Site Nam[redacted]
NAD83 Latitud[redacted]
Longitu[redacted]
Elevati[redacted]
Centerlin[redacted]
Referenc[redacted]
Engineer[redacted]

Harris Stratex Networks
Harris Stratex Networks, inc

Path Loss and Fade Margin Calculations
For Line-of-Sight Microwave Systems
Version 5.0.0

		Date:	28-Jun-2006
Customer/Project:	MACOM - Dade County	Rev. Date:	03-Nov-2009
Path ID:	MMF-11	Engineer:	JM

Equipment Type:	IRU 600 L6 128QAM	Capacity:	1xOC-3 SP
Protection Type:	Space Diversity	Frequency:	6.175 GHz (FCC)
		Band Width:	30 MHz 60/6X Static

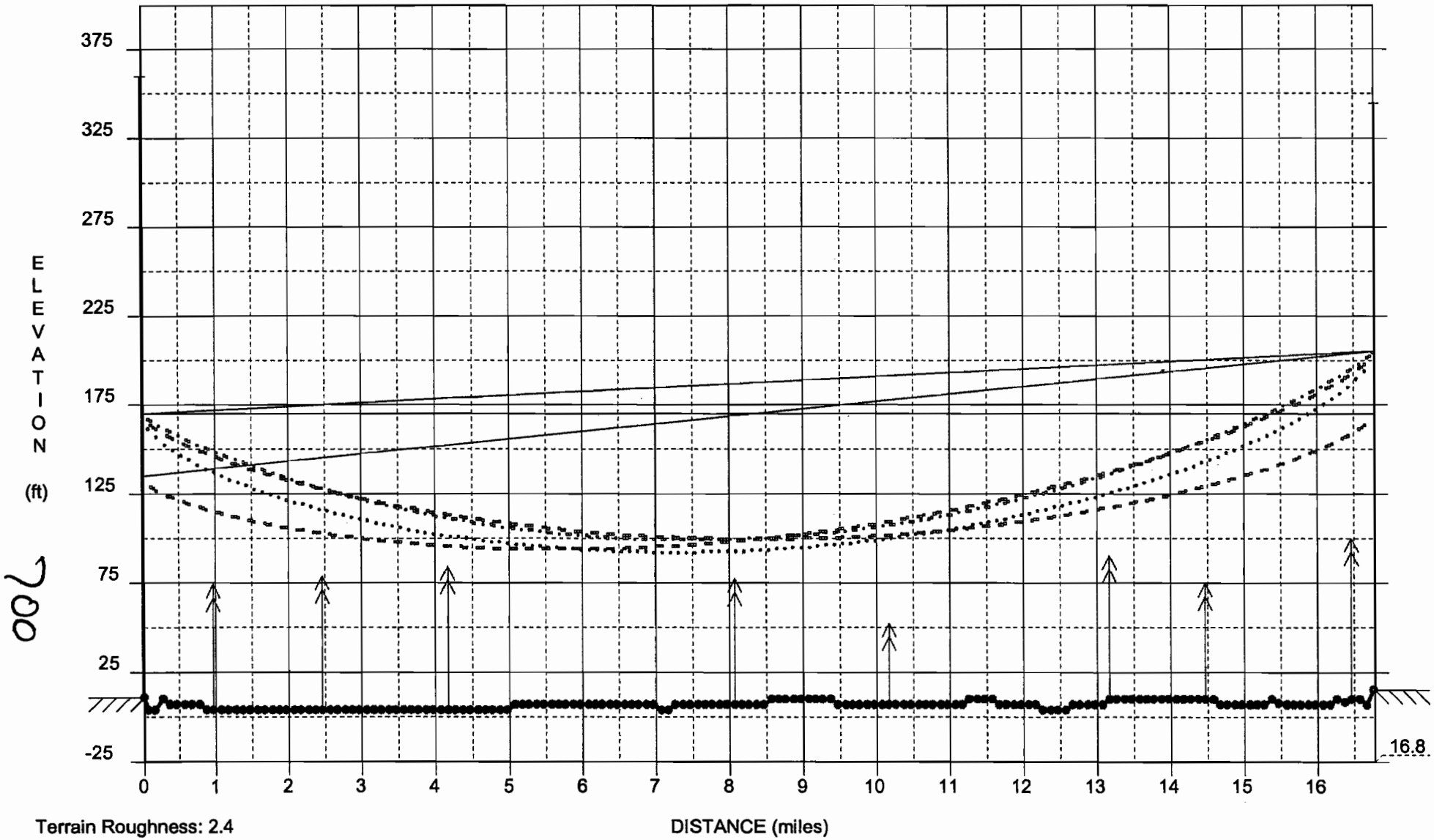
Site Name:	[redacted]
NAD83 Latitude:	
NAD83 Longitude:	
NAD83 Elevation:	
Azimuth:	

Path Length:		16.76 mi	
Free Space Loss:		136.90 dB	
Atmospheric Absorption:		0.24 dB	
Diffraction Loss:		0.00 dB	
Transmission Line Type:	Elliptical		Elliptical
Transmission Line Length:	250.00 ft		300.00 ft
Transmission Line Loss:	2.95 dB		3.54 dB
Transmit-Only Pads:	0.00 dB		0.00 dB
Jumper / Flex Loss:	0.27 dB		0.27 dB
Main Antenna Radome Loss:	**0.50 dB**		**0.50 dB**
Transmitter ACU Loss:		1.10 dB	
Receiver ACU Loss:		0.00 dB	
Misc/Common Line Pads:	0.00 dB		0.00 dB
TOTAL LOSSES:		146.27 dB	
Antenna Size:	6.0 ft		6.0 ft
Antenna Centerline:	160.0 ft		190.0 ft
Antenna Gain:	38.2 dB		38.2 dB
Antenna Type:	PAR6-59		PAR6-59
Effective Radiated Power (EIRP):	63.9 dBm		63.3 dBm
Transmitter Power, GUARANTEED:		High Power (30.5 dBm)	
TOTAL GAINS:		106.9 dB	
Unfaded Received Signal Level:		-39.4 dBm (+/- 2dB)	
Required Level For 10-6 BER:		-73.0 dBm	
Flat Fade Margin:		33.6 dB	
Dispersive Fade Margin:		51.0 dB	
Composite Fade Margin:		33.6 dB	
Diversity Improvement Factor:		78.7	
Multipath Outage Probability:		0.000002684	
Multipath Outage:		32.4 sec/year	
Percent Reliability:		99.99990 %	

c = 6.58 X = 2.0 w = 20.0 (Vigants 1975) Temperature = 75.0 °F

Diversity Spacing: 35.0 ft		Slope Equalizer? Std
Diversity Antenna Size/Type:	6.0 ft / PAR6-59	6.0 ft / PAR6-59
Diversity Centerline:	125.0 ft	155.0 ft

Unfaded Receive Signal Level (at radio/transmission line interface): -39.4 dBm (+/- 2dB)



Terrain Roughness: 2.4

[redacted]

ID: MMF-11	Freq = 6.175 GHz	06-Mar-2008
MACOM		
Dade County		
Harris Stratex Networks	..... = 1.00 F1 @ K = 1.33	
Harris Stratex Networks, Inc	- . - = 0.30 F1 @ K = 0.67	
	= 0.60 F1 @ K = 1.33	

[redacted]

700

Harris Stratex Networks
Harris Stratex Networks, inc

Path Loss and Fade Margin Calculations
For Line-of-Sight Microwave Systems
Version 5.0.0

		Date:	28-Jun-2006
Customer/Project:	MACOM - Dade County	Rev. Date:	02-Nov-2009
Path ID:	MMF-12	Engineer:	JM

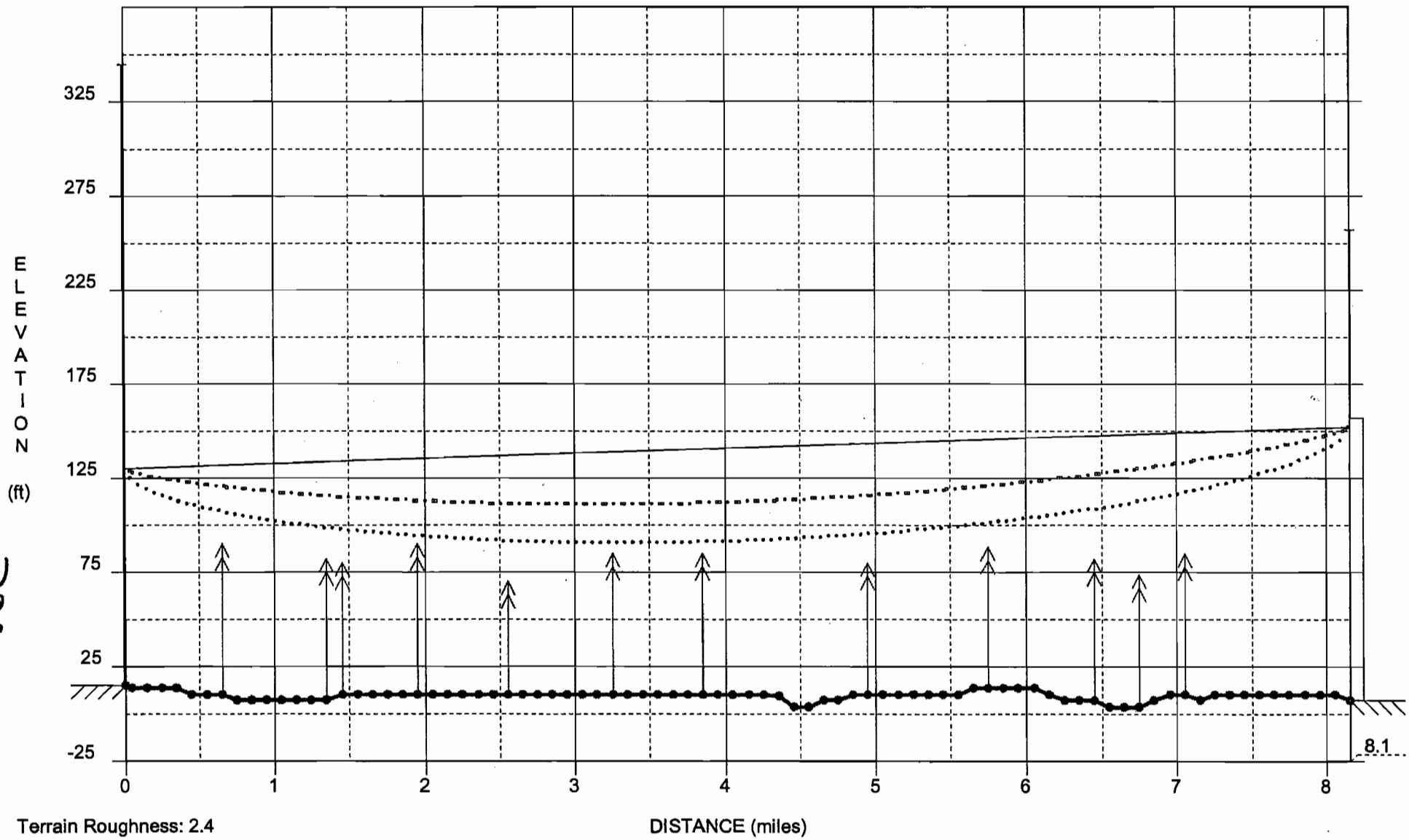
Equipment Type:	IRU 600 L6 128QAM	Capacity:	1xOC-3 SP
Protection Type:	Non Protected	Frequency:	6.175 GHz (FCC)
		Band Width:	30 MHz 60/6X Static

Site Name:	[redacted]		
NAD83 Latitude:			
NAD83 Longitude:			
NAD83 Elevation:			
Azimuth:			
Path Length:		8.15 mi	
Free Space Loss:		130.63 dB	
Atmospheric Absorption:		0.12 dB	
Diffraction Loss:		0.00 dB	
Transmission Line Type:	Elliptical		Elliptical
Transmission Line Length:	185.00 ft		225.00 ft
Transmission Line Loss:	2.18 dB		2.66 dB
Transmit-Only Pads:	0.00 dB		0.00 dB
Jumper / Flex Loss:	0.27 dB		0.27 dB
Main Antenna Radome Loss:	**0.50 dB**		**0.50 dB**
Transmitter ACU Loss:		0.00 dB	
Receiver ACU Loss:		0.00 dB	
Misc/Common Line Pads:	**1.00 dB**		**1.00 dB**
TOTAL LOSSES:		139.13 dB	
Antenna Size:	6.0 ft		6.0 ft
Antenna Centerline:	115.0 ft		145.0 ft
Antenna Gain:	38.2 dB		38.2 dB
Antenna Type:	PAR6-59		PAR6-59
Effective Radiated Power (EIRP):	64.7 dBm		64.3 dBm
Transmitter Power, GUARANTEED:		High Power (30.5 dBm)	
TOTAL GAINS:		106.9 dB	
Unfaded Received Signal Level:		-32.2 dBm (+/- 2dB)	
Required Level For 10-6 BER:		-73.0 dBm	
Flat Fade Margin:		40.8 dB	
Dispersive Fade Margin:		51.0 dB	
Composite Fade Margin:		40.4 dB	
Multipath Outage Probability:		0.000005034	
Multipath Outage:		60.7 sec/year	
Percent Reliability:		99.99981 %	

WARNING: - EIRP limitation due to short path length EIRP not to exceed 80.5 dBm

c = 6.58 X = 2.0 w = 20.0 (Vigants 1975) Temperature = 75.0 °F
Slope Equalizer? Std

Unfaded Receive Signal Level (at radio/transmission line interface): -32.2 dBm (+/- 2dB)



Terrain Roughness: 2.4

[redacted]

ID: MMF-12 Freq = 6.175 GHz 28-Jun-2006

MACOM

Dade County

Harris Stratex Networks	..... =	1.00	F1 @ K =	1.33
Harris Stratex Networks, Inc	- - - =	0.30	F1 @ K =	0.67
	=	0.60	F1 @ K =	1.33

[redacted]

702

Harris Stratex Networks
Harris Stratex Networks, inc

Path Loss and Fade Margin Calculations
For Line-of-Sight Microwave Systems
Version 5.0.0

		Date:	28-Jun-2006
Customer/Project:	MACOM - Dade County	Rev. Date:	02-Nov-2009
Path ID:	MMF-15	Engineer:	JM

Equipment Type:	IRU 600 L6 128QAM	Capacity:	1xOC-3 SP
Protection Type:	Non Protected	Frequency:	6.175 GHz (FCC)
		Band Width:	30 MHz 60/6X Static

Site Name:	[redacted]		[redacted]
NAD83 Latitude:			
NAD83 Longitude:			
NAD83 Elevation:			
Azimuth:			

Path Length:		9.73 mi	
Free Space Loss:		132.17 dB	
Atmospheric Absorption:		0.14 dB	
Diffraction Loss:		0.00 dB	
Transmission Line Type:	Elliptical		Elliptical
Transmission Line Length:	179.00 ft		175.00 ft
Transmission Line Loss:	2.11 dB		2.07 dB
Transmit-Only Pads:	0.00 dB		0.00 dB
Jumper / Flex Loss:	0.27 dB		0.27 dB
Main Antenna Radome Loss:	**0.50 dB**		**0.50 dB**
Transmitter ACU Loss:		0.00 dB	
Receiver ACU Loss:		0.00 dB	
Misc/Common Line Pads:	0.00 dB		0.00 dB
TOTAL LOSSES:		138.03 dB	

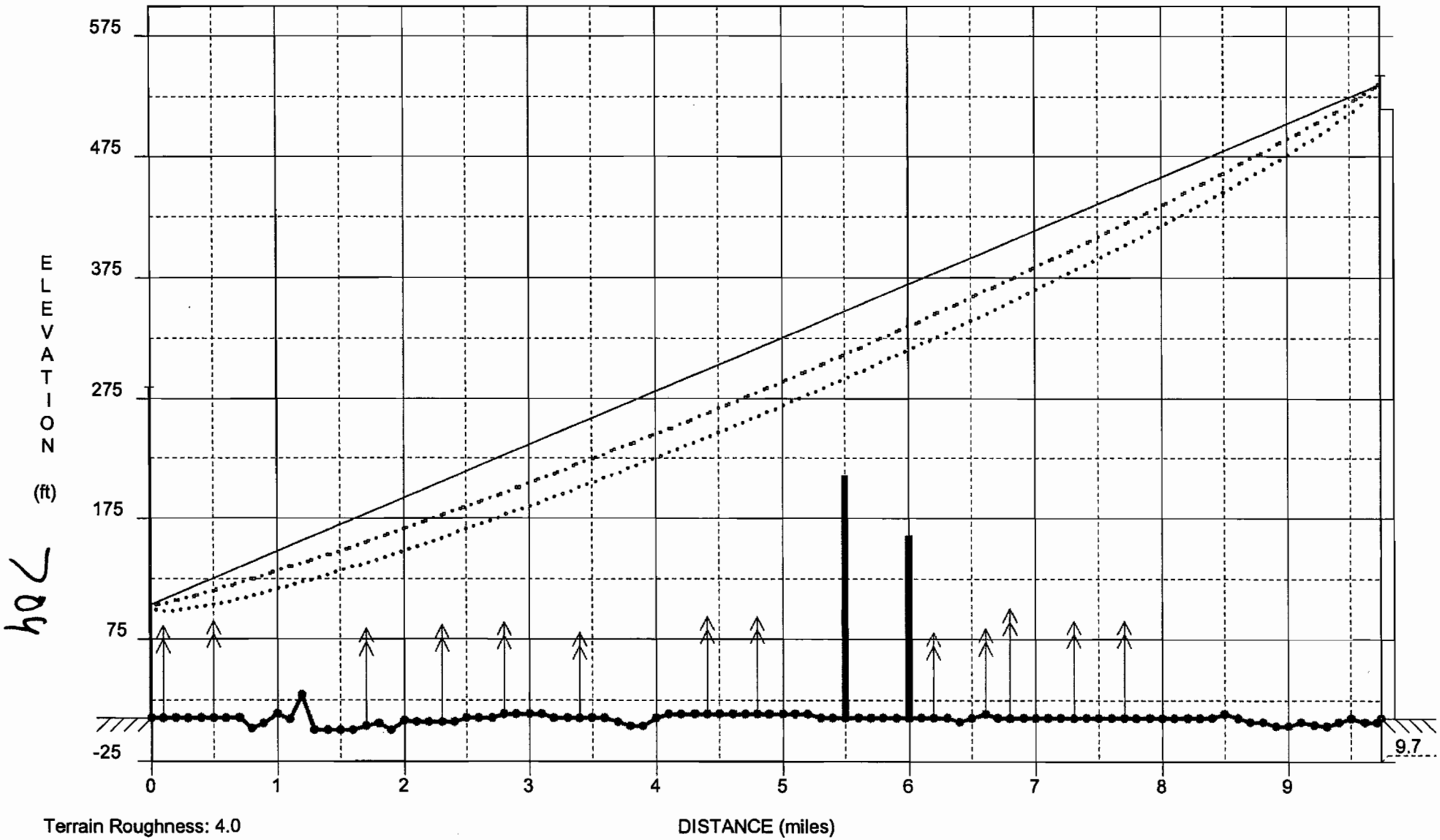
Antenna Size:	6.0 ft		6.0 ft
Antenna Centerline:	94.0 ft		525.0 ft
Antenna Gain:	38.2 dB		38.2 dB
Antenna Type:	PAR6-59		PAR6-59
Effective Radiated Power (EIRP):	65.8 dBm		65.9 dBm
Transmitter Power, GUARANTEED:		High Power (30.5 dBm)	
TOTAL GAINS:		106.9 dB	

Unfaded Received Signal Level:	-31.1 dBm (+/- 2dB)
Required Level For 10-6 BER:	-73.0 dBm
Flat Fade Margin:	41.9 dB
Dispersive Fade Margin:	51.0 dB
Composite Fade Margin:	41.4 dB
Multipath Outage Probability:	0.000006816
Multipath Outage:	82.2 sec/year
Percent Reliability:	99.99974 %

WARNING: - EIRP limitation due to short path length EIRP not to exceed 83.6 dBm

c = 6.58 X = 2.0 w = 20.0 (Vigants 1975) Temperature = 75.0 °F
Slope Equalizer? Std

Unfaded Receive Signal Level (at radio/transmission line interface): -31.1 dBm (+/- 2dB)



Terrain Roughness: 4.0

[redacted]

ID: MMF-15	Freq = 6.175 GHz	28-Jun-2006
MACOM		
Dade County		
Harris Stratex Networks	..... = 1.00 F1 @ K = 1.33	
Harris Stratex Networks, Inc	- . - = 0.30 F1 @ K = 0.67	
	= 0.60 F1 @ K = 1.33	

[redacted]

Harris Stratex Networks
Harris Stratex Networks, inc

Path Loss and Fade Margin Calculations
For Line-of-Sight Microwave Systems
Version 5.0.0

Date: 28-Jun-2006
Rev. Date: 02-Nov-2009
Engineer: JM

Customer/Project: MACOM - Dade County
Path ID: MMF-18

Equipment Type: IRU 600 L6 128QAM
Protection Type: Monitored Hot Standby (coupler)

Capacity: 1xOC-3 SP
Frequency: 6.175 GHz (FCC)
Band Width: 30 MHz 60/6X Static

Site Name:	[redacted]	[redacted]
NAD83 Latitude:		
Longitude:		
Elevation:		
Azimuth:		

Path Length:		5.12 mi	
Free Space Loss:		126.59 dB	
Atmospheric Absorption:		0.07 dB	
Diffraction Loss:		0.00 dB	
Transmission Line Type:	Elliptical		Elliptical
Transmission Line Length:	175.00 ft		55.00 ft
Transmission Line Loss:	2.07 dB		0.65 dB
Transmit-Only Pads:	0.00 dB		0.00 dB
Jumper / Flex Loss:	0.27 dB		0.27 dB
Main Antenna Radome Loss:	**0.50 dB**		**0.50 dB**
Transmitter ACU Loss:		1.10 dB	
Receiver ACU Loss:		1.10 dB	
Misc/Common Line Pads:	**1.00 dB**		**1.00 dB**
TOTAL LOSSES:		135.12 dB	

Antenna Size:	6.0 ft		6.0 ft
Antenna Centerline:	525.0 ft		103.0 ft
Antenna Gain:	38.2 dB		38.2 dB
Antenna Type:	PAR6-59		PAR6-59
Effective Radiated Power (EIRP):	59.8 dBm		61.2 dBm
Transmitter Power, GUARANTEED:		Standard Power (26.5 dBm)	
TOTAL GAINS:		102.9 dB	

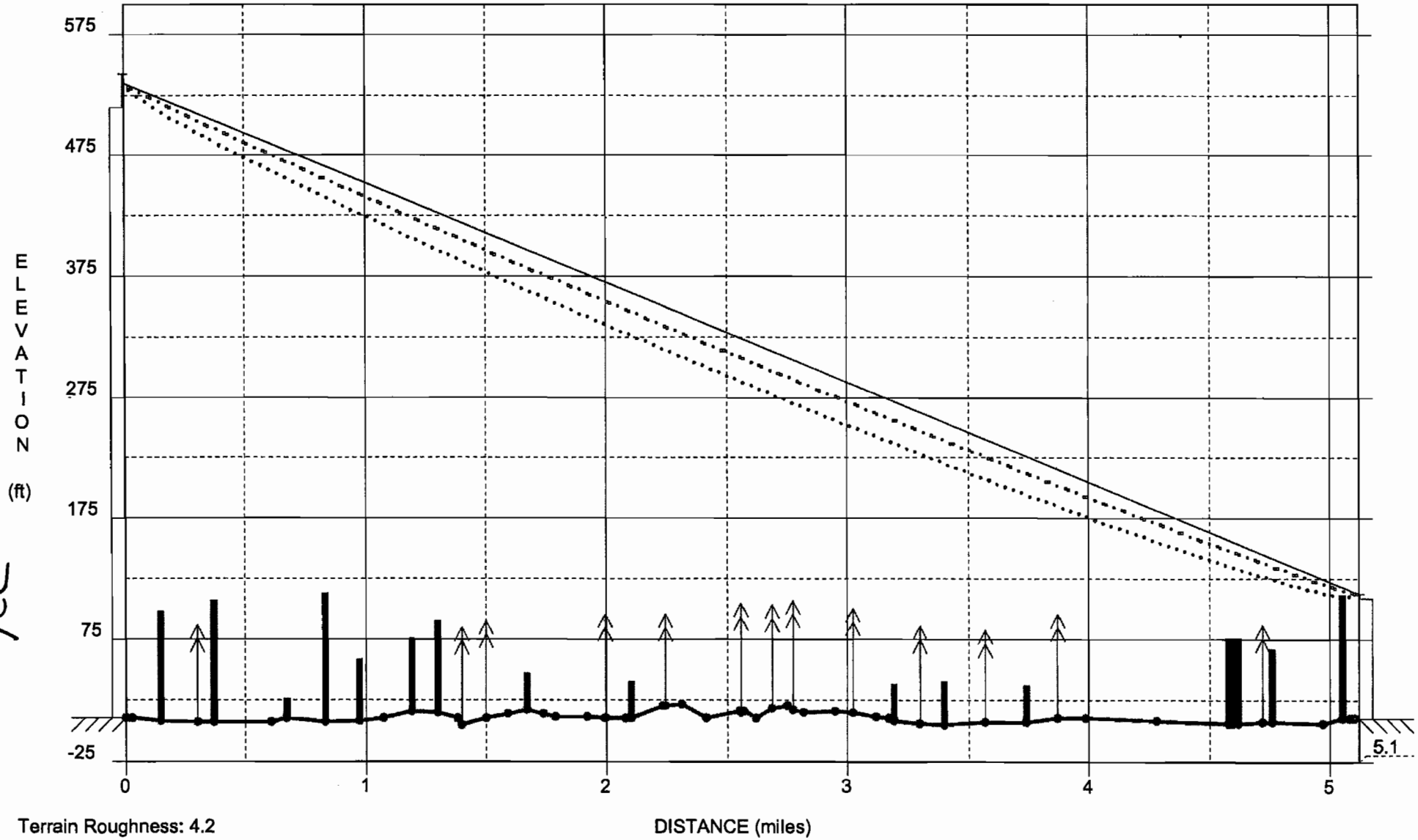
Unfaded Received Signal Level:	-32.2 dBm (+/- 2dB)
Required Level For 10-6 BER:	-73.0 dBm
Flat Fade Margin:	40.8 dB
Dispersive Fade Margin:	51.0 dB
Composite Fade Margin:	40.4 dB
Multipath Outage Probability:	0.000001244
Multipath Outage:	15.0 sec/year
Percent Reliability:	99.99995 %

WARNING: - EIRP limitation due to short path length EIRP not to exceed 72.4 dBm

c = 6.58 X = 2.0 w = 20.0 (Vigants 1975)

Temperature = 75.0 °F
Slope Equalizer? Std

Unfaded Receive Signal Level (at radio/transmission line interface): -31.1 dBm (+/- 2dB)



Terrain Roughness: 4.2

[redacted]

ID: MMF-18	Freq = 6.175 GHz	28-Jun-2006
MACOM		
Dade County		
Harris Stratex Networks	..... = 1.00 F1 @ K = 1.33	
Harris Stratex Networks, Inc	- · - = 0.30 F1 @ K = 0.67	
	= 0.60 F1 @ K = 1.33	

[redacted]

Harris Stratex Networks
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Path Loss and Fade Margin Calculations
For Line-of-Sight Microwave Systems
Version 5.0.0

Date: 19-Oct-2009
Rev. Date: 02-Nov-2009
Engineer: JM

Customer/Project: MACOM - Dade County
Path ID: MMF-29

Equipment Type: IRU 600 L6 128QAM
Protection Type: Non Protected

Capacity: 1xOC-3 SP
Frequency: 6.175 GHz (FCC)
Band Width: 30 MHz 60/6X Static

Site Name: [redacted]
NAD83 Latitude:
Longitude:
Elevation:
Azimuth:

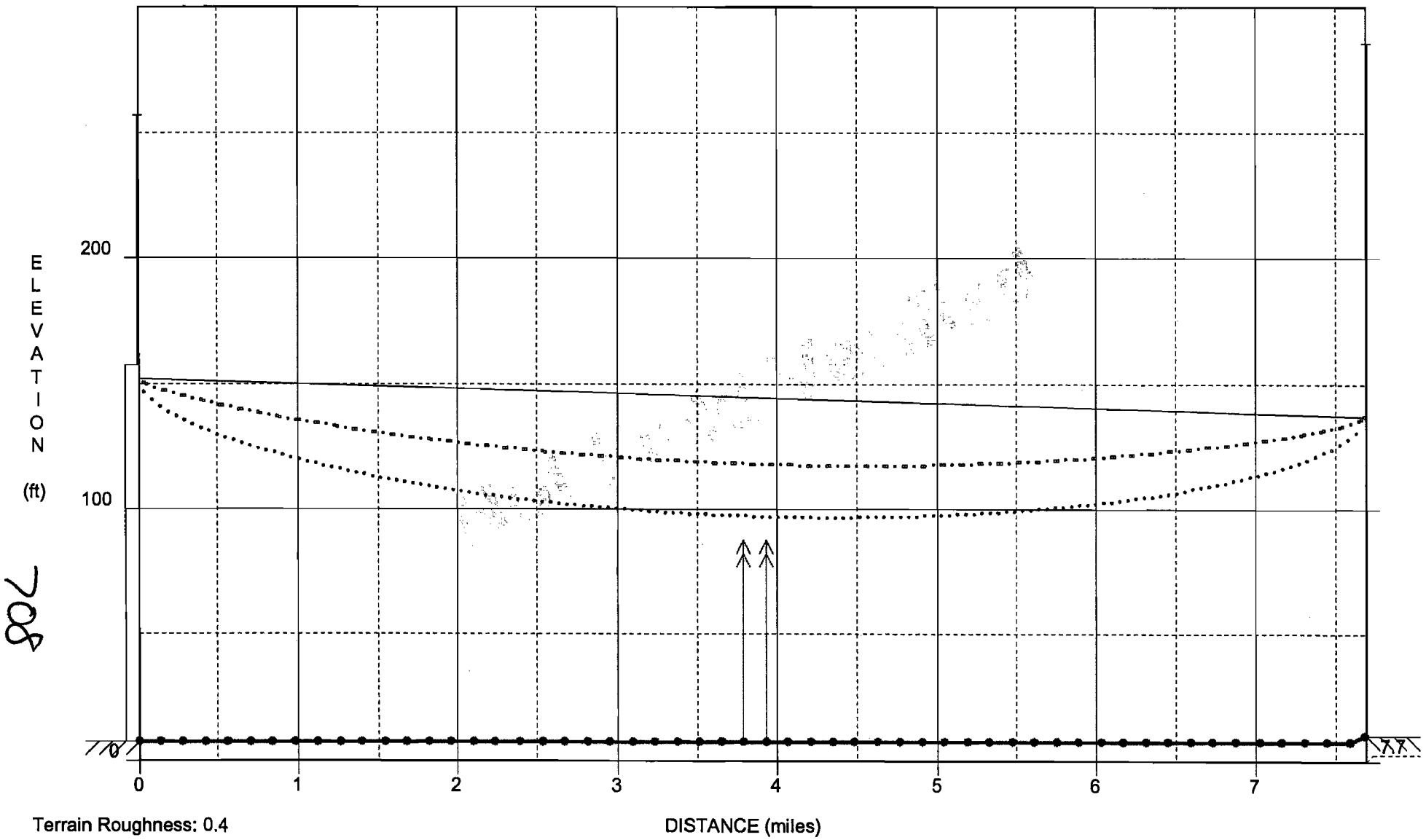
Path Length:		7.68 mi	
Free Space Loss:		130.12 dB	
Atmospheric Absorption:		0.11 dB	
Diffraction Loss:		0.00 dB	
Transmission Line Type:	Elliptical		Elliptical
Transmission Line Length:	225.00 ft		212.00 ft
Transmission Line Loss:	2.66 dB		2.50 dB
Transmit-Only Pads:	0.00 dB		0.00 dB
Jumper / Flex Loss:	0.27 dB		0.27 dB
Main Antenna Radome Loss:	**0.50 dB**		**0.50 dB**
Transmitter ACU Loss:		0.00 dB	
Receiver ACU Loss:		0.00 dB	
Misc/Common Line Pads:	**1.00 dB**		**1.00 dB**
TOTAL LOSSES:		138.93 dB	
Antenna Size:	6.0 ft		6.0 ft
Antenna Centerline:	145.0 ft		127.0 ft
Antenna Gain:	38.2 dB		38.2 dB
Antenna Type:	PAR6-59		PAR6-59
Effective Radiated Power (EIRP):	64.3 dBm		64.4 dBm
Transmitter Power, GUARANTEED:		High Power (30.5 dBm)	
TOTAL GAINS:		106.9 dB	
Unfaded Received Signal Level:		-32.0 dBm (+/- 2dB)	
Required Level For 10-6 BER:		-73.0 dBm	
Flat Fade Margin:		41.0 dB	
Dispersive Fade Margin:		51.0 dB	
Composite Fade Margin:		40.6 dB	
Multipath Outage Probability:		0.000004048	
Multipath Outage:		48.8 sec/year	
Percent Reliability:		99.99985 %	

WARNING: - EIRP limitation due to short path length EIRP not to exceed 79.5 dBm

c = 6.58 X = 2.0 w = 20.0 (Vigants 1975)

Temperature = 75.0 °F
Slope Equalizer? Std

Unfaded Receive Signal Level (at radio/transmission line interface): -32.0 dBm (+/- 2dB)



Terrain Roughness: 0.4

[redacted]

ID: MMF-29	Freq = 6.175 GHz	21-Oct-2009
MACOM		
Dade County		
Harris Stratex Networks	..... = 1.00 F1 @ K = 1.33	
Harris Stratex Networks, Inc	- . - = 0.30 F1 @ K = 0.67	
	= 0.60 F1 @ K = 1.33	

[redacted]

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Path Loss and Fade Margin Calculations
For Line-of-Sight Microwave Systems
Version 5.0.0

		Date:	29-Oct-2009
Customer/Project:	MACOM - Dade County	Rev. Date:	03-Nov-2009
Path ID:	MMF-30	Engineer:	JM

Equipment Type:	IRU 600 L6 128QAM	Capacity:	1xOC-3 SP
Protection Type:	Space Diversity	Frequency:	6.175 GHz (FCC)
		Band Width:	30 MHz 60/6X Static

Site Name:	[redacted]	[redacted]
NAD83 Latitude:		
NAD83 Longitude:		
NAD83 Elevation:		
Azimuth:		

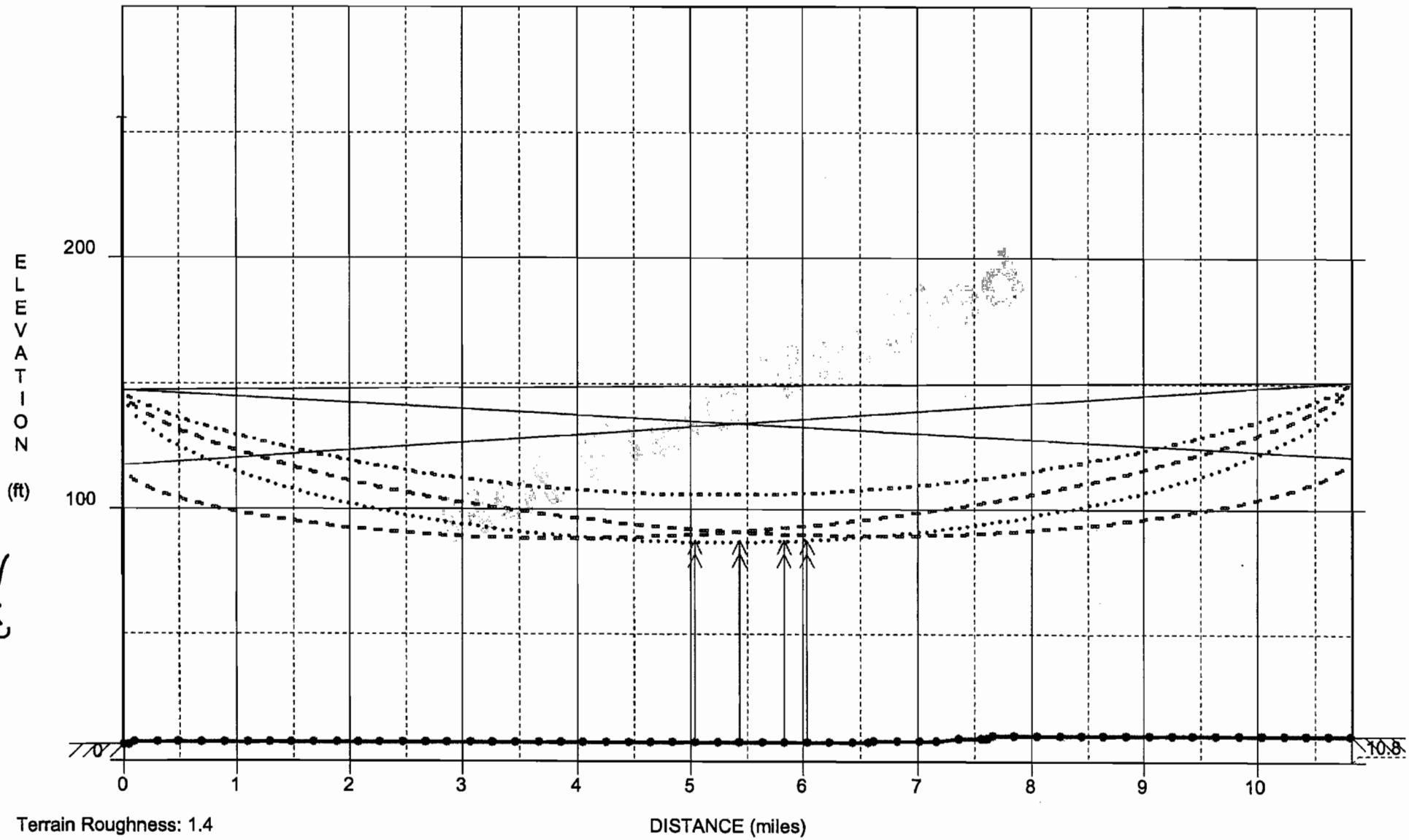
Path Length:		10.82 mi	
Free Space Loss:		133.10 dB	
Atmospheric Absorption:		0.15 dB	
Diffraction Loss:		0.00 dB	
Transmission Line Type:	Elliptical		Elliptical
Transmission Line Length:	176.00 ft		186.00 ft
Transmission Line Loss:	2.08 dB		2.19 dB
Transmit-Only Pads:	0.00 dB		0.00 dB
Jumper / Flex Loss:	0.27 dB		0.27 dB
Main Antenna Radome Loss:	**0.50 dB**		**0.50 dB**
Transmitter ACU Loss:		1.10 dB	
Receiver ACU Loss:		0.00 dB	
Misc/Common Line Pads:	**1.00 dB**		**1.00 dB**
TOTAL LOSSES:		142.16 dB	

Antenna Size:	6.0 ft		6.0 ft
Antenna Centerline:	141.0 ft		141.0 ft
Antenna Gain:	38.2 dB		38.2 dB
Antenna Type:	PAR6-59		PAR6-59
Effective Radiated Power (EIRP):	59.8 dBm		59.6 dBm
Transmitter Power, GUARANTEED:		Standard Power (26.5 dBm)	
TOTAL GAINS:		102.9 dB	

Unfaded Received Signal Level:	-39.3 dBm (+/- 2dB)
Required Level For 10-6 BER:	-73.0 dBm
Flat Fade Margin:	33.7 dB
Dispersive Fade Margin:	51.0 dB
Composite Fade Margin:	33.7 dB
Diversity Improvement Factor:	43.4
Multipath Outage Probability:	0.000001278
Multipath Outage:	15.4 sec/year
Percent Reliability:	99.99995 %

c = 6.58 X = 2.0 w = 20.0	(Vigants 1975)		Temperature = 75.0 °F
Diversity Spacing: 30.0 ft			Slope Equalizer? Std
Diversity Antenna Size/Type:	4.0 ft / HP4-57W		4.0 ft / HP4-57W
Diversity Centerline:	111.0 ft		111.0 ft

Unfaded Receive Signal Level (at radio/transmission line interface): -39.3 dBm (+/- 2dB)



Terrain Roughness: 1.4

[redacted]

ID: MMF-30	Freq = 6.175 GHz	02-Nov-2009
MACOM		
Dade County		
Harris Stratex Networks	..... = 1.00 F1 @ K = 1.33	
Harris Stratex Networks, Inc	- . - = 0.30 F1 @ K = 0.67	
	= 0.60 F1 @ K = 1.33	

[redacted]

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Path Loss and Fade Margin Calculations
For Line-of-Sight Microwave Systems
Version 5.0.0

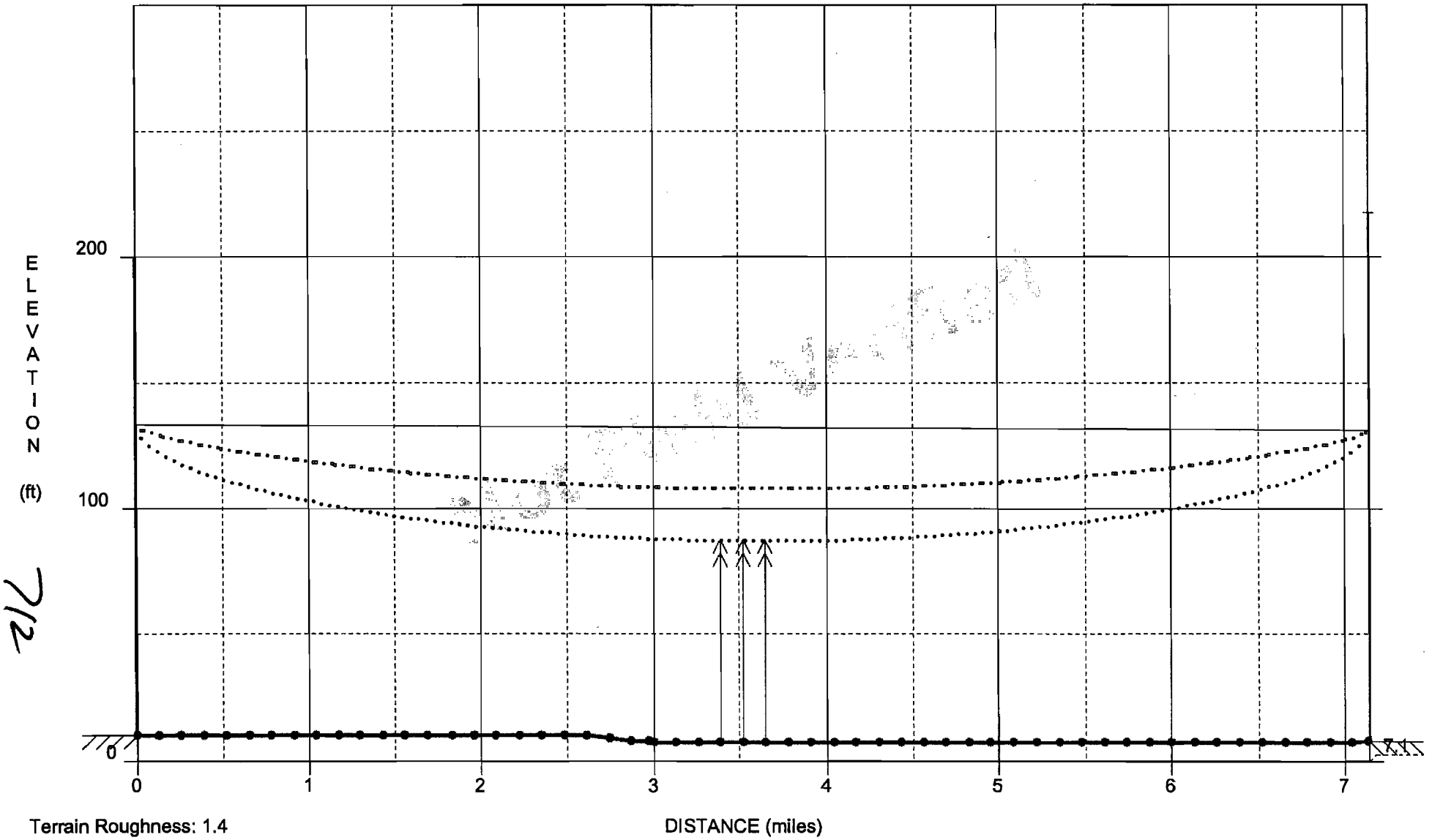
		Date:	29-Oct-2009
Customer/Project:	MACOM - Dade County	Rev. Date:	02-Nov-2009
Path ID:	MMF-31	Engineer:	JM

Equipment Type:	IRU 600 L6 128QAM	Capacity:	1xOC-3 SP
Protection Type:	Non Protected	Frequency:	6.175 GHz (FCC)
		Band Width:	30 MHz 60/6X Static

Site Name:		[redacted]	
NAD83 Latitude:			
NAD83 Longitude:			
NAD83 Elevation:			
Azimuth:			
Path Length:		7.14 mi	
Free Space Loss:		129.48 dB	
Atmospheric Absorption:		0.10 dB	
Diffraction Loss:		0.00 dB	
Transmission Line Type:	Elliptical		Elliptical
Transmission Line Length:	168.00 ft		183.00 ft
Transmission Line Loss:	1.98 dB		2.16 dB
Transmit-Only Pads:	0.00 dB		0.00 dB
Jumper / Flex Loss:	0.27 dB		0.27 dB
Main Antenna Radome Loss:	**0.50 dB**		**0.50 dB**
Transmitter ACU Loss:		0.00 dB	
Receiver ACU Loss:		0.00 dB	
Misc/Common Line Pads:	**1.00 dB**		**1.00 dB**
TOTAL LOSSES:		137.27 dB	
Antenna Size:	6.0 ft		6.0 ft
Antenna Centerline:	123.0 ft		123.0 ft
Antenna Gain:	38.2 dB		38.2 dB
Antenna Type:	PAR6-59		PAR6-59
Effective Radiated Power (EIRP):	60.9 dBm		60.8 dBm
Transmitter Power, GUARANTEED:		Standard Power (26.5 dBm)	
TOTAL GAINS:		102.9 dB	
Unfaded Received Signal Level:		-34.4 dBm (+/- 2dB)	
Required Level For 10-6 BER:		-73.0 dBm	
Flat Fade Margin:		38.6 dB	
Dispersive Fade Margin:		51.0 dB	
Composite Fade Margin:		38.4 dB	
Multipath Outage Probability:		0.000005359	
Multipath Outage:		64.6 sec/year	
Percent Reliability:		99.99980 %	

WARNING: - EIRP limitation due to short path length EIRP not to exceed 78.2 dBm

c = 6.58 X = 2.0 w = 20.0 (Vigants 1975) Temperature = 75.0 °F
Slope Equalizer? Std
Unfaded Receive Signal Level (at radio/transmission line interface): -34.4 dBm (+/- 2dB)



Terrain Roughness: 1.4

[redacted]

ID: MMF-31 Freq = 6.175 GHz 02-Nov-2009

MACOM

Dade County

Harris Stratex Networks	..... = 1.00	F1 @ K =	1.33
Harris Stratex Networks, Inc	- - - = 0.30	F1 @ K =	0.67
	= 0.60	F1 @ K =	1.33

[redacted]

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Path Loss and Fade Margin Calculations
For Line-of-Sight Microwave Systems
Version 5.0.0

Date: 29-Oct-2009
Rev. Date: 02-Nov-2009
Engineer: JM

Customer/Project: MACOM - Dade County
Path ID: MMF-32

Equipment Type: IRU 600 L6 128QAM
Protection Type: Non Protected

Capacity: 1xOC-3 SP
Frequency: 6.175 GHz (FCC)
Band Width: 30 MHz 60/6X Static

Site Name: [redacted]
NAD83 Latitude:
NAD83 Longitude:
NAD83 Elevation:
Azimuth:

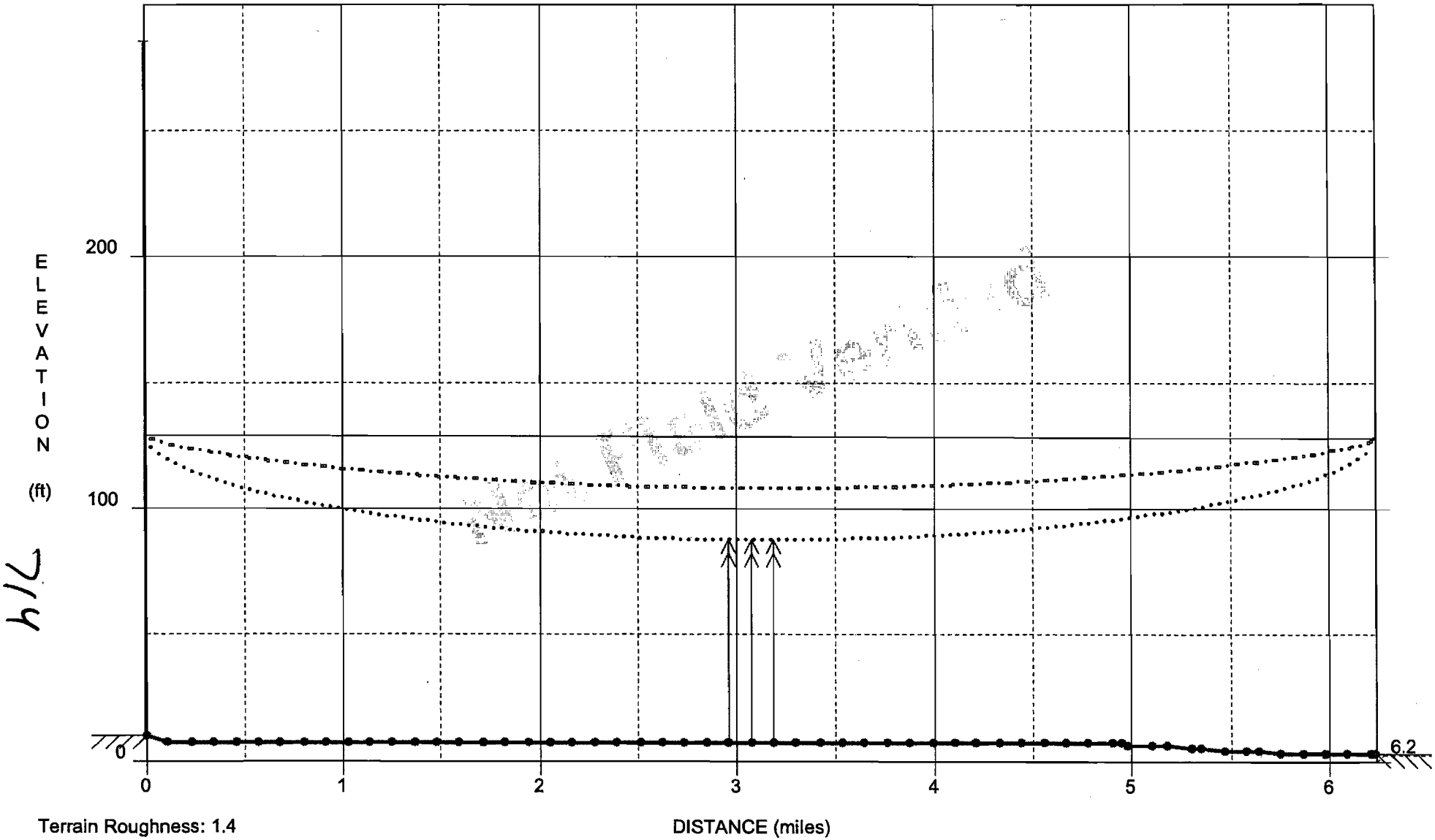
Path Length:		6.24 mi	
Free Space Loss:		128.31 dB	
Atmospheric Absorption:		0.09 dB	
Diffraction Loss:		0.00 dB	
Transmission Line Type:	Elliptical		Elliptical
Transmission Line Length:	204.00 ft		165.00 ft
Transmission Line Loss:	2.41 dB		1.95 dB
Transmit-Only Pads:	0.00 dB		0.00 dB
Jumper / Flex Loss:	0.27 dB		0.27 dB
Main Antenna Radome Loss:	**0.50 dB**		**0.50 dB**
Transmitter ACU Loss:		0.00 dB	
Receiver ACU Loss:		0.00 dB	
Misc/Common Line Pads:	**1.30 dB**		**1.30 dB**
TOTAL LOSSES:		136.89 dB	
Antenna Size:	6.0 ft		6.0 ft
Antenna Centerline:	119.0 ft		125.0 ft
Antenna Gain:	38.2 dB		38.2 dB
Antenna Type:	PAR6-59		PAR6-59
Effective Radiated Power (EIRP):	64.2 dBm		64.7 dBm
Transmitter Power, GUARANTEED:		High Power (30.5 dBm)	
TOTAL GAINS:		106.9 dB	
Unfaded Received Signal Level:		-30.0 dBm (+/- 2dB)	
Required Level For 10-6 BER:		-73.0 dBm	
Flat Fade Margin:		43.0 dB	
Dispersive Fade Margin:		51.0 dB	
Composite Fade Margin:		42.4 dB	
Multipath Outage Probability:		0.000001429	
Multipath Outage:		17.2 sec/year	
Percent Reliability:		99.99995 %	

WARNING: - EIRP limitation due to short path length EIRP not to exceed 75.8 dBm

c = 6.58 X = 2.0 w = 20.0 (Vigants 1975)

Temperature = 75.0 °F
Slope Equalizer? Std

Unfaded Receive Signal Level (at radio/transmission line interface): -30.0 dBm (+/- 2dB)
2xOC3 Link, ACU is 2+0 configured, 2xPairs on the same Pol



[redacted]

ID: MMF-32	Freq = 6.175 GHz	02-Nov-2009

MACOM

Dade County

Harris Stratex Networks	..... = 1.00 F1 @ K = 1.33	
Harris Stratex Networks, Inc	- . - = 0.30 F1 @ K = 0.67	
	= 0.60 F1 @ K = 1.33	

[redacted]

Harris Stratex Networks
Harris Stratex Networks, inc

Path Loss and Fade Margin Calculations
For Line-of-Sight Microwave Systems
Version 5.0.0

		Date:	30-Oct-2009
Customer/Project:	MACOM - Dade County	Rev. Date:	02-Nov-2009
Path ID:	MMF-33	Engineer:	JM

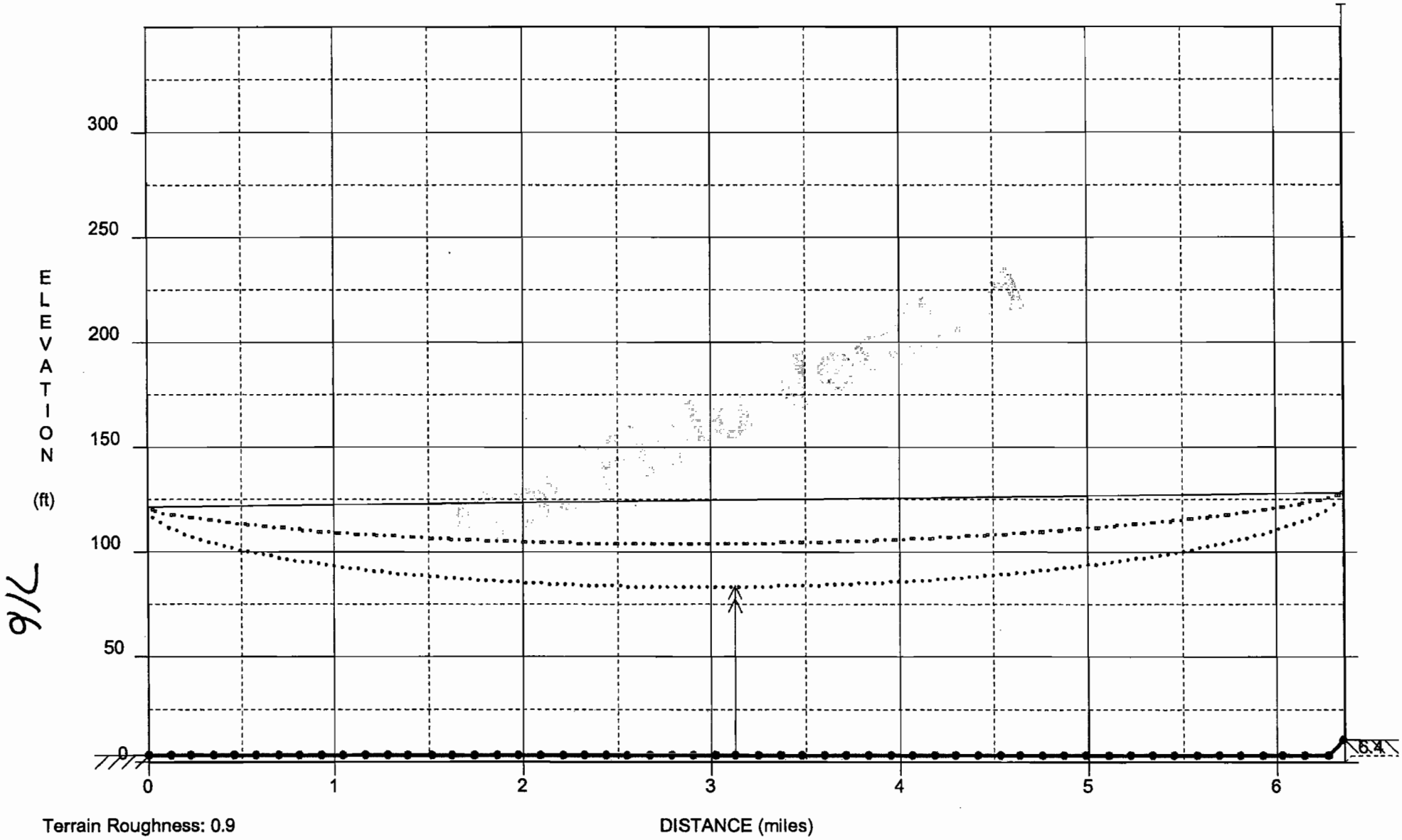
Equipment Type:	IRU 600 L6 128QAM	Capacity:	1xOC-3 SP
Protection Type:	Non Protected	Frequency:	6.175 GHz (FCC)
		Band Width:	30 MHz 60/6X Static

Site Name:	[redacted]		
NAD83 Latitude:			
NAD83 Longitude:			
NAD83 Elevation:			
Azimuth:			
Path Length:		6.35 mi	
Free Space Loss:		128.47 dB	
Atmospheric Absorption:		0.09 dB	
Diffraction Loss:		0.00 dB	
Transmission Line Type:	Elliptical		Elliptical
Transmission Line Length:	163.00 ft		178.00 ft
Transmission Line Loss:	1.92 dB		2.10 dB
Transmit-Only Pads:	0.00 dB		0.00 dB
Jumper / Flex Loss:	0.27 dB		0.27 dB
Main Antenna Radome Loss:	**0.50 dB**		**0.50 dB**
Transmitter ACU Loss:		0.00 dB	
Receiver ACU Loss:		0.00 dB	
Misc/Common Line Pads:	**1.00 dB**		**1.00 dB**
TOTAL LOSSES:		136.13 dB	
Antenna Size:	6.0 ft		6.0 ft
Antenna Centerline:	118.0 ft		118.0 ft
Antenna Gain:	38.2 dB		38.2 dB
Antenna Type:	PAR6-59		PAR6-59
Effective Radiated Power (EIRP):	61.0 dBm		60.8 dBm
Transmitter Power, GUARANTEED:		Standard Power (26.5 dBm)	
TOTAL GAINS:		102.9 dB	
Unfaded Received Signal Level:		-33.2 dBm (+/- 2dB)	
Required Level For 10-6 BER:		-73.0 dBm	
Flat Fade Margin:		39.8 dB	
Dispersive Fade Margin:		51.0 dB	
Composite Fade Margin:		39.5 dB	
Multipath Outage Probability:		0.000002954	
Multipath Outage:		35.6 sec/year	
Percent Reliability:		99.99989 %	

WARNING: - EIRP limitation due to short path length EIRP not to exceed 76.2 dBm

c = 6.58 X = 2.0 w = 20.0 (Vigants 1975) Temperature = 75.0 °F
Slope Equalizer? Std

Unfaded Receive Signal Level (at radio/transmission line interface): -33.2 dBm (+/- 2dB)



[redacted]

ID: MMF-33	Freq = 6.175 GHz	02-Nov-2009
MACOM		
Dade County		
Harris Stratex Networks	..... = 1.00 F1 @ K = 1.33	
Harris Stratex Networks, Inc	- - - = 0.30 F1 @ K = 0.67	
	= 0.60 F1 @ K = 1.33	

[redacted]

Harris Stratex Networks
Harris Stratex Networks, inc

Path Loss and Fade Margin Calculations
For Line-of-Sight Microwave Systems
Version 5.0.0

		Date:	30-Oct-2009
Customer/Project:	MACOM - Dade County	Rev. Date:	02-Nov-2009
Path ID:	MMF-34	Engineer:	JM

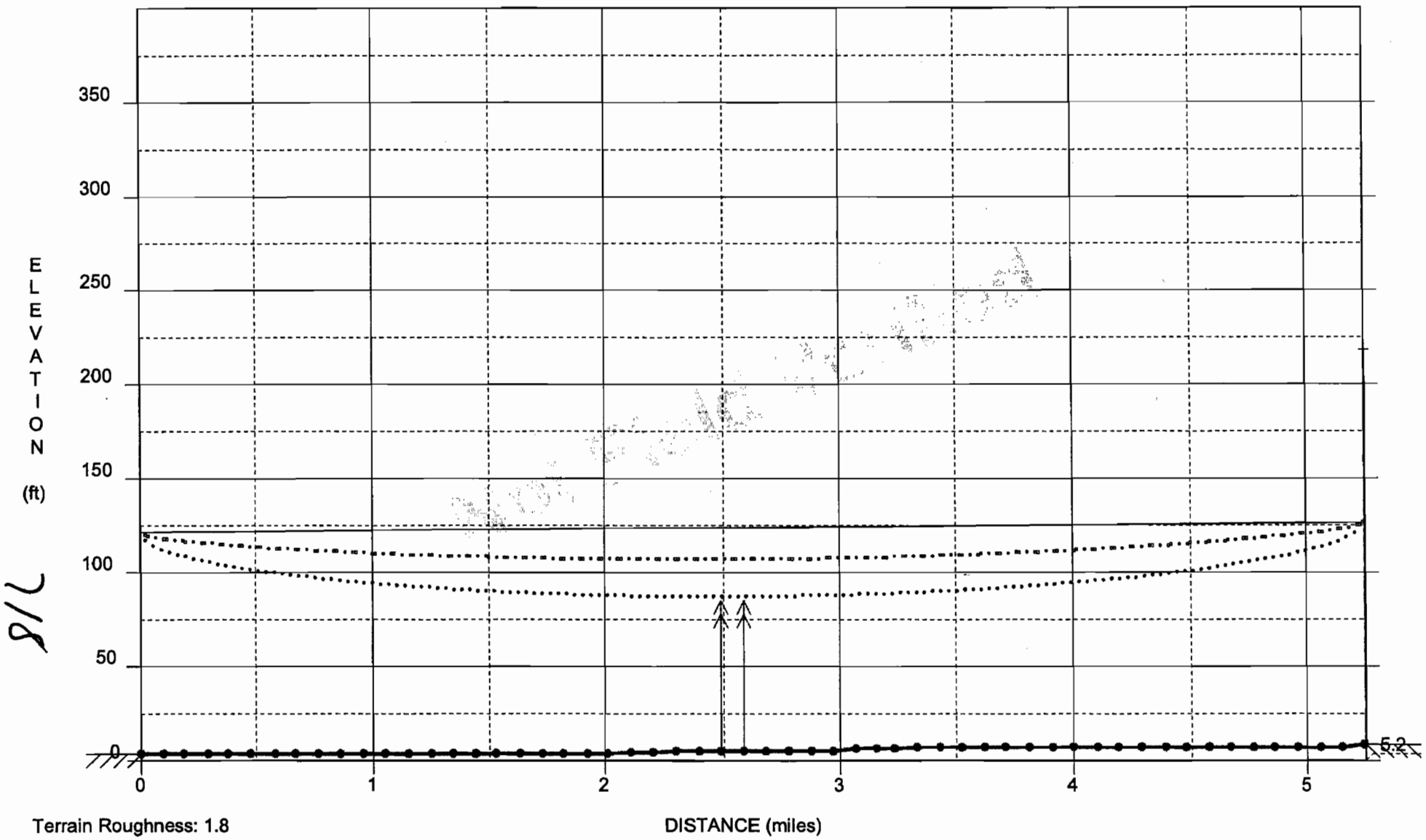
Equipment Type:	IRU 600 L6 128QAM	Capacity:	1xOC-3 SP
Protection Type:	Non Protected	Frequency:	6.175 GHz (FCC)
		Band Width:	30 MHz 60/6X Static

Site Name:	[redacted]		
NAD83 Latitude:			
Longitude:			
Elevation:			
Azimuth:			
Path Length:		5.25 mi	
Free Space Loss:		126.81 dB	
Atmospheric Absorption:		0.07 dB	
Diffraction Loss:		0.00 dB	
Transmission Line Type:	Elliptical		Elliptical
Transmission Line Length:	163.00 ft		178.00 ft
Transmission Line Loss:	1.92 dB		2.10 dB
Transmit-Only Pads:	0.00 dB		0.00 dB
Jumper / Flex Loss:	0.27 dB		0.27 dB
Main Antenna Radome Loss:	**0.50 dB**		**0.50 dB**
Transmitter ACU Loss:		0.00 dB	
Receiver ACU Loss:		0.00 dB	
Misc/Common Line Pads:	**1.00 dB**		**1.00 dB**
TOTAL LOSSES:		134.45 dB	
Antenna Size:	6.0 ft		6.0 ft
Antenna Centerline:	118.0 ft		118.0 ft
Antenna Gain:	38.2 dB		38.2 dB
Antenna Type:	PAR6-59		PAR6-59
Effective Radiated Power (EIRP):	61.0 dBm		60.8 dBm
Transmitter Power, GUARANTEED:		Standard Power (26.5 dBm)	
TOTAL GAINS:		102.9 dB	
Unfaded Received Signal Level:		-31.6 dBm (+/- 2dB)	
Required Level For 10-6 BER:		-73.0 dBm	
Flat Fade Margin:		41.4 dB	
Dispersive Fade Margin:		51.0 dB	
Composite Fade Margin:		41.0 dB	
Multipath Outage Probability:		0.000001168	
Multipath Outage:		14.1 sec/year	
Percent Reliability:		99.99996 %	

WARNING: - EIRP limitation due to short path length EIRP not to exceed 72.8 dBm

c = 6.58 X = 2.0 w = 20.0 (Vigants 1975) Temperature = 75.0 °F
Slope Equalizer? Std

Unfaded Receive Signal Level (at radio/transmission line interface): -31.6 dBm (+/- 2dB)



Terrain Roughness: 1.8

[redacted]

ID: MMF-34	Freq = 6.175 GHz	02-Nov-2009
MACOM		
Dade County		
Harris Stratex Networks	..... = 1.00 F1 @ K = 1.33	
Harris Stratex Networks, Inc	- - - = 0.30 F1 @ K = 0.67	
	= 0.60 F1 @ K = 1.33	

[redacted]

EXHIBIT C – P25 SOFTWARE LICENSE AGREEMENT

P25 SOFTWARE LICENSE AGREEMENT

This P25 Software License Agreement ("Agreement") is made on _____, 20__, (the "Effective Date") by and between Harris Corporation, a Delaware Corporation, through its RF Communications Division, ("LICENSOR") with offices at 221 Jefferson Ridge Parkway, Lynchburg, VA 24501 and Miami-Dade County ("LICENSEE"). LICENSOR is the owner of certain wireless communications software programs and LICENSEE desires to obtain a license from LICENSOR to use such wireless communications programs.

1.0 Definitions.

a. "Software": The term Software shall mean the wireless communications computer programs in software or firmware supplied under this Agreement by LICENSOR in binary form to the LICENSEE (stand alone or in conjunction with the purchase of a LICENSOR wireless communications system) and as identified in Exhibit A. Software shall also include all other material related to the Software supplied by LICENSOR to LICENSEE hereunder, and which may be in machine readable or printed form, including but not limited to user documentation and/or manuals. "Binary form" shall mean the executable version of the Software.

b. "Third Party Software Products": The term Third Party Software Products shall mean software products included in the Software specified in Exhibit A which were licensed/purchased by LICENSOR from third parties.

c. "Third Party Licensors": The term Third Party Licensors shall mean the third parties from whom LICENSOR purchased Third Party Software Products.

d. "Purchase Contract": The term Purchase Contract shall mean the Radio Communication System Purchase Contract of even date by and between LICENSOR and LICENSEE.

e. All other capitalized terms shall have the same meaning as in the Purchase Contract of even date by and between LICENSOR and LICENSEE.

2.0 License Grant for Software.

2.1 Subject to the Purchase Contract and the performance by LICENSEE of its obligations hereunder, LICENSOR hereby grants to LICENSEE, and LICENSEE hereby accepts from LICENSOR, (a) a personal, non-transferable, non-exclusive, perpetual license in North America to use the Software in binary form only and (b) install and execute such Software on LICENSEE's equipment and (c) a personal, non-transferable, non-exclusive, limited sublicense in North America to use the Third Party Software Products only as they are incorporated in to the Software, and not as a standalone product, in binary form only. This license does not transfer any right, title, or interest in the Software. Third Party Software Products are to be used for internal business purposes only, and not to be used for purposes of development or modifications. LICENSEE may not use Third Party Software Products for any sublicensing, timesharing, rental, facility management, or service bureau uses. Use of the Third Party Software Products, as incorporated into the Software, shall be restricted to the licensed purpose set forth in this Agreement.

2.2 With respect to the Software, LICENSEE will not alter, deface, discard, or erase any media, documentation, or LICENSOR or Third Party Licensor's trademarks or proprietary rights notices.

2.3 LICENSEE will not reproduce, modify, or make derivative works of the Software, except that LICENSEE may make one archival, and one inactive backup, copy of the Software. In addition, LICENSEE, its agents, consultants and/or its subcontractors will not attempt to reverse engineer, decompile, or reverse-compile any software contained in the Software and any attempt to do so shall be a material breach of this Agreement.

2.4 Neither the Software, nor any sublicensed software or products are designed or intended for use in connection with any nuclear, aviation (including but not limited to on-line control of aircraft, air traffic, aircraft navigation or aircraft communications), or any other inherently dangerous application that would result in death, personal injury, catastrophic damage or mass destruction, or for use in the design, construction, operation or maintenance of any nuclear, aviation or other inherently dangerous application that would result in death, personal injury, catastrophic damage or mass destruction.

2.5 Third Party Software Products may be subject to additional license terms, which, if applicable, are set out in Product Specific License Terms attached hereto as Exhibit B to this Agreement.

3.0 Protection and Security of Software. LICENSEE acknowledges and agrees that the Software and any materials and/or documentation related thereto, and any portion thereof, supplied by LICENSOR hereunder are proprietary and confidential to LICENSOR and are a valuable commercial asset of LICENSOR and its third party licensors. LICENSEE also acknowledges and agrees that LICENSOR and/or the third party licensors have and shall retain all proprietary rights in their respective portions of the Software and any materials and/or documentation related thereto. LICENSEE (i) shall respect such proprietary rights, (ii) shall protect LICENSOR and any third party licensor's proprietary rights at least to the extent that it protects its own proprietary information, (iii) shall not use the Software nor any materials or documentation related thereto except for the purposes for which they are being made available as set forth in this Agreement and (iv) shall not reproduce, print, disclose, or otherwise make said Software or materials and/or documentation related thereto available to any third party, in whole or in part, in whatever form, except as permitted in the terms of this Agreement.

4.0 Warranty

Seller warrants: (i) for a time period equal to the time period of the corresponding and applicable Terminal and Infrastructure Hardware Warranty for the Designated Equipment containing the Software as set forth in the Purchase Contract; and (ii) that any Licensed Program furnished to LICENSEE under this Agreement shall be capable of successfully operating on the Designated Equipment in accordance with the logic defined in the Operator's Manuals when the system is supplied with correct input data. If, on the basis of evidence submitted to LICENSOR within the term of this warranty, it is shown that any Licensed Program does not meet this warranty, LICENSOR will, at its option, either correct the defect or error in the Licensed Program, free of charge, or make available to LICENSEE a substitute program. The foregoing warranty is exclusive and in lieu of all other warranties whether written, oral, implied or statutory. **No implied or statutory warranty of merchantability or fitness for a particular purpose shall apply.**

Software which have been developed or are owned by a third party licensor and which are sublicensed by LICENSOR to LICENSEE hereunder shall be warranted to LICENSEE only to the extent that the licensor of such sublicensed software warrants such sublicensed software to LICENSOR.

In the event that the Software does not conform to the representation above, LICENSEE's sole remedy and LICENSOR's sole and exclusive liability shall be to replace such Software with the then current released version of such Software.

5.0 Limitation of Liability. LICENSOR's and Third Party Licensors' liability in contract, tort or otherwise arising out of or in connection with this Agreement or the use of the Software is contained in and governed by the Limitation of Liability provision in the Purchase Contract. .

IN NO EVENT WILL LICENSOR AND/OR ANY THIRD PARTY LICENSOR(S) BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES, INCLUDING BUT NOT LIMITED TO ANY DAMAGES RESULTING FROM LOSS OF USE, LOSS OF DATA, LOSS OF PROFITS OR LOSS OF BUSINESS, WHETHER BASED ON CONTRACT, TORT, STRICT LIABILITY OR ANY OTHER THEORY OR FORM OF ACTION, EVEN IF LICENSOR AND/OR ITS THIRD PARTY LICENSOR(S) HAS BEEN ADVISED OF THE POSSIBILTY OF SUCH DAMAGES.

6.0 Term and Termination.

6.1 Unless earlier terminated as provided herein, the Term of this Agreement shall be perpetual

6.2 This Agreement may be terminated at any time by written mutual agreement of the parties

6.3 LICENSOR reserves the right, in addition to any other remedies it may retain in this Agreement or may be entitled to in law or equity, to terminate this Agreement at any time prior to the expiration of any Term in the event:

a) LICENSEE defaults in any payment due hereunder and such default continues unremedied for a period of thirty (30) calendar days following written notice from LICENSOR; or

b) LICENSEE merges with a third party that is a competitor of LICENSOR or if LICENSEE sells all or substantially all of its assets; or

c) LICENSEE petitions for reorganization, readjustment or rearrangement of its business affairs under any laws or governmental regulations relating to bankruptcy or insolvency, or is adjudicated bankrupt or if a receiver is appointed for LICENSEE, or if LICENSEE makes or attempts to make an assignment for the benefit of creditors, or is unable to meet its obligations in the normal course or business as they fall due; or

d) LICENSEE breaches any material term or condition or fails to perform or observe any obligations or covenants of this Agreement and such failure and/or breach is not remedied within thirty (30) days of written notice from LICENSOR.

6.4 Except for termination resulting from default by LICENSEE in any payment due to LICENSOR hereunder or from material breach by either party, in the event this Agreement expires or is terminated in accordance with the provisions hereof, neither LICENSOR nor LICENSEE shall be liable to the other because of such expiration, termination, or failure to renew or extend this Agreement.

6.5 Upon expiration or termination of this Agreement:

a) Any earned, but unpaid, sums shall become due and payable by LICENSEE to LICENSOR within ten (10) business days.

b) Within thirty (30) days after termination or expiration of this Agreement, LICENSEE will return to LICENSOR all confidential material including but not limited to all copies, partial copies, and/or modified copies (if any) of Software and any equipment owned by LICENSOR in LICENSEE's possession.

6.6 Sections 3, 6, 7 and 8 of this Agreement shall survive termination.

7.0 Assignment/Transfer. This Agreement, the licenses granted hereunder and the Software provided to LICENSEE under this Agreement may not be assigned, sub-licensed, or otherwise transferred by

LICENSEE to any third party without LICENSOR's prior written consent. Subject to the foregoing, any assignee hereunder shall be subject to all of the terms, conditions and provisions of this Agreement. Any attempt by LICENSEE to assign, sub-license, or transfer the Software, or any of the rights or duties contained in this Agreement, without LICENSOR's prior written consent shall be void.

8.0 **Severability.** If any term or provision of the Agreement is determined by a court or government agency of competent jurisdiction to be invalid under any applicable statute or rule of law, such provision(s) are, to that extent, deemed omitted, but this Agreement and the remainder of its provision shall otherwise remain in full force and effect.

9.0 **Limitation of Actions** No action, regardless of form, arising out of this Agreement may be brought by either party more than one (1) year after the cause of action has arisen.

10.0 **Waiver.** No waiver will be implied from conduct or failure to enforce rights. No waiver will be effective unless in writing signed on behalf of the party against whom the waiver is asserted.

11.0 **Exhibits.** All Exhibits attached to this Agreement are considered part of this Agreement and are incorporated by reference.

12.0 **Export Regulations.** LICENSEE agrees to comply with all export and re-export restrictions and regulations imposed by the U.S. Government and governing the export and re-export of the Designated Equipment and/or the Software.

13.0 **U.S. Government.** If LICENSEE is the U.S. Government now or in the future, use, duplication or disclosure of the Third Party Software Products and documentation by such LICENSEE shall be subject to the terms and conditions consistent with any applicable FAR provisions, for example, FAR 52.227.19.

14.0 **Internet Users.** Internet users under a CPU License model are prohibited from using the Third Party Software Products to develop or modify applications or perform other programming tasks.

15.0 **Agreement.** This Agreement is part of the overall Purchase Contract between LICENSOR and LICENSEE governing the purchase by LICENSEE from LICENSOR of a wireless communications system. The Purchase Contract and this Agreement contain the full understanding of the parties with respect to the subject matter hereof and supersede all prior understandings and writings relating thereto and which shall become binding on the Effective Date of this Agreement. No waiver, consent, modification, amendment, or change to the terms of this Agreement shall be binding unless agreed to in a writing signed by LICENSEE and LICENSOR. If there is any conflict between the terms of the Purchase Contract and this Agreement as to the Software, the terms of this Agreement will prevail.

LICENSOR: HARRIS CORPORATION RF COMMUNICATIONS DIVISION	**LICENSEE: MIAMI-DADE COUNTY**
By: _____	By: _____
Name: _____	Name: _____
Title: _____	Title: _____

EXHIBIT A

1.0 Listing of Software:

Item	Device	Software Description
1.	Mobile Radio	Trunking Protocol mobile device software for OpenSky, P25 and EDACSIP applications
2.	Mobile Radio	Conventional FM mobile device software for OpenSky, P25 and EDACSIP applications
3.	Portable Radio	Trunking Protocol portable device software for OpenSky, P25 and EDACSIP applications
4.	Portable Radio	Conventional FM portable device software for OpenSky, P25 and EDACSIP applications
5.	OpenSky Base Station	OpenSky Trunking Protocol base station
6.	OpenSky Base Station	OpenSky Conventional FM base station software
7.	P25 Base Station	DSP and SitePro application software for P25 trunked and conventional base station applications
8.	Dispatch Console	MaestroIP and VIP application software for OpenSky, P25 and EDACSIP applications.
9.	Telephone Interconnect	Telephone Interconnect software for OpenSky, P25 and EDACSIP applications.
10.	Interoperability Gateway	VIDA Conventional and NetworkFirst application software for OpenSky, P25 and EDACSIP applications.
11.	Key Management	Network Key Management, Key Loader, and Key Administration application software for P25 applications
12.	Data Gateway	PMIPS Data Gateway application software for P25 and EDACSIP applications.
13.	Site Management	Network Sentry application software (including SMI, SMAC, and OS) and SiteLink application software for P25 and EDACSIP applications.
14.	Network Switching Center	VNIC, HA, MDIS, RNM/CNM, UAS, and RSM software for OpenSky, P25 and EDACSIP applications.

EXHIBIT B

PRODUCT SPECIFIC LICENSE TERMS
Adaptive Server® Enterprise 12.5.2 (Small Business Edition, all platforms)
("Program")

IN ADDITION TO THE LICENSE TERMS SET OUT IN THE SOFTWARE LICENSE AGREEMENT, THE FOLLOWING ADDITIONAL OR DIFFERENT RIGHTS AND ACCOMPANYING OBLIGATIONS AND RESTRICTIONS SHALL APPLY TO THE PROGRAM FOR WHICH LICENSEE HAS PURCHASED A LICENSE.

The Program contains or is provided with component software products from both Sybase and third parties. Except as otherwise specifically authorized below, or by third parties as identified below, use of all components is limited to use in the same manner and capacity for which the Program as a whole is licensed. Additional licenses may be available from Sybase for a fee.

I. Terms Applicable to the Small Business Editions of the Program. This Program is limited to use on a single Machine with a maximum capacity (as specified by the manufacturer) of four (4) CPU's or less.

II. Developer Components. The Program contains or is provided with the Developer Components identified below. The Developer Components are licensed without further charge for Use by one Standalone Seat for the sole purpose of testing and developing applications in a non-production environment. No production or commercial use is permitted. Use and distribution of the Distributable Components (as specified in and subject to the limitations in the Documentation) of the Developer Components is permitted without charge. Partner may Use and modify the source code version of those portions of the Developer Components that are provided as sample code (if any) for its internal use only.

Developer Components
Software Developers Kit
InfoMaker® (not included on Mac OS X)
Physical Architect™ (not on Mac OS X)

III. Restricted Use Components. The Program may contain or be provided with the Restricted Use Components identified below (depending on the platform licensed). If included, Partner is licensed without further charge to Use only one (1) copy of each Restricted Use Component on one (1) Machine. Partner may Use the Restricted Use Components solely in conjunction with its use of the Program, and subject to any Additional Restrictions set forth below.

Restricted Use Components	Additional Restrictions
SQL Remote™	

IV. Free Download Components. The Program includes certain third party open source and other free download components ("Free Download Components"). Partner may have additional rights in the Free Download Components that are provided by the third party licensors of those components. The Free Download Components, and any such third party licenses and other third party-required notices, are identified in the Getting Started materials that accompany the Program, and are also available at www.sybase.com/thirdpartylegal (third party licenses and notices for Free Download Components included as part of the Developer Components and Restricted

Use Components are identified under the names of those products). THE FREE DOWNLOAD COMPONENTS ARE PROVIDED **"AS IS"** BY THE THIRD PARTY LICENSORS. ANY OBLIGATIONS UNDERTAKEN BY SYBASE IN THE AGREEMENT RELATING TO THE FREE DOWNLOAD COMPONENTS AS PART OF THE PROGRAM ARE PROVIDED BY SYBASE ALONE, AND NOT BY THE THIRD PARTY LICENSORS OF THE FREE DOWNLOAD COMPONENTS. NOTHING IN THE FOREGOING AFFECTS ANY PERFORMANCE WARRANTY PROVIDED BY SYBASE WITH REGARD TO THE PROGRAM AS A WHOLE.

EXHIBIT B
(continued)

PRODUCT SPECIFIC LICENSE TERMS
Adaptive Server® Enterprise v15.x (all editions, all platforms)
("Program")

IN ADDITION TO THE LICENSE TERMS SET OUT IN THE SOFTWARE LICENSE AGREEMENT ACCOMPANYING THIS PROGRAM, THE FOLLOWING ADDITIONAL OR DIFFERENT RIGHTS AND ACCOMPANYING OBLIGATIONS AND RESTRICTIONS SHALL APPLY TO THE PROGRAM FOR WHICH LICENSEE HAS PURCHASED A LICENSE.

The Program may contain or be provided with component software products from both Sybase and third parties. Except as set forth below, use of all components is limited to use in the same manner and capacity for which the Program as a whole is licensed. Additional licenses for Sybase components may be available from Sybase for a fee.

I. Limitations on Use of the Developer's Edition and Small Business Edition of Program.

A. Developer's Edition. The Developer's Edition of the Program is licensed for internal development and testing purposes only. Deployment licenses for any purpose (including, without limitation, usage in a general production environment or on a web server) must be purchased from Sybase before deployment of any production components contained in the Program.

B. Small Business Edition. The Small Business edition of the Program is limited to use on a single Machine with a maximum capacity (as specified by the manufacturer) of four (4) CPUs or fewer.

II. Sybase Developer Components/Distributable Components/Sample Code. The Program contains or is provided with the Developer Components identified below. The Developer Components are licensed without further charge for Use by one Standalone Seat for development purposes only. Use and distribution of the Developer Components and/or the Distributable Components of the Program (as specified in and subject to the limitations in the Documentation) is permitted without charge. LICENSEE may use and modify the source code version of those portions of the Program and/or the Developer Components that are provided as sample code (if any) for its internal use only.

Developer Components
Software Developers Kit
InfoMaker®
Physical Architect™

III. Free Download Components. The Program, including any Developer Components and Restricted Use Components provided with it, may include certain third party open source and other free download components ("Free Download Components"). LICENSEE may have additional rights in the Free Download Components that are provided by the third party licensors of those components. The Free Download Components and any such third party licenses and third party-required notices for the Program are identified at http://www.sybase.com/thirdpartylegal (third party licenses and notices for Free Download Components included as part of the Developer Components and Restricted Use Components are identified under the names of those products). Any obligations undertaken by Sybase in the Agreement relating to the Free Download Components as

part of the Program are provided by Sybase alone, and not by the third party licensors of the Free Download Components.

A. **FURTHER DISCLAIMER OF WARRANTIES AND LIABILITIES.** THE FREE DOWNLOAD COMPONENTS ARE PROVIDED "AS IS" BY THE THIRD PARTY LICENSORS, WHO DISCLAIM ALL LIABILITIES, DAMAGES (EVEN IF THEY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES), WARRANTIES, INDEMNITIES AND OTHER OBLIGATIONS OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO THE FREE DOWNLOAD COMPONENTS. NOTHING IN THE FOREGOING AFFECTS ANY PERFORMANCE WARRANTY PROVIDED BY SYBASE WITH REGARD TO THE PROGRAM AS A WHOLE.

EXHIBIT D – P25 SOFTWARE FX AGREEMENT

HARRIS

SOFTWARE FX

AGREEMENT

FX Sales Order No.
Customer P.O. No.

THIS SOFTWARE FX AGREEMENT ("Agreement") is hereby entered into between Harris Corporation, a Delaware Corporation, through its RF Communications Division ("Seller") and ("Subscriber") on the following terms and conditions:

1. SCOPE OF AGREEMENT

During the term of this Agreement, as set forth in Section 7, Seller agrees to provide Subscriber with software updates, documentation updates and other services, as set forth in Section 3 of this Agreement, for the software developed and provided by Seller and contained within the Subscriber's Designated Seller System(s) as described in Schedule A to this Agreement.

2. DEFINITIONS

As used in this Agreement, the following terms shall have the meanings set forth below.

A. "Contract" means the agreement for the purchase of the Designated System(s).

B. "Current Software Release Levels" means the most recent Software release announced by Seller as being commercially available. "Commercially available" does not include interim releases provided as emergency fixes or software released for beta test or noncommercial or similar purposes.

C. "Designated System(s)" means the Seller system(s) purchased by Subscriber and identified in Schedule A to this Agreement. The Designated System does not include Vendor Products, Excluded Products or other systems to which the Designated System may be linked.

D. "Encrypted Features" means those SOFTWARE product features which are not included as part of the standard Seller system component or radio product software and which are activated by Seller only upon their being licensed to Subscriber. Examples of such features are Landline Data for the Seller system components and Priority System Scan for the Seller portable radios.

E. "Licensed Programs" means all Seller Software programs and associated documentation nonexclusively licensed to Subscriber by Seller for use solely with Subscriber's Designated System, under one or more licenses, for which services are to be provided hereunder.

F. "Software" means computer programs contained on a magnetic tape, semiconductor device or other memory device or system memory consisting of: (a) hardwired logic instructions which

manipulate data in a processor and control input-output operations and error diagnostic and recovery routines, and (b) instruction sequences in machine-readable code that control transaction processing, peripheral equipment and administration and maintenance functions, as well as associated documentation used to describe, maintain and use the programs.

G. "SOFTWARE FX Classification" means the classification of Subscriber's Designated System(s) within categories of system type and complexity, as defined by Seller from time to time, for the purpose of determining Subscriber's annual SOFTWARE FX Fee.

H. "Updates" means any commercially available corrections, modifications or enhancements to the Licensed Programs generally released and/or provided by Seller.

I. "Seller Network Solutions Provider" (NSP) means a person or entity authorized by Seller to sell certain Seller products and systems as an authorized NSP in accordance with the provisions of a NSP Agreement between Seller and such person or entity.

J. "SOFTWARE FX" means the software maintenance program entered into between Seller and the subscriber as described in this document.

3. DESCRIPTION OF SOFTWARE FX PROGRAM FEATURES

A. Software Releases Included. With respect to each Licensed Program, and subject to the conditions of this Agreement, Seller will provide the Software Updates described below during the term of this Agreement. All Updates shall be shipped to Subscriber's SOFTWARE FX contact designated in Schedule A of this Agreement via protective packaging containing a quantity of programmed Software media (e.g., Proms, Tapes, Compact Discs or diskettes) necessary for Subscriber to fully implement the Software Updates within its Designated System. In addition, each shipment of Software Updates shall contain at least one set of Software release notes detailing the contents of the Software Update and providing installation instructions. All Software Updates and documentation shipped to Subscriber shall be considered part of the Licensed Programs, shall be subject to the terms and conditions of the nonexclusive licenses granted by Seller to Subscriber, and Seller shall be free to license others with respect thereto.

i. Software Updates Upon Enrollment. As determined by the system audit described in Section 3.C.i. of this Agreement, Seller shall provide to Subscriber the Software Updates needed, if any, to bring the Licensed Programs within Subscriber's Designated System up to Seller's Current Software Release Levels. Such Updates will be provided at no additional cost to Subscriber provided Subscriber has enrolled in the SOFTWARE FX program within the enrollment deadline specified in Section 4.A of this Agreement and provided Subscriber has installed, at Subscriber's expense, the compatible hardware necessary to accommodate the Software Updates.

ii. Subsequent Software Updates. During the term of this Agreement and subject to Subscriber's performance of its obligations, Seller shall provide to Subscriber Software Updates, released by Seller subsequent to Subscriber's enrollment in SOFTWARE FX, for the Licensed Programs contained within Subscriber's Designated System. Such subsequent Software Updates may include:

a. Enhancements and/or corrections to existing features for all Designated System backbone components and/or radios;

b. New features implemented via the system components already contained within Subscriber's Designated System, including unencrypted features for the system backbone components and/or unencrypted features for the radio products.

iii. Software Replacements. In the event any Software media contained within Subscriber's Designated System incurs damage, whether from acts of Nature or human error, Seller shall provide replacements for such Software to Subscriber at no additional charge, subject to the terms and conditions of this Agreement.

B. Software Releases Not Included. The following Software releases are not included within the terms of this Agreement:

i. New Products. Any Software products released by Seller for which an earlier generation or release level is not already contained within Subscriber's Designated System. If Subscriber wishes to implement such Software products within its Designated System, it will need to license such products at the fees then in effect and purchase any necessary compatible hardware for operation of such Software.

ii. Encrypted Features. Encrypted features for Seller's products are not included under this Agreement. Such features must be licensed separately by Subscriber at the fees then in effect.

iii. Third Party Software. To the extent that such Vendor Products are available and compatible with the Designated System, Seller reserves the right to charge an additional fee for upgrades to software programs that are licensed by a third party for use with the Seller system yet are not the property of Seller.

C. Services Included. Subject to the terms and conditions of this Agreement and Subscriber's compliance therewith. Seller will provide to Subscriber the services described below. Unless otherwise indicated, these services are provided to Subscriber at no additional charge.

i. System Configuration Baseline and Documentation Update. As part of the initial enrollment process for SOFTWARE FX, Seller may deem it necessary to conduct a system audit of Subscriber's Designated System(s) to be covered under this Agreement. If said audit is required, Seller, or its Seller Network Solutions Provider will conduct the audit. . This audit will be used to verify Subscriber's first-year SOFTWARE FX Fee and to determine the Software release levels for Licensed Programs contained within Subscriber's System at the time of enrollment, together with any hardware updates necessary to accommodate Software Updates. .

ii. SOFTWARE FX Features Summary. Prior to the general release by Seller of any Software Updates, Seller shall make available a SOFTWARE FX Features Summary announcing the impending release, and detailing its contents and impact, if any, on any other Seller hardware or Software components. Subscriber acknowledges that older hardware may not have sufficient capacity for the operation of the Software Updates. NOTHING IN THIS AGREEMENT OR OTHERWISE REQUIRES SELLER EITHER TO DESIGN UPDATES THAT REMAIN COMPATIBLE WITH DESIGNATED SYSTEM HARDWARE OR TO PROVIDE ADDITIONAL HARDWARE UNDER THIS AGREEMENT, AND SUBSCRIBER WAIVES ANY SUCH DUTY OR OBLIGATION BY SELLER.

iii. Installation Phone Support. Subscriber's SOFTWARE FX subscription shall include telephone support by Seller's Technical Assistance Center (TAC) personnel with respect to the installation of Software Updates. Such support will be available during Seller's normal

business hours (8:00 a.m. to 5:00 p.m. Eastern Standard Time Monday through Friday, excluding holidays) and for a period of ninety (90) days from the date the Software Update is released to Subscriber. After-hours emergency support will be available through Sellers optional System Maintenance services at prices then in effect, provided that Subscriber is in compliance with the terms of this Agreement.

iv. Upgrade Planning. If Subscriber is in compliance with the terms of this Agreement and its Designated System is classified as a Single Node Network or higher, upon request by Subscriber, Seller, or its Network Solutions Provider, shall provide an annual consultation service at Subscriber's site to review Seller's planned Software releases and evaluate the operational and financial impact such releases may have on Subscriber's Designated System. If Subscriber is in compliance with the terms of this Agreement and its Designated System is classified below a Single Node Network, upgrade planning is not included within the terms of this Agreement but can be obtained from Seller at the rates then in effect for such service.

D. Services Not Included. The following services/products are not included within the terms of this Agreement:

i. Installation of Terminal Software Updates. Installation of Software Updates to terminal products is not included, but such installations may be obtained through Seller, or its Network Solutions Provider , at the rates then in effect for such service provided that Subscriber is in compliance with the terms of this Agreement.

ii. Installation of System Software Updates. Installation of System Software Updates by Seller is not included, but such installations may be obtained from Seller, or its Network Solutions Provider, , at the rates then in effect for such service, provided that Subscriber is in compliance with the terms of this Agreement.

iii. Hardware Upgrades. In the occasional event that a Software Update released requires a corresponding hardware change, Subscriber will need to purchase separately the compatible hardware required. Seller will endeavor to notify Subscriber in advance via the SOFTWARE FX Features Summary or, if applicable, via SOFTWARE FX's upgrade planning service of any hardware changes needed in order to implement a Software Update. No such notice will be given for Vendor Products or Excluded Products, and no hardware upgrade may be available.

iv. Optional Support Services. Other Software support services Subscriber may require, including, but not limited to, training, customized software programming or troubleshooting through Seller's Technical Assistance Center are outside the scope of this Agreement but may be obtainable through other programs offered by Seller.

v. Remote Site Transportation Costs. For those sites that are not readily accessible by motor vehicle and require special transportation arrangements in order to gain access for Designated System audits, Subscriber will be responsible, at its expense for providing transportation to the site and reasonable lodging and other support where same day service is not reasonably available.

4. CONDITIONS FOR SERVICE

A. Enrollment Deadline. Subscriber agrees to enroll in SOFTWARE FX no later than sixty (60) days after the earlier of: (i) the first expiration date of the warranty provided by Seller for any

component of Subscriber's Designated System, or (ii) the first expiration date of the warranty provided by Seller for any of the Software within Subscriber's Designated System. If either such warranty already has expired when Subscriber is first offered the SOFTWARE FX Program, Subscriber will be given a 60-day grace period in which to enroll in SOFTWARE FX. A Subscriber meeting the enrollment deadline will receive, at no additional charge as described in Section 3.A.i. of this Agreement; the Software Updates needed to bring its Designated System up to Seller's Current Software Release Levels to the extent the Designated System hardware is compatible with such Software Updates.

B. Subscriber Contact. Seller requests that Subscriber identify its Subscriber Contact in Section 5.B. of Schedule A to this Agreement. Subscriber shall designate a person with sufficient technical expertise to be able to interact knowledgeably with Seller's technical support personnel. To the maximum extent practicable, Subscriber's communications with Seller (with regard to the Software Updates provided under this Agreement) should be through the Subscriber Contact.

C. Installation. Subscriber agrees to properly install the Software Updates provided by Seller in order of receipt from Seller. Subscriber understands that Software support provided by Seller is limited to Seller's Current Software Release Levels of Licensed Programs for the Designated System.

D. Media Labeling. Subscriber agrees that if it makes copies of any Software Update supplied by Seller, for backup purposes, Subscriber will reproduce any copyright notice and/or proprietary notice appearing on and/or in such Update and will label all copies with all information, including part numbers and revision levels, provided on the set of media provided by Seller. Nothing herein grants Subscriber any right to sublicense any Software or to distribute copies to any other person, and such sublicensing and distribution is expressly prohibited.

E. No Modification of Software. Subscriber agrees not to modify, enhance or otherwise alter any Software unless specifically authorized in the user documentation provided by Seller with such Software Update or unless the prior written consent of Seller is obtained. Under no circumstance shall Subscriber create or permit the creation of any derivative work from any Software or the reverse engineering or replication of any Software.

F. Seller's obligations under this Agreement are conditional upon Subscriber's compliance with the terms of this Agreement and any Contract then in effect between Seller and Subscriber.

5. FEES, TERMS OF PAYMENT & TAXES

A. SOFTWARE FX Fee. Subscriber agrees to pay Seller or its Network Solutions Provider an annual SOFTWARE FX Fee, in the amount set forth in Schedule A to this Agreement, plus taxes pursuant to Subsection E below, for SOFTWARE FX services provided during the term as defined in Schedule A. Subsequent years' SOFTWARE FX Fees, beyond Subscriber's first-year fee specified in Schedule A, may or may not remain at the same rates. Any changes made to Subscriber's Designated System(s) or mobile equipment which results in their falling into another SOFTWARE FX Classification will be reflected in the following year's SOFTWARE FX Fee. If Seller's rates for SOFTWARE FX should increase, Subscriber will be notified in writing of any such increases at least one hundred twenty (120) days prior to the end of Subscriber's yearly SOFTWARE FX period then in effect.

B. Other Charges. Subscriber understands that if it chooses to delay its enrollment in SOFTWARE FX beyond the deadline described in Section 4.A. of this Agreement, Subscriber will need to

license, at the applicable fees then in effect, the initial Software Updates needed to bring its System up to Seller's Current Software Release Levels, as well as any hardware which may be required to accommodate such Updates.

C. Due Date. Subscriber's first-year SOFTWARE FX Fee will be invoiced upon receipt of this Agreement signed by Subscriber. Payment will be due thirty (30) days from the date of the invoice. Subscriber's subsequent years' SOFTWARE FX Fees will be automatically invoiced sixty (60) days prior to the commencement of the subsequent year's term. Payment of all amounts due is a condition precedent to Seller providing any future Software Updates or other services.

D. Payment Terms. Payment shall be made in United States currency. All amounts over thirty (30) days past due shall accrue interest from the due date at the rate of one and one-half percent (1-1/2%) per month (or such lesser rate as is the maximum permissible rate under applicable law). In addition to payment of interest, Subscriber agrees to pay all collection costs and enforcement expenses, including reasonable attorneys' fees, if Seller must bring a proceeding to collect any amount owed by Subscriber or to enforce any rights in any bankruptcy or similar proceeding involving Subscriber.

E. Taxes. In addition to all fees specified herein, Subscriber shall pay the gross amount of any present or future sales, use, excise, value-added, or other similar tax applicable to the price, sale or delivery of any products or services furnished hereunder or to their use by Subscriber, unless Subscriber shall otherwise furnish Seller with a tax-exemption certificate acceptable to the applicable taxing authorities.

F. Discontinuance. Subscriber understands that if Subscriber discontinues and then subsequently resumes participation in the SOFTWARE FX Program, Subscriber will be required to pay a re-entry fee for any benefits provided to Subscriber upon re-entry to the SOFTWARE FX Program plus the SOFTWARE FX Fee for the term then commencing.

6. TITLE

The Licensed Programs and all copies thereof, in whole or in part, and all Software, documents and materials which may be provided by Seller hereunder for use in connection with such Programs are furnished nonexclusively as part of the Licensed Program(s) defined in the applicable software license agreement(s) and shall remain the exclusive property of Seller and will be held in confidence by Subscriber in accordance with the provisions of each such software license agreement. Under no circumstance shall Subscriber create or permit the creation of any derivative work from any Software or the reverse engineering or replication of any Software.

7. TERM & TERMINATION

A. SOFTWARE FX services will be provided by Seller to Subscriber for an initial one-year term, as defined in Schedule A to this Agreement, and thereafter on a year-to-year basis as provided herein, subject to prior payment in full of all outstanding fees and charges at the time of renewal and compliance with the provisions of this Agreement.

B. Provided Subscriber is then in full compliance with all of its obligations, Subscriber's SOFTWARE FX enrollment shall be automatically renewed at the end of the first- year term for a second year's term and on a succeeding yearly basis thereafter unless either party notifies the

other in writing, at least ninety (90) days prior to the end of the yearly period then in effect, that this Agreement will not be renewed.

C. Seller shall have the right to suspend or terminate this Agreement upon thirty (30) days' prior written notice if Subscriber fails to pay any fees or charges due hereunder or if Subscriber commits any other breach of this Agreement or commits any breach of any applicable Software license agreement for any Licensed Program being supported under this Agreement, any contract between Subscriber and Seller or any other obligation of Subscriber to Seller or any of its affiliates.

D. Seller shall have the right to discontinue providing SOFTWARE FX services (including Updates) for any Licensed Program supported under this Agreement. Software Updates may be discontinued at any time at Seller's discretion. Other services shall not be discontinued without at least ninety (90) days' prior written notice by Seller to Subscriber. Notwithstanding any other provision of this Agreement, as Subscriber's sole and exclusive remedy Seller will provide a pro-rata refund of Subscriber's annual SOFTWARE FX Fee if Seller elects to discontinue providing SOFTWARE FX services for any Licensed Program supported under this Agreement.

E. Except as provided in Section 7. D. above, under no circumstances (including any termination of this Agreement) shall any fees paid pursuant to this Agreement be refundable once paid by Subscriber.

8. SOFTWARE WARRANTY

Seller warrants, for a period of ninety (90) days from delivery of a Software Update, that any Software furnished to Subscriber shall be capable of successfully operating on the designated hardware in accordance with the logic defined in the operator's manuals or other supporting documentation when Subscriber's Designated System is supplied with correct input data. If, on the basis of evidence submitted to Seller within the 90 day term of this warranty, it is shown that any Software does not meet this warranty, Seller, at its option, will either correct the defect or error in the Software free of charge and provide a corrected Software Update, or make available to Subscriber a satisfactory substitute program. The foregoing warranty is exclusive and in lieu of all other warranties whether written, oral, implied or statutory. **NO IMPLIED OR STATUTORY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY, ALL OF WHICH ARE WAIVED IN FULL BY SUBSCRIBER. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, INDIRECT OR EXEMPLARY DAMAGES, OR FOR ANY LOST PROFITS OR REVENUES OR OTHER INDIRECT ECONOMIC PREJUDICE, OR FOR ANY EQUITABLE REIMBURSEMENT OR RECOVERY, ALL OF WHICH ARE HEREBY WAIVED IN FULL BY SUBSCRIBER.**

9. LIMITATION OF LIABILITY

The total liability of Seller, including its subcontractors or suppliers, for all direct or indirect claims of any kind for any loss, cost, expense, liabilities, or damage, whether in contract, warranty, tort (including negligence or infringement), strict liability, equity or otherwise, directly or indirectly arising out of, connected with, or resulting from the performance or non-performance of this Agreement (or any related software license agreement) or from the furnishing of any good or service pursuant to this Agreement (or any related software license agreement) shall not exceed the amount of the most recent annual SOFTWARE FX Fee paid by Subscriber under this Agreement. IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE OR INFRINGEMENT), STRICT LIABILITY, EQUITY, OR OTHERWISE, SHALL SELLER OR ITS

AFFILIATES, AGENTS, OFFICERS, DIRECTORS, EMPLOYEES, VENDORS, SUBCONTRACTORS OR SUPPLIERS, BE DIRECTLY OR INDIRECTLY LIABLE FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, INDIRECT OR EXEMPLARY DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR REVENUES, LOSS OF USE OF EQUIPMENT, COST OF CAPITAL, COST OF SUBSTITUTE GOODS, FACILITIES, SERVICES OR REPLACEMENT POWER, DOWNTIME COSTS, INTEREST, ATTORNEYS FEES OR LITIGATION COSTS OR CLAIMS OF SUBSCRIBER'S CUSTOMERS FOR SUCH DAMAGES. The provisions of this Section, Limitation of Liability, shall apply notwithstanding any other provisions of this Agreement (or any related software license agreement). The terms and provisions of this Section shall survive the termination or expiration of this Agreement.

10. CONFIDENTIALITY

A. Subscriber agrees not to disclose, provide or otherwise make available to any third party any Software or portion thereof, or any technical information provided to Subscriber under the provisions of this Agreement (hereinafter "Confidential Information"), and to hold such materials in confidence using a strict degree of care to protect the Confidential Information from unauthorized disclosure.

B. Subscriber's obligation with respect to disclosure of Confidential Information shall terminate with respect to any Confidential Information which Subscriber can show was rightfully in its possession prior to the disclosure made by Seller, or which subsequently came into its possession through a third party under no obligation of confidentiality to Seller, or which was independently developed by employees of Subscriber who did not have access to Confidential Information or which becomes a matter of public knowledge other than as a breach of any obligation owed to Seller, or which is disclosed with the prior written permission of Seller.

C. Notwithstanding the obligations on disclosure and use set forth herein, Subscriber may disclose Confidential Information to third parties insofar as is necessary to satisfy a proper court order, subpoena, litigation discovery demand or administrative or regulatory proceeding order, provided that Subscriber promptly notifies Seller in writing of such order or demand prior to any disclosure and takes advantage of all available and appropriate measures to prevent further disclosure of the Confidential Information.

D. The provisions of this Section shall survive the expiration or termination of this Agreement.

11. FAILURE TO ENFORCE

The failure of either party to enforce, at any time or for any period of time, any provision of this Agreement in accordance with its terms shall not be construed to be a waiver of such provision or of the right of such party thereafter to enforce each and every such provision.

12. GOVERNING LAW AND DISPUTE RESOLUTION

A. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Virginia, excluding its rules pertaining to conflict of laws. Subject to the provisions of Subsection A, Subscriber consents to the personal jurisdiction of the state and federal courts in the Commonwealth of Virginia, which courts shall constitute the exclusive forum for all court proceedings involving the enforcement of this Agreement and the resolution of

all Disputes related to the subject of this Agreement, whenever, wherever and however arising, whether at law, in equity or otherwise and whether the Dispute involves an alleged breach of contract, violation of law or tort of any kind.

B. Each party acknowledges that jury trials are slower and more expensive than court trials without juries, and, considering the complex nature of the technology and other issues which may give rise to Disputes, the parties agree that any court proceedings commenced by or against either party shall be resolved by a court without a jury, and each party waives its right to a jury as to any disputes or claims arising under or relating to this Agreement, whether for breach or enforcement of contract, tort or otherwise, including all Disputes as defined herein.

13. NO THIRD PARTY BENEFICIARIES; ASSIGNMENT

The provisions of this Agreement are solely for the benefit of Subscriber and Seller. No other person or entity is intended to be a beneficiary of nor is entitled to rely upon or enforce any of the provisions of this Agreement or to assert any claim for nonperformance of this Agreement by any party. This Agreement may not be assigned by either Seller or Subscriber without the prior written consent of the other party. The provisions of this Agreement shall inure to the benefit of and be binding upon Subscriber and Seller and their respective permitted successors and permitted assignees (if any).

14. NOTICES

All notices required or permitted hereunder shall be in writing and shall be deemed validly given upon being hand delivered, or upon receipt if sent by facsimile, e-mail or if mailed by certified mail, return receipt requested, to Subscriber at the address set forth in Schedule A or to Harris Corporation at 221 Jefferson Ridge Parkway, Lynchburg, VA. 24501, Attention: Software Services Group, or to such other address as either party may designate to the other in writing.

15. ENTIRE AGREEMENT, EXECUTION AND MODIFICATION

A. This Agreement contains the entire and only agreement between the parties concerning the subject matter hereof, and all prior representations and understandings in connection with the subject matter hereof are superseded and merged herein, and any representation or understanding not incorporated herein shall not be binding upon either party.

B. This Agreement shall not become effective until signed on behalf of Seller by one of its officers or by an executive duly authorized by Seller's Vice President. No change, modification, ratification, rescission, or waiver of this Agreement or any of the provisions hereof shall be binding upon Seller unless made in writing and signed on its behalf in like manner.

C. SELLER DOES NOT ASSUME ANY OBLIGATIONS OR LIABILITIES IN CONNECTION WITH THE SOFTWARE OR SERVICES OTHER THAN THOSE EXPRESSLY STATED IN THIS AGREEMENT, AND DOES NOT AUTHORIZE ANY PERSON (INCLUDING SELLER'S NETWORK SOLUTIONS PROVIDERS OR SUBCONTRACTORS OR SUPPLIERS) TO ASSUME FOR SELLER ANY OTHER OBLIGATIONS OR LIABILITIES.

D. This Agreement is a standard form agreement subject to the terms and conditions agreed to by the parties in the Contract and, in the event of a conflict, the general terms of the Contract control over the specific terms of the agreement.

[SIGNATURES ON FOLLOWING PAGE]

IN WITNESS WHEREOF, and intending to be legally bound, the parties hereto have caused this Agreement to be executed by their duly authorized officers or representatives.

SELLER:	**SUBSCRIBER:**
HARRIS CORPORATION **RF COMMUNICATIONS DIVISION**	
By: _____	By: _____
Name:	Name:
Title:	Title:
Date:	Date:

Harris Corporation
RF Communications Division
221 Jefferson Ridge Parkway
Lynchburg, VA. 24501

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SOFTWARE FX

AGREEMENT

SCHEDULE A

1. Term of SOFTWARE FX Agreement
The services, as described in the SOFTWARE FX Agreement to which this Schedule A is attached, will be
Provided for the initial period beginning and ending
and will be automatically renewed for one-year periods thereafter pursuant to Section 7 of the Agreement.

2. Designated System.
The Designated System(s) for which the SOFTWARE FX Agreement will apply is (are):

System Name	System Classification	System Location
	EDACS	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	

3. *SOFTWARE FX Fees*

The first-year SOFTWARE FX Fee for the above Designated System(s) is as follows:

System Name	SOFTWARE FX Option	System Fee

Subscriber's subsequent years' SOFTWARE FX Fees will be determined in accordance with Section 5.A. of the Agreement.

4. *Fiscal Year Billing Option*

If Subscriber requests billing for the first and subsequent years' SOFTWARE FX Fees coincident with Subscriber's fiscal year, please indicate the fiscal year end date:

m m d d

If this option is selected, Subscriber's initial SOFTWARE FX term will be from the effective date shown in Section 1 of this Schedule A through the next fiscal year end date and the first-year SOFTWARE FX Fee will be prorated accordingly.

5. *Designated Subscriber Contact(s)*

A. All notices regarding the SOFTWARE FX Agreement to which this Schedule A is attached are to be sent by Harris Corporation to:

Contact's Name:
Title:
Address:
(Do not use P.O. Boxes)
Telephone:

FAX No.

B. All Software Updates to be provided by Seller to Subscriber under this Agreement are to be sent to (if different than 5.A. above):

Contact's Name:
Company Name:
Title:
Address:
(Do not use P.O. Boxes)

Telephone:
FAX No.

6. This Schedule A is agreed to by:

Seller:	Subscriber Name:
Harris Corporation RF Communications Division 221 Jefferson Ridge Parkway Lynchburg, VA. 24501	
By: _____	By: _____
Name:	Name:
Title:	Title:
Date:	Date:

EXHIBIT E – SECURITY UPDATE MANAGEMENT (SUMS) PLUS AGREEMENT

HARRIS

SECURITY UPDATE MANAGEMENT SERVICE AGREEMENT

Sales Order No.
Customer P.O. No.

This SECURITY UPDATE MANAGEMENT SERVICE AGREEMENT ("SUMS AGREEMENT" or "AGREEMENT") is hereby entered into between Harris Corporation, a Delaware Corporation, through its RF Communications Division ("Seller") and _____ ("Subscriber") on the following terms and conditions:

1. SCOPE OF AGREEMENT

During the term of this AGREEMENT, as set forth in Section7, Seller agrees to provide Subscriber with software updates, documentation updates and other services, as set forth in Section 3of this AGREEMENT, for the products developed and provided by Seller and contained within the Subscriber's Designated System(s) as described in Schedules A to this Agreement.

2. DEFINITIONS

As used in this SUMS AGREEMENT, the following terms shall have the meanings set forth below.

A. "Contract" means the agreement for the purchase of the Designated System(s).

B. "Current Software Release Levels" means the most recent Software release announced by Seller as being commercially available. "Commercially available" does not include interim releases provided as emergency fixes or software released for beta test or noncommercial or similar purposes.

C. "Designated System(s)" means the Seller system(s) purchased by Subscriber and identified in Schedule A to this Agreement. The Designated System does not include Vendor Products, Excluded Products or other systems to which the Designated System may be linked.

D. "Encrypted Features" means those SOFTWARE product features which are not included as part of the standard Seller system component or radio product software and which are activated by Seller only upon their being licensed to Subscriber. Examples of such features are Landline Data and Multiple Channel Partitioning for the Seller system components and Priority System Scan for the Seller portable radios.

E. "Licensed Programs" means all Seller Software programs and associated documentation nonexclusively licensed to Subscriber by Seller for use solely with Subscriber's Designated System, under one or more licenses, for which services are to be provided hereunder.

F. "Seller Network Solutions Provider" (NSP) means a person or entity authorized by Seller to sell certain Seller products and systems as an authorized NSP in accordance with the provisions of a NSP Agreement between Seller and such person or entity.

G. "Product Vulnerability Alerts" (PVAs) means security vulnerabilities reported against a product supplied by the Seller. Notifications of these PVAs are obtained from multiple sources; governmental, vendor, independent and open source databases.

H. "PVA Evaluation" means the Seller's process for evaluation of a potential Product Vulnerability Alert affecting products provided be the Seller.

I. "Security Updates" means software updates that mitigate, address and/or resolve product security vulnerabilities in system components offered by the Seller. These updates may include Vendor Patches and/or Vendor Work-Arounds.

J. "Security Update Distribution" means the Seller providing Security Updates to which the Subscriber is entitled under the terms of this AGREEMENT, affecting components of the Subscribers radio system as defined in Schedule A.

K. "Security Update Management Service Products" (SUMS PRODUCTS) means the optional "for-fee" services that provides periodic, security-related software updates. A current SOFTWARE FX agreement is a prerequisite to the establishment of a SUMS AGREEMENT. Unless specifically excluded the use of the term SUMS PRODUCTS applies to all Seller Security Update Service products including but not limited to SUMS*watch*, SUMS*watch*plus, SUMS, and SUMS*plus*.

L. "Software" means computer programs contained on a magnetic tape, semiconductor device or other memory device or system memory consisting of: (a) hardwired logic instructions which manipulate data in a processor and control input-output operations and error diagnostic and recovery routines, and (b) instruction sequences in machine-readable code, excluding human-readable source code, that control transaction processing, peripheral equipment and administration and maintenance functions, as well as associated documentation used to describe, maintain and use the programs.

M. "SOFTWARE FX" means the optional "for-fee" service that provides Subscriber with software updates, documentation updates and other services.

N. "SUMS" means optional, update services provided under an active SUMS AGREEMENT with functionality listed in section 3.C.ii.

O. "SUMS*plus*" means optional, enhanced update services provided under an active SUMS AGREEMENT with functionality listed in section 3.C.iii.

P. "SUMS*watch*" means optional enhanced update services provided under an active SUMS AGREEMENT combining SUMS*watch* functionality listed in section 3.C.iv with SUMS functionality with listed in section 3.C.ii.

Q. "SUMS*watch*plus" means optional enhanced update services provided under an active SUMS AGREEMENT combining SUMS*watch* functionality listed in section 3.C.iv with SUMS*plus* functionality listed in section 3.C.iii.

R. "Tech-Link" is the technical information section of Seller's web site. Access is restricted to authorized subscribers via user ID and password login.

S. "Vendor Patches" means software updates provided by third-party software vendors that mitigate, address and/or resolve PVA(s).

T. "Vendor Work-Arounds" means configuration and/or procedural changes provided by third-party software vendors that mitigate, address and/or resolve PVA(s).

3. DESCRIPTION OF SUMS PRODUCTS FEATURES

A. Security Update Distributions Inclusions. Subject to the conditions of the Subscriber's SOFTWARE FX and this SUMS AGREEMENT, Seller will provide periodic SECURITY UPDATES described below during the term of this AGREEMENT. All SECURITY UPDATES shall be provided to Subscriber's contact designated in Schedule A. SECURITY UPDATES shall contain software necessary for the Subscriber to fully implement the Security Update within the Designated System and at least one set of Software release notes detailing the contents of the SECURITY UPDATES and providing installation instructions. All Seller produced components of the SECURITY UPDATES and documentation provided to Subscriber shall be considered part of the Licensed Programs, shall be subject to the terms and conditions of the nonexclusive licenses granted by Seller to Subscriber, and Seller shall be free to license others with respect thereto.

i. Security Updates Upon Enrollment. As determined by the system audit described in Section 3.C.i. of this AGREEMENT, Seller shall provide to Subscriber the SECURITY UPDATES needed, if any, to bring the Licensed Programs within Subscriber's Designated System up to Seller's current security software release levels. Such updates will be provided at no additional cost to Subscriber provided Subscriber has enrolled in the SOFTWARE FX and SUMS PRODUCTS programs within the enrollment deadline specified in Section 4.A of this AGREEMENT and provided Subscriber has installed, at Subscriber's expense, any compatible hardware necessary to accommodate the SECURITY UPDATES.

ii. Subsequent Security Updates. During the term of this AGREEMENT and subject to Subscriber's performance of its obligations, Seller shall provide to Subscriber SECURITY UPDATES, released by Seller subsequent to Subscriber's enrollment in the SUMS PRODUCTS program, for the Licensed Programs contained within Subscriber's Designated System. Such subsequent SECURITY UPDATES may include:

a. Vendor Patches and/or Vendor Work-Arounds, enhancements, corrections and/or changes, made by third-party software vendors to software included in Seller provided products subject to the Subscriber's right to receive the third-party software. The Subscriber may be required to have currently executed services/support agreement(s) with third-party vendor(s) separate from this SUMS AGREEMENT;

iii. Software Replacements. In the event any Security Update Distribution media for Subscriber's Designated System incurs damage, whether from acts of Nature or human error, Seller shall provide replacements for such Software to Subscriber at no additional charge, for a period of one hundred

twenty (120) days from the date of the original media's delivery, subject to the terms and conditions of this AGREEMENT.

B. Security Update Distribution Exclusions. The following are not included within the terms of this AGREEMENT:

i. Third Party Software. To the extent that such Vendor Products are available and compatible with the Designated System, Seller reserves the right to charge an additional fee for upgrades to software programs that are licensed by a third party for use with the Seller system yet are not the property of Seller. The Subscriber may be required to have currently executed services/support agreement(s) with third-party vendor(s) separate from this SUMS AGREEMENT. Subscriber must provide evidence of a current services/support agreement at the seller's request.

C. Services Included. Subject to the terms and conditions of this AGREEMENT and Subscriber's compliance therewith, Seller will provide to Subscriber the services described below as specified by the Security Update Service Type in Schedule A. Unless otherwise indicated, these services are provided to Subscriber at no additional charge.

i. System Configuration Baseline Update. As part of the initial enrollment process for SUMS, Seller may deem it necessary to conduct a system audit of Subscriber's Designated System(s) to be covered under this AGREEMENT. If said audit is required, Seller, or its Network Solutions Provider will conduct the audit. This audit will be used to verify Subscriber's first-year SUMS PRODUCTS Fee and to determine the Software release levels for Licensed Programs contained within Subscriber's System at the time of enrollment, together with any hardware updates necessary to accommodate Security Updates.

ii. SUMS PRODUCTS Features Summary.

a. The Seller will use reasonable efforts to monitor pertinent governmental, vendor, independent and open source databases for PVAs and for PVA resolutions that affect products provided by the Seller that are part of the Subscriber's Designated System.

b. The Seller will make every reasonable effort to verify that the PVA resolutions, Vendor Patches and/or Vendor Work-Arounds, do not adversely affect the Seller's stated performance of the Subscriber's Designated System.

c. The Seller will provide Security Update Distributions to the Subscriber at periodic intervals targeting quarterly releases. The interval shall be determined solely by the Seller. More frequent Security Update Distributions may be required to address urgent product security vulnerabilities. Security Update Distributions on other than a quarterly basis do not constitute a contractual default by the Seller.

d. The Seller will provide Security Update Distributions in a means suitable for use on the target devices of the Subscriber's Designated System. As set forth in Section 4.C of this AGREEMENT, it shall be the Subscriber's responsibility to apply the Security Update

Distributions to target devices following the Patch Installation and Patch Application instructions in the Release Notes accompanying each Security Update Distribution. Optional On-Site Support Services may be contracted by the Subscriber, outside of this AGREEMENT, through the Seller or the Seller's Network Solutions Provider or designated local service provider as set forth in Section 3.C.v.b.

e. Prior to the general release by Seller of any Security Updates, Seller shall make available a SUMS PRODUCTS Features Summary announcing the impending release, and detailing its contents and impact, if any, on any other Seller hardware or Software components. Subscriber acknowledges that older hardware may not have sufficient capacity for the operation of the Software Updates. NOTHING IN THIS AGREEMENT OR OTHERWISE REQUIRES SELLER EITHER TO DESIGN UPDATES THAT REMAIN COMPATIBLE WITH DESIGNATED SYSTEM HARDWARE OR TO PROVIDE ADDITIONAL HARDWARE UNDER THIS AGREEMENT, AND SUBSCRIBER WAIVES ANY SUCH DUTY OR OBLIGATION BY SELLER.

f. The Seller will provide with each Security Update Distribution a Security Release Notes document. This document will detail the PVA resolutions and/or mitigation addressed by this release, installation and installation recovery procedures and software and hardware compatibility information where applicable.

iii. SUMS*plus* Features Summary

SUMS*plus* provides enhanced Security Update features including all basic SUMS features plus the following:

a. Automated Security Update Distribution Services. If the SUMS*plus* security update service type is specified in Schedule A, the Seller will, in addition to providing Security Update Distributions, provide a means of automating the distribution of Security Updates to the target devices within the Subscriber's Designated System. As set forth in Section 4.C of this AGREEMENT, it shall be the Subscriber's responsibility to complete the security update process on the target devices (e.g. rebooting the target devices) following the Patch Application instructions in the Release Notes accompanying each Security Update Distribution. Optional On-Site Support Services may be contracted by the Subscriber, outside of this AGREEMENT, through the Seller or the Seller's Network Solutions Provider or designated local service provider as set forth in Section 3.C.v.b.

iv. SUMS*watch* and SUMS*watch*plus Features Summary

SUMS*watch* and SUMS*watch*plus combine vulnerability monitoring and assessment reporting with either SUMS or SUMS*plus* functionality, respectively.

a. Vulnerability Monitoring. The Seller will use reasonable efforts to monitor pertinent governmental, vendor, independent and open source databases for PVAs and for PVA resolutions that affect products provided by the Seller that are part of the Subscriber's Designated System.

b. Assessment Reporting. For those PVAs monitored by the Seller as stated in section 3.C.iv.a, the Seller will provide responses assessing the affects of the monitored PVAs on the LMR system and stating Seller's recommendations for required actions. This assessment will only be made available to SUMS*watch* and SUMS*watch*plus subscribers. Access to the PVA assessments will be granted through Tech-Link, a restricted web site maintained by the Seller. The Seller does not guarantee assessment response time, but will make reasonable efforts to provide timely assessment responses.

v. Support Services

a. Phone Support. Subscriber's SUMS PRODUCTS subscription shall include telephone support by Seller's Technical Assistance Center (TAC) personnel with respect to the installation of the most recent Security Updates. Such support will be available during Seller's normal business hours (8:00 a.m. to 5:00 p.m. Eastern Standard Time Monday through Friday, excluding holidays) for a period of forty-five (45) days from the date the Security Update is released to Subscriber. After-hours emergency support will be available through Sellers optional System Maintenance services at prices then in effect, provided that Subscriber is in compliance with the terms of this AGREEMENT.

b. On-Site Services

The following services are optionally available, outside of this AGREEMENT, through the Seller, the Seller's Network Solutions Provider, or a designated local service provider provided that Subscriber is in compliance with the terms of this AGREEMENT.

- Initial Installation Services
- Security Update Application Services

c. Tech-Link

Tech-Link is the restricted access, technical information section of Seller's web site. Seller will provide SUMS PRODUCTS subscribers access, via user ID and password authorization, to SUMS PRODUCTS release documentation and downloadable distribution media. Seller will provide additional authorization to allow SUMS*watch* and SUMS*watch*plus subscribers to view PVA assessment recommendations described in section 3.C.iv.b.

D. Services Not Included. The following services/products are not included within the terms of this AGREEMENT:

i. SUMS PRODUCTS Installation. SUMS PRODUCTS Installation by Seller is not included, but such installations may be obtained from Seller, or its Network Solutions Provider, at the rates then in effect for such service, provided that Subscriber is in compliance with the terms of this AGREEMENT.

ii. Hardware Upgrades. In the occasional event that a Security Update released requires a corresponding hardware change, Subscriber will need to purchase separately the compatible hardware required. Seller will endeavor to notify Subscriber in advance via the SUMS PRODUCTS Features Summary of any hardware changes needed in order to implement a Software Update.

iii. Optional Support Services. Other Software support services Subscriber may require, including, but not limited to, training, customized software programming or troubleshooting through Seller's Technical Assistance Center are outside the scope of this AGREEMENT but may be obtainable through other programs offered by Seller.

4. CONDITIONS FOR SERVICE

A. Enrollment. All enrollment stipulations specified for SOFTWARE FX apply to this SUMS AGREEMENT with the additional requirement that the Subscriber must have existing, currently active SOFTWARE FX before executing this AGREEMENT or must be establishing a SOFTWARE FX agreement concurrent with this SUMS AGREEMENT. A Subscriber meeting the SUMS PRODUCTS enrollment criteria will receive, at no additional charge as described in Section 3.A.i. of this AGREEMENT; the SECURITY UPDATES needed to bring its Designated System up to Seller's current security software release levels to the extent the Designated System hardware is compatible with such SECURITY UPDATES.

B. Subscriber Contact. Seller requests that Subscriber identify its Subscriber Contact in Section 5.B. of Schedule A. Subscriber shall designate a person with sufficient technical expertise to be able to interact knowledgeably with Seller's technical support personnel. To the maximum extent practicable, Subscriber's communications with Seller (with regard to the SECURITY UPDATES provided under this AGREEMENT) should be through the Subscriber Contact.

C. Applying Security Updates. Subscriber agrees to promptly and properly install the SECURITY UPDATES provided by Seller in order of receipt from Seller or to allow the Seller reasonable access to the designated system for Seller-managed SECURITY UPDATE installation. Subscriber understands that Software support provided by Seller is limited to Seller's Current and the most previous Software Release Levels of Licensed Programs for the Designated System.

D. Media Labeling. Subscriber agrees that if it makes copies of any SECURITY UPDATES supplied by Seller, for backup purposes, Subscriber will reproduce any copyright notice and/or proprietary notice appearing on and/or in such Update and will label all copies with all information, including part numbers and revision levels, provided on the set of media provided by Seller. Nothing herein grants Subscriber any right to sublicense any Software or to distribute copies to any other person, and such sublicensing and distribution is expressly prohibited.

E. No Modification of Software. Subscriber agrees not to modify, enhance or otherwise alter any Software unless specifically authorized in the user documentation provided by Seller with such SECURITY UPDATES or unless the prior written consent of Seller is obtained. Under no circumstance shall Subscriber create or permit the creation of any derivative work from any Software or the reverse engineering or replication or decompilation or disassembly of any Software.

F. Seller's Obligations. The Seller's obligations under this AGREEMENT are conditional upon Subscriber's compliance with the terms of this AGREEMENT and any Contract then in effect between Seller and Subscriber.

G. Appropriate Use. Security Updates are provided to the Subscriber for use **ONLY** on Seller provided components of the Designated System. Any use of Seller provided Security Updates on devices other than those defined as part of the Designated System is strictly prohibited. The Subscriber shall not hold the Seller liable for any affects of any such Inappropriate Use. Inappropriate Use shall be considered at Seller's discretion, grounds for termination of this agreement in accordance with Section 7.C.

H. Delegation of Authority. The Subscriber hereby delegates, grants, and assigns to Seller, acting as the Subscriber's agent or to a person or entity authorized by Seller, all approval rights relating to the selection of Vendor Patches. All approvals given to third-party vendors by the seller acting as the subscriber's agent under the terms of this SUMS AGREEMENT shall be deemed as being granted by the Subscriber.

5. FEES, TERMS OF PAYMENT & TAXES

A. SUMS PRODUCTS Fee. Subscriber agrees to pay Seller or its Network Solutions Provider an annual SUMS PRODUCTS Fee, in the amount set forth in Schedule A to this Agreement, plus taxes pursuant to Subsection E below, for SUMS PRODUCTS related services provided during the term as defined in Schedule A. Subsequent years' SUMS PRODUCTS Fees, beyond Subscriber's first-year fee specified in Schedule A, may or may not remain at the same rates. Any changes made to Subscriber's Designated System(s) which results in their falling into another SOFTWARE FX Classification will be reflected in the following year's SUMS PRODUCTS Fee. If Seller's rates for SUMS PRODUCTS should increase, Subscriber will be notified in writing of any such increases at least one hundred twenty (120) days prior to the end of Subscriber's yearly subscription period then in effect.

B. Delayed Subscription Charges. Subscriber understands that if it chooses to delay its enrollment in a SUMS AGREEMENT beyond the deadline described in Section 4.A. of this Agreement, Subscriber will need to license, at the applicable fees then in effect, the initial SECURITY UPDATES needed to bring its System up to Seller's current software release levels, as well as any hardware which may be required to accommodate such Updates.

C. Due Date. Subscriber's first-year SUMS PRODUCTS Fee will be invoiced upon receipt of this AGREEMENT signed by Subscriber. Payment will be due thirty (30) days from the date of the invoice. Subscriber's subsequent years' SUMS PRODUCTS Fees will be automatically invoiced sixty (60) days prior to the commencement of the subsequent year's term. Payment of all amounts due is a condition precedent to Seller providing any future SECURITY UPDATES or other services.

D. Payment Terms. Payment shall be made in United States currency. All amounts over thirty (30) days past due shall accrue interest from the due date at the rate of one and one-half percent (1-1/2%) per month (or such lesser rate as is the maximum permissible rate under applicable law). In addition to payment of interest, Subscriber agrees to pay all collection costs and enforcement expenses, including reasonable attorneys' fees, if Seller must bring a proceeding to collect any amount owed by Subscriber or to enforce any rights in any bankruptcy or similar proceeding involving Subscriber.

E. Taxes. In addition to all fees specified herein, Subscriber shall pay the gross amount of any present or future sales, use, excise, value-added, or other similar tax applicable to the price, sale or delivery of any products or services furnished hereunder or to their use by Subscriber, unless Subscriber shall otherwise furnish Seller with a tax-exemption certificate acceptable to the applicable taxing authorities.

F. Discontinuance. Subscriber understands that if Subscriber discontinues and then subsequently resumes participation in the SUMS PRODUCTS Program, Subscriber will be required to pay a re-entry fee for any benefits provided to Subscriber upon re-entry to the SUMS PRODUCTS Program plus the SUMS PRODUCTS Fee for the term then commencing.

G. Other Charges. Subscriber may be required to have currently executed service(s)/support agreement(s) with third-party vendor(s) separate from this SUMS AGREEMENT in order to receive certain Security Updates. Failure to do so may limit the Subscriber's right to receive the third-party software. Any charges or fees associated with the third-party vendors' service(s)/support agreement(s) are the sole responsibility of the subscriber.

6. TITLE

The Licensed Programs and all copies thereof, in whole or in part, and all Software, documents and materials which may be provided by Seller hereunder for use in connection with such Programs are furnished nonexclusively as part of the Licensed Program(s) defined in the applicable software license agreement(s) and shall remain the exclusive property of Seller and will be held in confidence by Subscriber in accordance with the provisions of each such software license agreement. Under no circumstance shall Subscriber create or permit the creation of any derivative work from any Software or the reverse engineering or replication or decompilation or disassembly of any Software.

7. TERM & TERMINATION

A. SUMS PRODUCTS services will be provided by Seller to Subscriber for an initial one-year term, as defined in Schedule A to this Agreement, and thereafter on a year-to-year basis as provided herein, subject to maintenance of a SOFTWARE FX agreement and prior payment in full of all outstanding fees and charges at the time of renewal and compliance with the provisions of this AGREEMENT.

   i. This AGREEMENT shall be considered terminated upon termination of the Subscriber's SOFTWARE FX Agreement. The termination date of the SOFTWARE FX Agreement shall be the effective termination date for this AGREEMENT and shall override any termination clauses herein.

   ii. The termination of this AGREEMENT shall have no affect upon the continuance of the Subscriber's SOFTWARE FX Agreement.

B. Provided Subscriber is then in full compliance with all of its obligations, Subscriber's SUMS AGREEMENT enrollment shall be automatically renewed at the end of the first- year term for a second year's term and on a succeeding yearly basis thereafter unless either party notifies the other in writing, at least ninety (90) days prior to the end of the yearly period then in effect, that this AGREEMENT will not be renewed.

C. Seller shall have the right to suspend or terminate this AGREEMENT upon thirty (30) days' prior written notice if Subscriber fails to pay any fees or charges due hereunder or if Subscriber commits any other breach of this AGREEMENT or commits any breach of any applicable Software license agreement for any Licensed Program being supported under this AGREEMENT, any contract between Subscriber and Seller or any other obligation of Subscriber to Seller or any of its affiliates.

D. Seller shall have the right to discontinue providing SUMS PRODUCTS services for any Licensed Program supported under this AGREEMENT. SECURITY UPDATES may be discontinued at any time at Seller's discretion. Other services shall not be discontinued without at least ninety (90) days' prior written notice by Seller to Subscriber. Notwithstanding any other provision of this AGREEMENT, as Subscriber's sole and exclusive remedy Seller will provide a pro-rata refund of Subscriber's annual SUMS PRODUCTS Fee if Seller elects to discontinue providing SUMS PRODUCTS services for any Licensed Program supported under this AGREEMENT.

E. Except as provided in Section 7.D. above, under no circumstances (including any termination of this AGREEMENT) shall any fees paid pursuant to this Agreement be refundable once paid by Subscriber.

8. SOFTWARE WARRANTY

Article I. Seller warrants, for a period of ninety (90) days from delivery of a SECURITY UPDATE, that any Software furnished to Subscriber, shall be capable of successfully operating on the designated hardware in accordance with the logic defined in the operator's manuals or other supporting documentation when Subscriber's Designated System is supplied with correct input data. If, on the basis of evidence submitted to Seller within the 90 day term of this warranty, it is shown that any Software does not meet this warranty, Seller, at its option, will either correct the defect or error in the Software free of charge and provide a corrected SECURITY UPDATE, or make available to Subscriber a satisfactory substitute program. The foregoing warranty is exclusive and in lieu of all other warranties whether written, oral, implied or statutory. NO IMPLIED OR STATUTORY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY SHALL APPLY, ALL OF WHICH ARE WAIVED IN FULL BY SUBSCRIBER. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, INDIRECT OR EXEMPLARY DAMAGES, OR FOR ANY LOST PROFITS OR REVENUES OR OTHER INDIRECT ECONOMIC PREJUDICE, OR FOR ANY EQUITABLE REIMBURSEMENT OR RECOVERY, ALL OF WHICH ARE HEREBY WAIVED IN FULL BY SUBSCRIBER.

9. LIMITATION OF LIABILITY

A. The total liability of Seller, including its subcontractors or suppliers, for all direct or indirect claims of any kind for any loss, cost, expense, liabilities, or damage, whether in contract, warranty, tort (including negligence or infringement), strict liability, equity or otherwise, directly or indirectly arising out of, connected with, or resulting from the performance or non-performance of this Agreement (or any related software license agreement) or from the furnishing of any good or service pursuant to this Agreement (or any related software license agreement) shall not exceed the amount of the most recent annual SUMS PRODUCTS Fee paid by Subscriber under this Agreement. IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE OR INFRINGEMENT), STRICT LIABILITY, EQUITY, OR OTHERWISE, SHALL SELLER OR ITS AFFILIATES, AGENTS, OFFICERS, DIRECTORS, EMPLOYEES, VENDORS, SUBCONTRACTORS OR SUPPLIERS, BE DIRECTLY OR INDIRECTLY LIABLE FOR ANY

SPECIAL, CONSEQUENTIAL, INCIDENTAL, INDIRECT OR EXEMPLARY DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR REVENUES, LOSS OF USE OF EQUIPMENT, COST OF CAPITAL, COST OF SUBSTITUTE GOODS, FACILITIES, SERVICES OR REPLACEMENT POWER, DOWNTIME COSTS, INTEREST, ATTORNEYS FEES OR LITIGATION COSTS OR CLAIMS OF SUBSCRIBER'S CUSTOMERS FOR SUCH DAMAGES. The provisions of this Section, Limitation of Liability, shall apply notwithstanding any other provisions of this Agreement (or any related software license agreement). The terms and provisions of this Section shall survive the termination or expiration of this Agreement.

B. In the event that service(s)/support agreement(s) are required from third-party vendors it shall be the Subscribers responsibility to maintain these agreements. Seller shall not be held liable for third-party security updates provided to Subscriber without an active service(s)/support agreement(s).

10. CONFIDENTIALITY

A. Subscriber agrees not to disclose, provide or otherwise make available to any third party any Software or portion thereof, or any technical information provided to Subscriber under the provisions of this AGREEMENT (hereinafter "Confidential Information"), and to hold such materials in confidence using a strict degree of care to protect the Confidential Information from unauthorized disclosure.

B. Subscriber's obligation with respect to disclosure of Confidential Information shall terminate with respect to any Confidential Information which Subscriber can show was rightfully in its possession prior to the disclosure made by Seller, or which subsequently came into its possession through a third party under no obligation of confidentiality to Seller, or which was independently developed by employees of Subscriber who did not have access to Confidential Information or which becomes a matter of public knowledge other than as a breach of any obligation owed to Seller, or which is disclosed with the prior written permission of Seller.

C. Notwithstanding the obligations on disclosure and use set forth herein, Subscriber may disclose Confidential Information to third parties insofar as is necessary to satisfy a proper court order, subpoena, litigation discovery demand or administrative or regulatory proceeding order, provided that Subscriber promptly notifies Seller in writing of such order or demand prior to any disclosure and takes advantage of all available and appropriate measures to prevent further disclosure of the Confidential Information.

D. The provisions of this Section shall survive the expiration or termination of this AGREEMENT.

11. FAILURE TO ENFORCE

The failure of either party to enforce, at any time or for any period of time, any provision of this Agreement in accordance with its terms shall not be construed to be a waiver of such provision or of the right of such party thereafter to enforce each and every such provision.

12. GOVERNING LAW AND DISPUTE RESOLUTION

A. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Virginia, excluding its rules pertaining to conflict of laws. Subject to the provisions of Subsection A, Subscriber consents to the personal jurisdiction of the state and federal courts in the Commonwealth of Virginia, which courts shall constitute the exclusive forum for all court proceedings involving the enforcement of this Agreement and the resolution of all Disputes related to the subject of this Agreement, whenever, wherever and however arising, whether at law, in equity or otherwise and whether the Dispute involves an alleged breach of contract, violation of law or tort of any kind.

B. Each party acknowledges that jury trials are slower and more expensive than court trials without juries, and, considering the complex nature of the technology and other issues which may give rise to Disputes, the parties agree that any court proceedings commenced by or against either party shall be resolved by a court without a jury, and each party waives its right to a jury as to any disputes or claims arising under or relating to this Agreement, whether for breach or enforcement of contract, tort or otherwise, including all Disputes as defined herein.

13. NO THIRD PARTY BENEFICIARIES; ASSIGNMENT

The provisions of this Agreement are solely for the benefit of Subscriber and Seller. No other person or entity is intended to be a beneficiary of nor is entitled to rely upon or enforce any of the provisions of this Agreement or to assert any claim for nonperformance of this Agreement by any party. This Agreement may not be assigned by Subscriber without the prior written consent of the Seller. The provisions of this Agreement shall inure to the benefit of and are binding upon Subscriber and Seller and their respective permitted successors and permitted assignees (if any).

14. NOTICES

All notices required or permitted hereunder shall be in writing and shall be deemed validly given upon being hand delivered, or upon receipt if sent by facsimile or if mailed by certified mail, return receipt requested, to Subscriber at the address set forth in Schedule A or to Harris Corporation. at 221 Jefferson Ridge Parkway, Lynchburg, VA. 24501, Attention: Technical Support Services Group, or to such other address as either party may designate to the other in writing.

15. ENTIRE AGREEMENT, EXECUTION AND MODIFICATION

A. This Agreement contains the entire and only agreement between the parties concerning the subject matter hereof, and all prior representations and understandings in connection with the subject matter hereof are superseded and merged herein, and any representation or understanding not incorporated herein shall not be binding upon either party.

B. This Agreement shall not become effective until signed on behalf of Seller by one of its officers or by an executive duly authorized by Seller's Vice President. No change, modification, ratification, rescission, or waiver of this Agreement or any of the provisions hereof shall be binding upon Seller unless made in writing and signed on its behalf in like manner.

C. SELLER DOES NOT ASSUME ANY OBLIGATIONS OR LIABILITIES IN CONNECTION WITH THE SOFTWARE OR SERVICES OTHER THAN THOSE EXPRESSLY STATED IN THIS AGREEMENT, AND DOES NOT AUTHORIZE ANY PERSON (INCLUDING SELLER'S NETWORK SOLUTIONS PROVIDERS OR SUBCONTRACTORS OR SUPPLIERS) TO ASSUME FOR SELLER ANY OTHER OBLIGATIONS OR LIABILITIES.

D. This Agreement is a standard form agreement subject to the terms and conditions agreed to by the parties in the Contract and, in the event of a conflict, the general terms of the Contract control over the specific terms of the agreement.

IN WITNESS WHEREOF, and intending to be legally bound, the parties hereto have caused this AGREEMENT to be executed by their duly authorized officers or representatives.

SELLER:	**SUBSCRIBER:**
HARRIS CORPORATION **RF COMMUNICATIONS DIVISION**	
By: _____	By: _____
Name:	Name:
Title:	Title:
Date:	Date:

Harris Corporation
RF Communications Division
221 Jefferson Ridge Parkway
Lynchburg, VA. 24501

SECURITY UPDATE MANAGEMENT SERVICE

SCHEDULE A

AGREEMENT

1. Term of SUMS AGREEMENT

The services, as described in the SUMS AGREEMENT to which this Schedule A is attached, will be provided for the initial period
beginning and ending
and will be automatically renewed for one-year periods thereafter pursuant to Section 7 of the AGREEMENT.

2. Designated System

The Designated System(s) for which the SUMS AGREEMENT will apply is (are):

System Name	System Classification	System Location
	P25	
	P25	
	P25	
	P25	
	P25	
	P25	
	P25	

3. **SUMS PRODUCTS Fees**

The first-year SUMS PRODUCTS Fee for the above Designated System(s) is as follows:

System Name	Security Update Service Type	System Fee
	Sums	
	Sums	
	Sums	
	Sums	
	Sums	
	Sums	
	Sums	

Subscriber's subsequent years' SUMS PRODUCTS Fees will be determined in accordance with Section 5.A. of the SUMS AGREEMENT.

4. **Fiscal Year Billing Option**

If Subscriber requests billing for the first and subsequent years' SUMS PRODUCTS Fees coincident with Subscriber's fiscal year, please indicate the fiscal year end date:

m m d d

If this option is selected, Subscriber's initial SUMS PRODUCTS term will be from the effective date shown in Section 1 of this Schedule A through the next fiscal year end date and the first-year SUMS PRODUCTS Fee will be prorated accordingly.

5. **Designated Subscriber Security Update Contact(s)**

A. All notices regarding the SUMS AGREEMENT to which this Schedule A is attached are to be sent by Seller to:

Contact's Name:
Title:
Address:
(Do not use P.O. Boxes)

Telephone:
FAX No.

B. All SECURITY UPDATES to be provided by Seller to Subscriber under this Agreement are to be sent to:

Contact's Name:
Company Name:
Title:
Address:
(Do not use P.O. Boxes)

Telephone:
FAX No.

6. This Schedule A is agreed to by:

Seller:	Subscriber Name:
Harris Corporation	
221 Jefferson Ridge Parkway	
Lynchburg, VA. 24501	
By: _____	By: _____
Name:	Name:
Title:	Title:
Date:	Date:

SCHEDULE 1 – FREQUENCY RECONFIGURATION AND SETTLEMENT AGREEMENT

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FREQUENCY RECONFIGURATION AND SETTLEMENT AGREEMENT

THIS FREQUENCY RECONFIGURATION AND SETTLEMENT AGREEMENT (this "Agreement") is made as of this ____ day of _____, 2010 ("Effective Date"), by and between **Miami-Dade County**, a municipal subdivision incorporated under the laws of the State of Florida ("Incumbent"), and **Nextel South Corp.** ("Nextel"), a wholly owned indirect subsidiary of Sprint Nextel Corporation, a Kansas corporation (each is referred to in this Agreement as a "Party" and collectively as the "Parties").

RECITALS

A. On August 6, 2004, the Federal Communications Commission ("FCC") issued a report and order that modified its rules governing the 800 MHz band. The purpose of the order was to reconfigure the 800 MHz band to minimize harmful interference to public safety radio communications systems in the band ("Reconfiguration").

B. On December 22, 2004, the FCC issued a Supplemental Order and Order on Reconsideration. The August 6, 2004 and December 22, 2004 FCC orders, any binding actions issued by the Transition Administrator pursuant to its delegated authority under the orders ("Actions"), and any supplemental FCC orders in the Reconfiguration proceeding or subsequent Actions after the date of this Agreement, are collectively referred to as the "Order."

C. Pursuant to the Order, Incumbent and Nextel are licensed on frequency allocations subject to Reconfiguration.

D. Pursuant to the Order, Nextel is obligated to pay Incumbent an amount to effect a Reconfiguration of Incumbent's affected frequency allocations ("Reconfiguration Cost").

E. The Parties desire to settle the parties' mutual obligations under the Order whereby Nextel will provide equipment to the County as set forth herein, and the County will discharge Nextel of any other obligation to pay for the County's Reconfiguration Costs.

F. This Agreement is subject to obtaining all required government approval and the execution of a Radio Communication System Purchase Contract_between the Incumbent and Harris Corporation to provide all services necessary to achieve the Reconfiguration.

THEREFORE, FOR GOOD AND VALUABLE CONSIDERATION, THE RECEIPT OF WHICH IS HEREBY ACKNOWLEDGED, THE PARTIES AGREE AS FOLLOWS:

AGREEMENT

1. The recitals as set forth above are true and correct and incorporated herein by reference.

2. **Frequencies to be Reconfigured**: Incumbent is the licensee under the license(s) granted by the FCC identified in Schedule A (the "Incumbent Licenses") for the operation of certain 800 MHz frequencies at the locations identified on Schedule A (the "Incumbent Frequencies"). Nextel, including its subsidiaries or affiliates, is the licensee under license(s) granted by the FCC (the "Nextel Licenses") for the operation of Specialized Mobile Radio ("SMR") systems on the frequencies and at the locations identified in Schedule B (the "Replacement Frequencies"). Pursuant to the Order, Incumbent must relinquish the Incumbent Frequencies and relocate its system to the Replacement Frequencies.

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3. **Frequency Reconfiguration Process:**

(a) On or before the Closing Date (as defined below) (i) Nextel or Incumbent will cause the modification of the Incumbent Licenses to add the Replacement Frequencies or Nextel will cause the creation of a new FCC license for Incumbent that includes the Replacement Frequencies; (ii) Incumbent will assign the Incumbent Frequencies to Nextel or at Nextel's election will cause the deletion of the Incumbent Frequencies from the Incumbent Licenses following Reconfiguration of Incumbent's system; and (iii) Nextel will cause the modification and/or cancellation of the FCC licenses it holds for the operation of 800 MHz frequencies that are co-channels of the Replacement Frequencies, to the extent required to meet the technical short-spacing requirements of Section 90.621(b) of the FCC's Rules, 47 C.F.R. § 90.621(b) ("Section 90.621(b)"), as such rule may be amended from time to time by the FCC.

(b) The Parties agree that Nextel will make the FCC assignment filings for the Replacement Frequencies on a future date to be determined by the Parties through mutual agreement, as provided in Section 6(ii). The Incumbent reserves the right to make its own FCC filings for the Replacement Frequencies on such mutually agreed date, rather than relying on Nextel to do so, by so notifying Nextel in accordance with the Notice provision of this Agreement.

4. **Incumbent Obligations and Reconfiguration Costs:**

(a) The Statement of Work attached to Schedule C, sets forth all of the activities needed to be completed in order to reconfigure the Incumbent's systems consistent with the requirements of the Order ("SOW").

(b) Incumbent acknowledges and agrees that it is obligated under the Order to reconfigure its systems. Incumbent warrants that it will ensure that its systems are reconfigured in accordance with the SOW as it may periodically be amended by the Incumbent and the vendor.

(c) Incumbent acknowledges that it is solely responsible for the payment of all costs necessary to reconfigure its systems in accordance with the Order, in excess of and subject to Nextel's obligations included in this Agreement.

(i) Funding Commitment. Incumbent warrants that all funding being provided by the Incumbent required to accomplish the SOW has been approved by the Miami-Dade County Board of County Commissioners and will be available prior to commencement of physical retuning (the "Commencement Date"). Incumbent further warrants that it will allocate all funds necessary for the reconfiguration of the Incumbent's systems in its annual budgets to cover each year's reconfiguration costs until such time as the reconfiguration is completed.

(ii) Vendor Resources Available. Incumbent warrants that it has made reasonable inquiries to ensure itself that all Vendors involved in the reconfiguration of the Incumbent's systems have committed the necessary resources to accomplishing the SOW in a timely manner and has entered into a Radio Communication System Purchase Contract with the Harris Corporation which includes the performance of all tasks identified in the SOW. Incumbent further warrants that Incumbent's selection of the Harris Corporation to perform the tasks identified in the SOW and Incumbent's award of the Radio Communication System Contract to the Harris Corporation complied with all applicable law, including, without limitation, all applicable state and local procurement laws, regulations and rules.

(iii) Incumbent will certify that following the reconfiguration of its systems in accordance with the SOW, Incumbent's resulting facilities shall be deemed comparable as the term "comparable" is defined in the FCC's rules and the Order. Incumbent shall execute such closing documentation as shall be

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required by either the TA or Nextel to certify the comparability of Incumbent's facilities following the reconfiguration on its systems.

(d) The parties acknowledge that the SOW includes a schedule for relocating to the Replacement Frequencies and decommissioning the Incumbent Frequencies that extends beyond the Reconfiguration deadlines included in the Order. Within 15 days of the Effective Date, Incumbent shall file with the FCC the necessary request for waiver or extension of those deadlines. In addition, within 15 days of any changes to the SOW that extend the schedule for relocating to the Replacement Frequencies or decommissioning the Incumbent Frequencies, the Incumbent shall file with the FCC an updated request for wavier or extension. Furthermore, Incumbent agrees to comply with the FCC's orders and decisions issued regarding the waiver or extension of those deadlines.

(e) The Incumbent shall provide to the Transition Administrator copies of all filings and notices made pursuant to this Section. The email address for the copies is Waivers@800ta.org.

5. **Nextel Provided Equipment and Reconfiguration Costs:**

(a) The equipment set forth on Schedule D, sets forth all of the equipment to be provided to Incumbent in accordance with Nextel's obligations under the Orders ("Equipment"). Such Equipment shall consist of up to twenty-four thousand (24,000) terminal units (radios) and associated accessories purchased from the Harris Corporation ("Harris"). The Equipment shall be in new condition and shall be covered by any standard warranties offered by Harris on such equipment, or any such other warranties agreed to by Incumbent and Harris.

(b) The Parties agree that the Equipment identified in Schedule D may be amended by Incumbent for a period of 14 days following the Effective Date provided that such amendment may not cause the terminal units provided by Nextel to exceed twenty-four thousand (24,000) units

(c) Nextel will execute a purchase order with Harris for all Equipment set forth on Schedule D within 45 days from the Effective Date for delivery to Nextel within eighteen (18) months from the date of purchase. After Nextel purchases the Equipment set forth in Schedule D from Harris, Incumbent may direct Harris to substitute alternate terminal unit models and associated accessories for those models and associated accessories purchased by Nextel provided that such Equipment has not already been delivered to Nextel and the substitution does not alter the cost of the Equipment or the number of terminal units purchased.

(d) Upon receipt of the Equipment by Nextel, or a portion thereof, Nextel shall make periodic deliveries of the Equipment to the Incumbent upon a mutually agreed schedule to allow Incumbent adequate time to program and deploy the Equipment. Nextel shall bear all costs associated with delivering Equipment to Incumbent. Title to the Equipment or any portion thereof shall pass to Incumbent free and clear of liens and any other encumbrances upon acceptance of delivery, and Nextel shall execute such documentation as Incumbent may reasonably request to transfer title to Incumbent free and clear of all liens.

(e) Incumbent shall, within a reasonable period of time after receipt of the Equipment or a portion thereof, deliver to Nextel a number of terminal units (radios) ("Nextel Replaced Equipment") equal to the number of terminal units delivered to the County. The Nextel Replaced Equipment shall be either from Incumbent's inventory or of the inventory of a government agency using the Incumbent's system as of the Effective Date, and shall each bear a unique identifier. Title to the Nextel Replaced Equipment) shall pass to Nextel upon delivery to Nextel free and clear of liens and any other encumbrances. Nextel agrees that the Nextel Replaced Equipment shall not be reused and shall be destroyed after the Closing Date (as

defined below) in a manner determined by Nextel and approved by Incumbent. Nextel shall bear all costs associated with delivering Nextel Replaced Equipment to Nextel and destroying such equipment.

(f) If Incumbent fails to return any item of the Nextel Replaced Equipment to Nextel, Incumbent must return to Nextel those items of the Equipment that would have replaced the Nextel Replaced Equipment not returned in new condition within a reasonable period of time. If Incumbent fails to return any item of the Nextel Replaced Equipment to Nextel under this Section then Incumbent must pay Nextel the actual cost of the purchase of such Equipment from Harris within thirty (30) days of receipt of notice from Nextel that such a payment is due. Prior to the Closing Date, the parties shall prepare a statement reconciling the total number of units of Equipment with the total number of units of Nextel Replaced Equipment. In addition, prior to the Closing Date, the parties shall prepare an "Actual Cost Reconciliation Statement" confirming that Incumbent, either directly or for its benefit, did not receive any payments or reimbursement from Nextel other than the Equipment.

(g) Prior to the Closing Date (as defined below), Nextel will pay on behalf of itself and Incumbent, both Parties' applicable sales and transfer taxes, if any, and all FCC fees in connection with the preparation and filing of the necessary FCC applications for the assignment(s) described in Section 2 of this Agreement.

(h) Nextel agrees to pay all other reimbursable costs under the Planning Funding Agreement dated August 20, 2007, between Nextel and Incumbent as it may be amended in accordance with the policies and rules of the Transition Administrator.

6. **Retuning Cooperation** The Parties acknowledge that the number of frequencies and locations covered by this Agreement will require the Parties to cooperate closely in performing their respective reconfiguration activities. The Parties agree that: (i) as of the Effective Date, the Incumbent may begin the reconfiguration of its subscriber units, in accordance with the appropriate sections of Schedule C; and (ii) the Parties will agree on a schedule to make the FCC filings, clear the Replacement Frequencies and decommission the Incumbent Frequencies (the "Schedule"). Depending on the timing of the adoption of this Schedule, it may require an Amendment to this Agreement, but in any event the Parties agree to adopt the Schedule no later than sixty (60) days from the Effective Date of this Agreement.

7. **Representations and Warranties:** Each Party represents and warrants to the other as follows:

(i) it is duly organized, validly existing and in good standing under the laws of the state of its incorporation;

(ii) this Agreement has been duly authorized and approved by all required organizational action of the Party;

(iii) neither the execution and delivery of this Agreement nor the consummation of the transactions contemplated by this Agreement will conflict with, or result in any material violation or default under, any term of its articles of incorporation, by-laws or other organizational documents or any agreement, mortgage, indenture, license, permit, lease, encumbrance or other instrument, judgment, decree, order, law or regulation by which it is bound;

(iv) it is the lawful and exclusive FCC licensee of its respective license(s) described in this Agreement, such licenses are valid and in good standing with the FCC, and it has the authority to request the FCC to assign, modify or cancel such licenses;

(v) there is no pending or threatened action or claim that would have the possible effect of enjoining or preventing the consummation of this Agreement or awarding a third party damages on account of this Agreement; and

(vi) to the best of its knowledge, all information provided to the other Party concerning the transactions contemplated by this Agreement is true and complete.

All representations and warranties made in this Agreement shall survive the Closing Date (defined below) for two (2) years.

8. **Covenants:** From the Effective Date until the Closing Date (defined below), each Party will promptly notify the other Party of any pending or threatened action by the FCC or any other governmental entity or third party to suspend, revoke, terminate or challenge any license described in this Agreement or to investigate the construction, operation or loading of any system authorized under such licenses. From the Effective Date until the Closing Date, Incumbent will not enter into any agreement resulting in, or otherwise cause, the encumbrance of any license for the Incumbent Frequencies, and Nextel will not enter into any agreement resulting in, or otherwise cause, the encumbrance of any of the Replacement Frequencies.

9. **Closing:** The closing of the transactions contemplated by this Agreement will take place after (i) FCC approval of the assignment of the Incumbent Frequencies to Nextel and/or deletion of the Incumbent Frequencies from the Incumbent Licenses, (ii) FCC approval of the modification to add the Replacement Frequencies to the Incumbent Licenses or the creation of a new license for Incumbent that includes the Replacement Frequencies, (iii) notification by Incumbent to Nextel that the Incumbent Licenses are clear of all users, (iv) FCC approval of the modification and/or cancellation of the FCC licenses Nextel holds for the operation of 800 MHz frequencies that are co-channels of the Replacement Frequencies, to the extent required to meet the technical short-spacing requirements of Section 90.621(b) of the FCC's Rules, 47 C.F.R. § 90.621(b), as such rule may be amended from time to time by the FCC, and (v) the satisfaction of all other conditions specified in this Agreement (the "Closing Date").

10. **Closing Conditions:** Performance of each Party's Closing obligations is subject to satisfaction of the following conditions (except to the extent expressly waived in writing by the other Party):

(a) the continued truth and accuracy of the other Party's representations and warranties set forth in this Agreement;

(b) all of the covenants of the other Party described in this Agreement are performed in all material respects;

(c) execution and delivery by the other Party of Closing documents as well as any other Closing instruments and documents either Party or its counsel may reasonably request. Incumbent will execute and deliver to Nextel a closing certification required by the Transition Administrator ("Completion Certification"); and

(d) The Parties will cooperate in good faith and exercise their reasonable best efforts to finalize and execute these instruments and documents on or prior to the Closing Date in order to effect the Reconfiguration contemplated.

11. **Review Rights:** In order to enable the Transition Administrator to comply with its audit obligations under the Order, Incumbent agrees to maintain records and other supporting evidence related to the costs that Incumbent has expended in connection with the Reconfiguration contemplated by this

Agreement and that Nextel has paid or will pay to Incumbent pursuant to this Agreement. Incumbent agrees to maintain such records and make them reasonably available to the Transition Administrator for review or reproduction until eighteen (18) months after the date of Incumbent's executed Completion Certification required by this Agreement or for a longer period if Incumbent, for its own purposes, retains such records for a longer period of time. As used in this provision, "records" includes books, documents, accounting procedures and practices and other data regardless of type and regardless of whether such items are in written form, in the form of computer data or in any other form.

12. **Excluded Assets; No Assumption of Liabilities:** Nothing in this Agreement should be construed as a transfer or assignment from either Party to the other Party of any assets (including FCC licenses) except as expressly set forth in this Agreement. Other than as expressly provided in this Agreement, neither Party is obligated to assign and transfer to the other any asset, tangible or intangible, nor is either Party entitled to assume any asset, tangible or intangible. Neither Party is assuming, nor is either Party responsible for, any liabilities or obligations of the other Party arising out of or in connection with the other Party's licenses (or related systems and facilities) that are the subject of this Agreement.

13. **Confidentiality**: Any proprietary, non-public information regarding the Incumbent Frequencies, Replacement Frequencies, Nextel's business and Incumbent's business must be kept confidential by the Parties and their employees, shareholders, agents, attorneys and accountants (collectively, "Agents"), which confidentiality will survive the Closing or termination of this Agreement for a period of two (2) years. The Parties may make disclosures: (i) as required by law, (ii) to the Transition Administrator, (iii) to a manufacturer of Replacement Equipment to allow for the provisioning of that equipment to Incumbent (but only to the extent such disclosure specifically relates to that manufacturers equipment as identified on Schedule D), and (iv) to a Vendor (but only to the extent such disclosure specifically relates to that Vendor's work and costs under this Agreement (as identified on Schedule C) as required to perform obligations under this Agreement, provided, however, that each Party will cause all of its Agents to honor the provisions of this Section. Nextel, Incumbent and their respective Agents may make disclosures regarding the terms of this Agreement to other public safety licensees and their Agents. Each party involved in such disclosures shall cause all of its Agents to confine the disclosure of the terms of this Agreement to only public safety licensees and will advise the party to whom the disclosure was made, to limit further disclosure to only public safety licensees in accordance with the FCC Order, WT Docket No. 02-55, adopted January 8, 2007. Notwithstanding the foregoing, any compliance with, or good-faith attempt to comply with, Florida's Public Records Laws, Fla. Stat. 119, et. seq., shall not be a breach of this provision or this Agreement.

14. **Cooperation**: The Parties will cooperate with each other and the Transition Administrator with respect to the Reconfiguration work contemplated by this Agreement. Without limiting the foregoing obligations, the Parties agree to cooperate in the preparation of any applications required to be filed with the FCC, and Incumbent agrees to provide reasonable access to its facilities so that the Transition Administrator may comply with any audit obligations and so any Reconfiguration work contemplated by this Agreement may be performed in accordance with Schedule C and performance schedule. If a Party is subject to a denial of FCC benefits for delinquent non-tax debts owed to the FCC that would prevent or delay the timely processing of any FCC applications, such Party shall cure such delinquency in an expeditious manner and at its sole expense.

15. **Indemnification:** From and after the Closing Date, each Party (the "Indemnifying Party") will indemnify and defend the other Party, its officers, directors, employees and agents (collectively, the "Indemnified Party"), from and against all demands, claims, actions, losses, damages, liabilities, costs and expenses, including, without limitation, reasonable attorneys' fees and expenses (collectively, "Costs"), asserted against, imposed upon or incurred by the Indemnified Party arising from or related to: (i) any

breach of any covenant, agreement, representation or warranty of the Indemnifying Party contained in, or made pursuant to, this Agreement; or (ii) any and all liabilities (including successor liabilities) or obligations relating to periods prior to the Closing Date resulting from the Indemnifying Party's operation of the system operated pursuant to the Incumbent Licenses or the Nextel Licenses, as applicable, or the ownership or use of those licenses or from the Indemnifying Party's employment, or termination of employment, of its employees. The obligations under this Section survive the Closing for a period of three (3) years. Notwithstanding the foregoing, the Incumbent shall have no obligation to indemnify Nextel in excess of the limits set forth in Fla. Stat. Section 768.29 and does not waive its sovereign immunity in excess of the limited waiver provided for in Florida Law.

16. **Disputes:** The Parties agree that any dispute related to the Replacement Frequencies, Nextel's obligation to pay any cost of the Reconfiguration of Incumbent's system contemplated by this Agreement, or the comparability of Incumbent's reconfigured system to Incumbent's existing system prior to Reconfiguration, which is not resolved by mutual agreement, shall be resolved in accordance with the dispute resolution provisions of the Order, as it may be amended from time to time.

17. **No Gratuities**: No gift, gratuity, credit, thing of value or compensation of any kind shall be offered or provided by Incumbent, directly or indirectly, to any officer, employee or official of Nextel for the purpose of improperly obtaining or rewarding favorable treatment under this Agreement.

18. **Liens**: If any liens or security interests attach to any of Incumbent's facilities in favor of any vendor or service provider that is performing any Reconfiguration work contemplated by this Agreement as a result of Nextel's breach of any obligation to make direct payment (not in dispute) to such vendor or services provider, Nextel upon receipt of Notice from Incumbent will cooperate to remove any Liens.

19. **Vendor Performance Issues**: Incumbent will select and contract directly with any vendor or service provider performing work required to reconfigure the Incumbent's existing facilities to operate on the Replacement Frequencies. Neither the Transition Administrator nor Nextel will be responsible for, or assume the risk of any failure of that Vendor to perform its obligations under any contract entered into between Incumbent and such Vendor in connection with the Reconfiguration contemplated by this Agreement.

20. **Termination**: This Agreement may be terminated and the transactions contemplated by this Agreement abandoned: (i) by mutual consent of the Parties provided in writing; (ii) for cause by either Party upon material breach of the other Party, following a thirty (30) day period for cure by the breaching Party following written notice of the breach or (iii) by Nextel in the event of any Adverse Decision by any governmental entity of competent jurisdiction affecting the Order. For purposes of this Agreement, an "Adverse Decision" means an order, decree, opinion, report or any other form of decision by a governmental entity of competent jurisdiction that results, in whole or part, in a stay, remand, or reversal of the Order. In the event of termination, the Parties shall take all necessary action (including preparing and filing FCC documents) to return the *status quo ante* on the date of this Agreement. In the event of termination, Nextel shall pay all costs associated with the return to the *status quo ante* except if such termination was due to an uncured material breach by Incumbent. Notwithstanding the foregoing, in the event of a termination only due to material breach by Nextel or under (iii) above, Incumbent shall retain all Equipment delivered up to the date of termination and Nextel shall retain all Nextel Replaced Equipment delivered up to the date of termination.

21. **Notices**: All notices and other communications under this Agreement must be in writing and will be deemed given (i) the same day if delivered personally or sent by facsimile; (ii) the next business day if sent by overnight delivery via a reliable express delivery service; or (iii) after five (5) business days if sent

by certified mail, return receipt requested, postage prepaid. All notices are to be delivered to the Parties at the following addresses:

If to Incumbent, to: Miami-Dade County Enterprise Technology Services Department Radio Communications Services Division 6010 SW 87th Avenue Miami, FL 33173 Attn: Felix Perez Phone: (305) 596-8098 E-mail Address: fap@miamidade.gov	If to Nextel, to: Nextel South Corp. c/o Sprint Nextel Corporation 2001 Edmund Halley Drive Reston, VA 20191 Attn: Heather P. Brown, Esq. Phone: (703) 433-4000 Fax: (703) 433-4483
With a copy that shall not constitute Notice: Miami-Dade County Enterprise Technology Department Information Technology Business Office 5680 SW 87th Avenue Miami, FL 33173 Attn: Contracts Manager AND TO: Miami-Dade County Department of Procurem Management 111 NW 1st Street, Suite 1300 Miami, FL 33128 Attn: Director	With a copy that shall not constitute Notice: Sprint Nextel Corporation 6575 The Corners Parkway Norcross, GA 30092 Attn: William Jenkins, VP Spectrum Resources Phone: (770) 326-7484 Fax: (678) 405-8252

22. **Assignment**: This Agreement is binding upon and inures to the benefit of the Parties and their respective successors and permitted assigns. Either Party may assign this Agreement to any direct or indirect subsidiary or affiliate of the Party, upon delivery of written notice to the other Party.

23. **Amendments:** This Agreement, including without limitation the scope of work contemplated hereby and the Estimated Cost thereof to be paid by Nextel, may be amended or modified only by a written instrument signed by authorized representatives of both Parties, provided, however, no amendment or modification to this Agreement shall become effective until approved by the Transition Administrator.

24. **Benefits:** This Agreement is for the benefit of the Parties and their successors and permitted assigns, and nothing in this Agreement gives or should be construed to give any legal or equitable rights under this Agreement to any person or entity, other than (i) the successors and assigns of the Parties, and (ii) the Transition Administrator as specifically provided for in this Agreement.

25. **Miscellaneous**: If any provision(s) of this Agreement is held in whole or part, to be invalid, void or unlawful by any administrative agency or court of competent jurisdiction, then such provision(s) will be deemed severable from the remainder of this Agreement, will in no way affect, impair or invalidate any other provision contained in the Agreement and the Parties will use their commercially

reasonable efforts to amend this Agreement to make the unlawful provision compliant with applicable law so as to preserve the rights and obligations of the Parties. No action taken pursuant to this Agreement should be deemed to constitute a waiver of compliance with any representation, warranty, covenant or agreement contained in this Agreement and will not operate or be construed as a waiver of any subsequent breach, whether of a similar or dissimilar nature. This Agreement, together with the Schedules, constitutes the entire understanding and agreement between the Parties concerning the subject matter of this Agreement, and supersedes all prior oral or written agreements or understandings. This Agreement is governed by the laws of the State of Florida without regard to conflicts of law principles thereof. This Agreement may be executed in one or more counterparts, including by facsimile, which will be effective as original agreements of the Parties executing the counterpart.

In consideration of the mutual consideration set forth herein, this Agreement is effective as a legally binding agreement between the Parties upon execution by the Parties.

INCUMBENT:	NEXTEL: **Nextel South Corp.**
_____	
By:_____	By: William M. Jenkins
Name:	Name:
Title:	Title: WILLIAM M JENKINS AUTHORIZED SIGNATORY

SCHEDULE 2 – EDACS FX AGREEMENT and FIRST AMENDMENT

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Electronics

M/A-COM

EDACS FX
AGREEMENT

References: FX Requisition No.
MBP No. Cust. P.O. No. APIT0103521

THIS EDACS FX AGREEMENT ("Agreement") is hereby entered into between M/A-COM, Inc. ("Seller") and Miami-Dade County ("Subscriber") on the following terms and conditions:

1. SCOPE OF AGREEMENT

During the term of this Agreement, as set forth in Section 7, Seller agrees to provide Subscriber with software updates, documentation updates and other services, as set forth in Section 3 of this Agreement, for the software developed and provided by Seller and contained within the Subscriber's Designated EDACS System(s) as described in Schedule A to this Agreement.

2. DEFINITIONS

As used in this Agreement, the following terms shall have the meanings set forth below.

A. "Contract" means the agreement for the purchase of the Designated System(s).

B. "Current Software Release Levels" means the most recent Software release announced by Seller as being commercially available. "Commercially available" does not include interim releases provided as emergency fixes or software released for beta test or noncommercial or similar purposes.

C. "Designated System(s)" means the EDACS system(s) purchased by Subscriber and identified in Schedule A to this Agreement. The Designated System does not include Vendor Products, Excluded Products or other systems to which the Designated System may be linked.

D. "Encrypted Features" means those EDACS product features which are not included as part of the standard EDACS system component or radio product software and which are activated by Seller only upon their being licensed to Subscriber. Examples of such features are Landline Data and Multiple Channel Partitioning for the EDACS system components and Priority System Scan for the EDACS PCS portable radios.

E. "Licensed Programs" means all Seller Software programs and associated documentation nonexclusively licensed to Subscriber by Seller for use solely with Subscriber's Designated System, under one or more licenses, for which services are to be provided hereunder.

F. "Software" means computer programs contained on a magnetic tape, semiconductor device or other memory device or system memory consisting of: (a) hardwired logic instructions which manipulate data in a processor and control input-output operations and error diagnostic and recovery routines, and (b) instruction sequences in machine-readable code that control transaction processing, peripheral equipment

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and administration and maintenance functions, as well as associated documentation used to describe, maintain and use the programs.

G. "EDACS FX Classification" means the classification of Subscriber's Designated System(s) within categories of system complexity, as defined by Seller from time to time, for the purpose of determining Subscriber's annual EDACS FX Fee.

H. "Updates" means any commercially available corrections, modifications or enhancements to the Licensed Programs generally released and/or provided by Seller.

I. "EDACS Reseller" means a person or entity authorized by Seller to sell certain EDACS products and systems as an authorized EDACS Reseller in accordance with the provisions of an EDACS Reseller Agreement between Seller and such person or entity.

J. "EDACS Strategic Integrator" means a person or entity authorized by Seller to sell certain EDACS products and systems as an authorized EDACS Strategic Integrator in accordance with the provisions of a Relationship Agreement between Seller and such person or entity.

3. DESCRIPTION OF EDACS FX PROGRAM FEATURES

A. Software Releases Included. With respect to each Licensed Program, and subject to the conditions of this Agreement, Seller will provide the Software Updates described below during the term of this Agreement. All Updates shall be shipped to Subscriber's EDACS FX contact designated in Schedule A of this Agreement via protective packaging containing a quantity of programmed Software media (e.g., PROMs, TK50/DAT tapes, Compact Discs or diskettes) necessary for Subscriber to fully implement the Software Updates within its Designated System. In addition, each shipment of Software Updates shall contain at least one set of Software release notes detailing the contents of the Software Update and providing installation instructions. All Software Updates and documentation shipped to Subscriber shall be considered part of the Licensed Programs, shall be subject to the terms and conditions of the nonexclusive licenses granted by Seller to Subscriber, and Seller shall be free to license others with respect thereto.

i. Software Updates Upon Enrollment. As determined by the system audit described in Section 3.C.i. of this Agreement, Seller shall provide to Subscriber the Software Updates needed, if any, to bring the Licensed Programs within Subscriber's Designated System up to Seller's Current Software Release Levels. Such Updates will be provided at no additional cost to Subscriber provided Subscriber has enrolled in the EDACS FX program within the enrollment deadline specified in Section 4.A of this Agreement and provided Subscriber has installed, at Subscriber's expense, the compatible hardware necessary to accommodate the Software Updates.

ii. Subsequent Software Updates. During the term of this Agreement and subject to Subscriber's performance of its obligations, Seller shall provide to Subscriber Software Updates, released by Seller subsequent to Subscriber's enrollment in EDACS FX, for the Licensed Programs contained within Subscriber's EDACS Designated System. Such subsequent Software Updates may include:

a. Enhancements and/or corrections to existing features for all EDACS Designated System backbone components and/or radios;
b. New features implemented via the system components already contained within Subscriber's Designated System, including unencrypted features for the system backbone components and/or unencrypted features for the radio products.

iii. Software Replacements. In the event any Software media contained within Subscriber's Designated System incurs damage, whether from acts of Nature or human error, Seller shall provide replacements for such Software to Subscriber at no additional charge, subject to the terms and conditions of this Agreement.

B. Software Releases Not Included. The following Software releases are not included within the terms of this Agreement:

i. New Products. Any Software products released by Seller for which an earlier generation or release level is not already contained within Subscriber's Designated System. If Subscriber wishes to implement such Software products within its Designated System, it will need to license such products at the fees then in effect and purchase any necessary compatible hardware for operation of such Software.

ii. Encrypted Features. Encrypted features for EDACS products are not included under this Agreement. Such features must be licensed separately by Subscriber at the fees then in effect.

iii. Third Party Software. To the extent that such Vendor Products are available and compatible with the Designated System, Seller reserves the right to charge an additional fee for upgrades to software programs that are licensed by a third party for use with the EDACS system yet are not the property of Seller.

C. Services Included. Subject to the terms and conditions of this Agreement and Subscriber's compliance therewith. Seller will provide to Subscriber the services described below. Unless otherwise indicated, these services are provided to Subscriber at no additional charge.

i. System Configuration Baseline and Documentation Update. As part of the initial enrollment process for EDACS FX, an audit will be conducted by Seller, or its EDACS Reseller or EDACS Strategic Integrator, of Subscriber's Designated System(s) to be covered under this Agreement. This audit will be used to verify Subscriber's first-year EDACS FX Fee and to determine the Software release levels for Licensed Programs contained within Subscriber's System at the time of enrollment, together with any hardware updates necessary to accommodate Software Updates or to address Year 2000 Readiness issues.

ii. EDACS FX Bulletin. Prior to the general release by Seller of any Software Updates, Subscriber shall receive an EDACS FX Bulletin announcing the impending release, and detailing its contents and impact, if any, on any other EDACS hardware or Software components. Subscriber acknowledges that older hardware may not have sufficient capacity for the operation of the Software Updates. NOTHING IN THIS AGREEMENT OR OTHERWISE REQUIRES SELLER EITHER TO DESIGN UPDATES THAT REMAIN COMPATIBLE WITH DESIGNATED SYSTEM HARDWARE OR TO PROVIDE ADDITIONAL HARDWARE UNDER THIS AGREEMENT, AND SUBSCRIBER WAIVES ANY SUCH DUTY OR OBLIGATION BY SELLER.

iii. Installation Phone Support. Subscriber's EDACS FX subscription shall include telephone support by Seller's Technical Assistance Center (TAC) personnel with respect to the installation of Software Updates. Such support will be available during Seller's normal business hours (8:00 a.m. to 5:00 p.m. Eastern Standard Time Monday through Friday, excluding holidays) and for a period of ninety (90) days from the date the Software Update is released to Subscriber. After-hours emergency support will be available through Sellers optional System Maintenance services at prices then in effect, provided that Subscriber is in compliance with the terms of this Agreement.

iv. Upgrade Planning. If Subscriber is in compliance with the terms of this Agreement and its Designated System is classified as a Level 4 EDACS or higher, upon request by Subscriber, Seller, or its EDACS Reseller or EDACS Strategic Integrator, shall provide yearly consultation service at Subscriber's site to review Seller's planned Software releases and evaluate the operational and financial impact such releases may have on Subscriber's Designated System. If Subscriber is in compliance with the terms of this Agreement and its Designated System is classified below Level 4 EDACS, upgrade planning is not included within the terms of this Agreement but can be obtained from Seller at the rates then in effect for such service.

D. Services Not Included. The following services/products are not included within the terms of this Agreement:

i. Terminal Software Updates. Installation of Software Updates to terminal products is not included, but such installations may be obtained through Seller, or its EDACS Reseller or EDACS Strategic Integrator, at the rates then in effect for such service provided that Subscriber is in compliance with the terms of this Agreement.

ii. Software Update Installation. Installation of Software Updates by Seller is not included, but such installations may be obtained from Seller, or its EDACS Reseller or EDACS Strategic Integrator, at the rates then in effect for such service, provided that Subscriber is in compliance with the terms of this Agreement.

iii. Hardware Upgrades. In the occasional event that a Software Update released requires a corresponding hardware change, Subscriber will need to purchase separately the compatible hardware required. Seller will endeavor to notify Subscriber in advance via the EDACS FX Bulletin or, if applicable, via EDACS FX's upgrade planning service of any hardware changes needed in order to implement a Software Update. No such notice will be given for Vendor Products or Excluded Products, and no hardware upgrade may be available.

iv. Optional Support Services. Other Software support services Subscriber may require, including, but not limited to, training, customized software programming or troubleshooting through Seller's Technical Assistance Center are outside the scope of this Agreement but may be obtainable through other programs offered by Seller.

v. Remote Site Transportation Costs. For those sites that are not readily accessible by motor vehicle and require special transportation arrangements in order to gain access for Designated System audits, Subscriber will be responsible, at its expense for providing transportation to the site and reasonable lodging and other support where same day service is not reasonably available.

4. CONDITIONS FOR SERVICE

A. Enrollment Deadline. Subscriber agrees to enroll in EDACS FX no later than sixty (60) days after the earlier of: (i) the first expiration date of the warranty provided by Seller for any component of Subscriber's Designated System, or (ii) the first expiration date of the warranty provided by Seller for any of the Software within Subscriber's Designated System. If either such warranty already has expired when Subscriber is first offered the EDACS FX Program, Subscriber will be given a 60-day grace period in which to enroll in EDACS FX. A Subscriber meeting the enrollment deadline will receive, at no additional charge as described in Section 3.A.i. of this Agreement, the Software Updates needed to bring its Designated System up to Seller's Current Software Release Levels to the extent the Designated System hardware is compatible with such Software Updates.

B. Subscriber Contact. Seller requests that Subscriber identify its Subscriber Contact in Section 5.B. of Schedule A to this Agreement. Subscriber shall designate a person with sufficient technical expertise to be able to interact knowledgeably with Seller's technical support personnel. To the maximum extent practicable, Subscriber's communications with Seller (with regard to the Software Updates provided under this Agreement) should be through the Subscriber Contact.

C. Installation. Subscriber agrees to properly install the Software Updates provided by Seller in order of receipt from Seller. Subscriber understands that Software support provided by Seller is limited to Seller's Current Software Release Levels of Licensed Programs for the Designated System.

D. Media Labeling. Subscriber agrees that if it makes copies of any Software Update supplied by Seller, whether for backup purposes or in order to install a Software Update throughout its Designated System, Subscriber will reproduce any copyright notice and/or proprietary notice appearing on and/or in such Update and will label all copies with all information, including part numbers and revision levels, provided on the set of media provided by Seller. Nothing herein grants Subscriber any right to sublicense any Software or to distribute copies to any other person, and such sublicensing and distribution is expressly prohibited.

E. No Modification of Software. Subscriber agrees not to modify, enhance or otherwise alter any Software unless specifically authorized in the user documentation provided by Seller with such Software Update or unless the prior written consent of Seller is obtained. Under no circumstance shall Subscriber create or permit the creation of any derivative work from any Software or the reverse engineering or replication of any Software.

F. Seller's obligations under this Agreement are conditional upon Subscriber's compliance with the terms of this Agreement and any Contract then in effect between Seller and Subscriber.

5. FEES, TERMS OF PAYMENT & TAXES

A. EDACS FX Fee. Subscriber agrees to pay Seller or its EDACS Reseller or EDACS Strategic Integrator an annual EDACS FX Fee, in the amount set forth in Schedule A to this Agreement, plus taxes pursuant to Subsection E below, for EDACS FX services provided during the term as defined in Schedule A. Subsequent years' EDACS FX Fees, beyond Subscriber's first-year fee specified in Schedule A, may or may not remain at the same rates. Any changes made to Subscriber's Designated System(s) or mobile equipment which results in their falling into another EDACS FX Classification will be reflected in the following year's EDACS FX Fee. If Seller's rates for EDACS FX should increase, Subscriber will be notified in writing of any such increases at least one hundred twenty (120) days prior to the end of Subscriber's yearly EDACS FX period then in effect.

B. Other Charges. Subscriber understands that if it chooses to delay its enrollment in EDACS FX beyond the deadline described in Section 4.A. of this Agreement, Subscriber will need to license, at the applicable fees then in effect, the initial Software Updates needed to bring its System up to Seller's Current Software Release Levels, as well as any hardware which may be required to accommodate such Updates.

C. Due Date. Subscriber's first-year EDACS FX Fee will be invoiced upon receipt of this Agreement signed by Subscriber. Payment will be due thirty (30) days from the date of the invoice. Subscriber's subsequent years' EDACS FX Fees will be automatically invoiced sixty (60) days prior to the commencement of the subsequent year's term. Payment of all amounts due is a condition precedent to Seller providing any future Software Updates or other services.

D. Payment Terms. Payment shall be made in United States currency. All amounts over thirty (30) days past due shall accrue interest from the due date at the rate of one and one-half percent (1-1/2%) per month (or such lesser rate as is the maximum permissible rate under applicable law). In addition to payment of interest, Subscriber agrees to pay all collection costs and enforcement expenses, including reasonable attorneys' fees, if Seller must bring an arbitration or other proceeding to collect any amount owed by Subscriber or to enforce any rights in any bankruptcy or similar proceeding involving Subscriber.

E. Taxes. In addition to all fees specified herein, Subscriber shall pay the gross amount of any present or future sales, use, excise, value-added, or other similar tax applicable to the price, sale or delivery of any products or services furnished hereunder or to their use by Subscriber, unless Subscriber shall otherwise furnish Seller with a tax-exemption certificate acceptable to the applicable taxing authorities.

F. Discontinuance. Subscriber understands that if Subscriber discontinues and then subsequently resumes participation in the EDACS FX Program, Subscriber will be required to pay a re-entry fee for any benefits provided to Subscriber upon re-entry to the EDACS FX Program plus the EDACS FX Fee for the term then commencing.

6. TITLE

The Licensed Programs and all copies thereof, in whole or in part, and all Software, documents and materials which may be provided by Seller hereunder for use in connection with such Programs are furnished nonexclusively as part of the Licensed Program(s) defined in the applicable software license agreement(s) and shall remain the exclusive property of Seller and will be held in confidence by Subscriber in accordance with the provisions of each such software license agreement. Under no circumstance shall Subscriber create or permit the creation of any derivative work from any Software or the reverse engineering or replication of any Software.

7. TERM & TERMINATION

A. EDACS FX services will be provided by Seller to Subscriber for an initial one-year term, as defined in Schedule A to this Agreement, and thereafter on a year-to-year basis as provided herein, subject to prior payment in full of all outstanding fees and charges at the time of renewal and compliance with the provisions of this Agreement.

B. Provided Subscriber is then in full compliance with all of its obligations, Subscriber's EDACS FX enrollment shall be automatically renewed at the end of the first- year term for a second year's term and on a succeeding yearly basis thereafter unless either party notifies the other in writing, at least ninety (90) days prior to the end of the yearly period then in effect, that this Agreement will not be renewed.

C. Seller shall have the right to suspend or terminate this Agreement upon thirty (30) days' prior written notice if Subscriber fails to pay any fees or charges due hereunder or if Subscriber commits any other breach of this Agreement or commits any breach of any applicable Software license agreement for any Licensed Program being supported under this Agreement, any contract between Subscriber and Seller or any other obligation of Subscriber to Seller or any of its affiliates.

D. Seller shall have the right to discontinue providing EDACS FX services (including Updates) for any Licensed Program supported under this Agreement. Software Updates may be discontinued at any time at Seller's discretion. Other services shall not be discontinued without at least ninety (90) days' prior written notice by Seller to Subscriber. Notwithstanding any other provision of this Agreement, as Subscriber's sole and exclusive remedy Seller will provide a pro-rata refund of Subscriber's annual

EDACS FX Fee if Seller elects to discontinue providing EDACS FX services for any Licensed Program supported under this Agreement.

E. Except as provided in Section 7. D. above, under no circumstances (including any termination of this Agreement) shall any fees paid pursuant to this Agreement be refundable once paid by Subscriber.

8. SOFTWARE WARRANTY

Seller warrants, for a period of ninety (90) days from delivery of a Software Update, that any Software furnished to Subscriber under this Agreement shall be capable of successfully operating on the designated hardware in accordance with the logic defined in the operator's manuals or other supporting documentation when Subscriber's Designated System is supplied with correct input data. If, on the basis of evidence submitted to Seller within the 90 day term of this warranty, it is shown that any Software does not meet this warranty, Seller, at its option, will either correct the defect or error in the Software free of charge and provide a corrected Software Update, or make available to Subscriber a satisfactory substitute program. The foregoing warranty is exclusive and in lieu of all other warranties whether written, oral, implied or statutory. **NO IMPLIED OR STATUTORY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY, ALL OF WHICH ARE WAIVED IN FULL BY SUBSCRIBER. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, INDIRECT OR EXEMPLARY DAMAGES, OR FOR ANY LOST PROFITS OR REVENUES OR OTHER INDIRECT ECONOMIC PREJUDICE, OR FOR ANY EQUITABLE REIMBURSEMENT OR RECOVERY, ALL OF WHICH ARE HEREBY WAIVED IN FULL BY SUBSCRIBER.**

9. LIMITATION OF LIABILITY

The total liability of Seller, including its subcontractors or suppliers, for all direct or indirect claims of any kind for any loss, cost, expense, liabilities, or damage, whether in contract, warranty, tort (including negligence or infringement), strict liability, equity or otherwise, directly or indirectly arising out of, connected with, or resulting from the performance or non-performance of this Agreement (or any related software license agreement) or from the furnishing of any good or service pursuant to this Agreement (or any related software license agreement) shall not exceed the amount of the most recent annual EDACS FX Fee paid by Subscriber under this Agreement. IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE OR INFRINGEMENT), STRICT LIABILITY, EQUITY, OR OTHERWISE, SHALL SELLER OR ITS AFFILIATES, AGENTS, OFFICERS, DIRECTORS, EMPLOYEES, VENDORS, SUBCONTRACTORS OR SUPPLIERS, BE DIRECTLY OR INDIRECTLY LIABLE FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, INDIRECT OR EXEMPLARY DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR REVENUES, LOSS OF USE OF EQUIPMENT, COST OF CAPITAL, COST OF SUBSTITUTE GOODS, FACILITIES, SERVICES OR REPLACEMENT POWER, DOWNTIME COSTS, INTEREST, ATTORNEYS FEES OR LITIGATION COSTS OR CLAIMS OF SUBSCRIBER'S CUSTOMERS FOR SUCH DAMAGES. The provisions of this Section, Limitation of Liability, shall apply notwithstanding any other provisions of this Agreement (or any related software license agreement). The terms and provisions of this Section shall survive the termination or expiration of this Agreement.

10. CONFIDENTIALITY

A. Subscriber agrees not to disclose, provide or otherwise make available to any third party any Software or portion thereof, or any technical information provided to Subscriber under the provisions of this Agreement (hereinafter "Confidential Information"), and to hold such materials in confidence using a strict degree of care to protect the Confidential Information from unauthorized disclosure.

B. Subscriber's obligation with respect to disclosure of Confidential Information shall terminate with respect to any Confidential Information which Subscriber can show was rightfully in its possession prior to the disclosure made by Seller, or which subsequently came into its possession through a third party under no obligation of confidentiality to Seller, or which was independently developed by employees of Subscriber who did not have access to Confidential Information or which becomes a matter of public knowledge other than as a breach of any obligation owed to Seller, or which is disclosed with the prior written permission of Seller.

C. Notwithstanding the obligations on disclosure and use set forth herein, Subscriber may disclose Confidential Information to third parties insofar as is necessary to satisfy a proper court order, subpoena, litigation discovery demand or administrative or regulatory proceeding order, provided that Subscriber promptly notifies Seller in writing of such order or demand prior to any disclosure and takes advantage of all available and appropriate measures to prevent further disclosure of the Confidential Information.

D. The provisions of this Section shall survive the expiration or termination of this Agreement.

11. FAILURE TO ENFORCE

The failure of either party to enforce, at any time or for any period of time, any provision of this Agreement in accordance with its terms shall not be construed to be a waiver of such provision or of the right of such party thereafter to enforce each and every such provision.

12. GOVERNING LAW AND DISPUTE RESOLUTION

A. Any and all Disputes (as defined herein) between or involving Seller and Subscriber shall be resolved by arbitration conducted by three arbitrators in accordance with the commercial arbitration rules of the American Arbitration Association, and in accordance with applicable law and the express terms hereof. The arbitration shall be conducted in Washington, D.C. The decision of the arbitrators shall be reported with their written findings of fact and conclusions of law. The arbitrators shall use their best efforts to reach their decision within six (6) months from the date when the initial arbitration request is made. As used herein the term "Disputes" means any and all disputes, controversies, claims or causes of action of every kind, whether arising from any alleged breach of contract or warranty, tort, violation of law, right to equitable relief or other legal or equitable theory, in any way, directly or indirectly, arising out of or relating to this Agreement. Any arbitration must be commenced within one year from the date on which the cause of action accrued under applicable law or it shall be barred.

B. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Virginia, excluding its rules pertaining to conflict of laws. Subject to the provisions of Subsection A, Subscriber consents to the personal jurisdiction of the state and federal courts in the Commonwealth of Virginia, which courts shall constitute the exclusive forum for all court proceedings involving the enforcement of this Agreement and the resolution of all Disputes related to the subject of this Agreement, whenever, wherever and however arising, whether at law, in equity or otherwise and whether the Dispute involves an alleged breach of contract, violation of law or tort of any kind.

C. Each party acknowledges that jury trials are slower and more expensive than court trials without juries, and, considering the complex nature of the technology and other issues which may give rise to Disputes, the parties agree that any court proceedings commenced by or against either party shall be resolved (subject to arbitration as provided herein) by a court without a jury, and each party waives its right to a

jury as to any disputes or claims arising under or relating to this Agreement, whether for breach or enforcement of contract, tort or otherwise, including all Disputes as defined herein.

13. NO THIRD PARTY BENEFICIARIES; ASSIGNMENT

The provisions of this Agreement are solely for the benefit of Subscriber and Seller. No other person or entity is intended to be a beneficiary of nor is entitled to rely upon or enforce any of the provisions of this Agreement or to assert any claim for nonperformance of this Agreement by any party. This Agreement may not be assigned by either Seller or Subscriber without the prior written consent of the other party. The provisions of this Agreement shall inure to the benefit of and be binding upon Subscriber and Seller and their respective permitted successors and permitted assignees (if any).

14. NOTICES

All notices required or permitted hereunder shall be in writing and shall be deemed validly given upon being hand delivered, or upon receipt if sent by facsimile or if mailed by certified mail, return receipt requested, to Subscriber at the address set forth in Schedule A or to M/A-COM, Inc. at 221 Jefferson Ridge Parkway, Lynchburg, VA. 24501, Attention: Software Services Group, or to such other address as either party may designate to the other in writing.

15. ENTIRE AGREEMENT, EXECUTION AND MODIFICATION

A. This Agreement contains the entire and only agreement between the parties concerning the subject matter hereof, and all prior representations and understandings in connection with the subject matter hereof are superseded and merged herein, and any representation or understanding not incorporated herein shall not be binding upon either party.

B. This Agreement shall not become effective until signed on behalf of Seller by one of its officers or by an executive duly authorized by Seller's Vice President. No change, modification, ratification, rescission, or waiver of this Agreement or any of the provisions hereof shall be binding upon Seller unless made in writing and signed on its behalf in like manner.

C. SELLER DOES NOT ASSUME ANY OBLIGATIONS OR LIABILITIES IN CONNECTION WITH THE SOFTWARE OR SERVICES OTHER THAN THOSE EXPRESSLY STATED IN THIS AGREEMENT, AND DOES NOT AUTHORIZE ANY PERSON (INCLUDING SELLER'S EDACS RESELLERS OR EDACS STRATEGIC INTEGRATORS OR SUBCONTRACTORS OR SUPPLIERS) TO ASSUME FOR SELLER ANY OTHER OBLIGATIONS OR LIABILITIES.

IN WITNESS WHEREOF, and intending to be legally bound, the parties hereto have caused this Agreement to be executed by their duly authorized officers or representatives.

ORIGINAL

SELLER:

M/A-COM, INC.

By:

Name: Tom Kegley

Title: Mgr. Technical Support Services

Date: 11/3/03

M/A-COM, Inc.

221 Jefferson Ridge Parkway

Lynchburg, VA. 24501

SUBSCRIBER:

Miami-Dade County

By:

Name: Jose R. Perez

Title: INFRASTRUCTURE SUPERVISOR

Date: 11-03-03

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EDACS FX

AGREEMENT

SCHEDULE A

1. Term of EDACS FX Agreement

The services, as described in the EDACS FX Agreement to which this Schedule A is attached, will be Provided for the initial period beginning 09/01/03 and ending 08/31/04 and will be automatically renewed for one-year periods thereafter pursuant to Section 7 of the Agreement.

2. Designated System.

The Designated System(s) for which the EDACS FX Agreement will apply is (are):

System Name	System Classification	System Location
Miami-Dade County	Extended Network	Miami, Florida

787

3. *EDACS FX Fees*

The first-year EDACS FX Fee for the above Designated System(s) is as follows:

System Name	EDACS FX Option	System Fee
Miami-Dade County	SSSV1H	$120,000.00

Subscriber's subsequent years' EDACS FX Fees will be determined in accordance with Section 5.A. of the Agreement.

4. *Fiscal Year Billing Option*

If Subscriber requests billing for the first and subsequent years' EDACS FX Fees coincident with Subscriber's fiscal year, please indicate the fiscal year end date:

mm dd

If this option is selected, Subscriber's initial EDACS FX term will be from the effective date shown in Section 1 of this Schedule A through the next fiscal year end date and the first-year EDACS FX Fee will be prorated accordingly.

5. *Designated Subscriber Contact(s)*

A. All notices regarding the EDACS FX Agreement to which this Schedule A is attached are to be sent by M/A-COM, Inc. to:

Contact's Name:	Jose R. Perez
Title:	
Address:	6010 SW 87th Avenue
(Do not use P.O. Boxes)	Miami, FL 33173
Telephone:	305-596-8053
FAX No.	305-596-8839

B. All Software Updates to be provided by Seller to Subscriber under this Agreement are to be sent to (if different than 5.A. above):

Contact's Name:
Company Name:
Title:
Address:
(Do not use P.O. Boxes)

Telephone:
FAX No.

(Note: EDACS FX Bulletins, announcing impending releases of EDACS software, will be sent to both of the above-designated contacts.)

6. This Schedule A is agreed to by:

Seller:	Subscriber Name:
M/A-COM, Inc.	Miami-Dade County
221 Jefferson Ridge Parkway	5680 SW 87th Avenue
Lynchburg, VA. 24501	Miami, FL 33173

ORIGINAL

By:	By:
Name: Tom Kegley	Name: Jose R. Perez
Title: Mgr., Technical Support Services	Title: Infrastructure Supervisor
Date: 11/3/03	Date: 11/3/03

FIRST AMENDMENT TO EDACS FX AGREEMENT

This First Amendment to EDACS FX Agreement ("Assignment") is made as of January ___, 2010 by and between Miami-Dade County ("Subscriber"), and Harris Corporation, a Delaware corporation ("Seller"), by and through its RF Communications division.

RECITALS:

A. Subscriber is party to that certain EDACS FX Agreement by and between Subscriber and M/A-COM Inc, dated as of November 3, 2003 (the "Agreement");

B. Effective as of May 29, 2009, M/A-COM, Inc. has assigned all of its rights, interest, and obligations under the Agreement to Seller; and

C. Subscriber and Seller have entered into that certain Radio Communication System Purchase Agreement dated as of the date hereof (the "System Purchase Contract") for the purchase of a reconfigured P25 Phase 1 Radio Communication System.

NOW, THEREFORE, in consideration of the execution of the System Purchase Contract and other good and valuable consideration, the receipt and sufficiency of which is acknowledged, the parties incorporate the above recitals herein and amend the Agreement as follows:

1. The term of the Agreement shall be and hereby is extended until August 31, 2015, at the expiration of which the Agreement will automatically renew for successive one-year terms unless either party notifies the other in writing, in accordance with Article 7 (Term & Termination). Notwithstanding the foregoing, this Agreement shall terminate upon Final System Acceptance of the P25 Phase 1 Radio Communication System as set forth in the System Purchase Contract, unless the Subscriber requests an additional extension of the term of this Agreement.

2. The EDACS FX fee described in Article 5(A) (Fees, Terms and Payments of Taxes – EDACS FX Fee) shall be One Hundred and Twenty Thousand and 00/100 Dollars ($120,000.00) through August 31, 2015, and then may change on an annual basis, subject to the notice provisions described in that same Article.

3. This Amendment shall serve to republish the Agreement and shall be incorporated into the Agreement and made a part thereof.

[NO FURTHER TEXT ON THIS PAGE]

IN WITNESS WHEREOF, this Amendment has been duly executed as of the day and year first above written.

SUBSCRIBER:

MIAMI-DADE COUNTY

By:_____
Name:
Title:

SELLER:

HARRIS CORPORATION,
a Delaware corporation

By:_____
Name:
Title:

EXHIBIT A – CONSENT BY MIAMI-DADE COUNTY TO ASSIGNMENT

1705469 v3 - GOULDBL - 028055/0002

Tyco Electronics
Our commitment. Your advantage.

HARRIS

November 19, 2009

Miami-Dade County, Florida
5680 SW 87th Avenue
Miami, FL 33173
Attn: Mr. Pedro Caciedo
Enterprise Technology Services Department

Re: Sale of the Wireless Systems Business of Tyco Electronics Ltd. (formerly referred to as M/A-COM) to Harris Corporation and Assignment of the Miami-Dade County FX Agreement

Dear Mr. Caciedo:

Reference is hereby made to the EDACS FX Agreement between M/A-COM, Inc., and Miami-Dade County, Florida dated November 3, 2003 (as the same has been modified, amended or supplemented, together with all orders issued thereunder or in connection therewith and all exhibits, schedules, addenda, and annexes thereto, collectively referred to as the "**Agreement**").

As you are aware, on May 29, 2009, Harris Corporation, a Delaware corporation ("**HARRIS**"), acquired the Wireless Systems Business of Tyco Electronics Ltd. ("**TE**"), which was conducted in the U.S. primarily through M/A-COM, an indirect subsidiary of TE (the "**Transaction**"). HARRIS is an international communications and information technology company serving government and commercial markets in more than 150 countries. Headquartered in Melbourne, Florida, HARRIS, which has been listed among Fortune Magazine's 500 largest American companies, has annual revenue of $5.4 billion and 16,000 employees, including nearly 7,000 engineers and scientists. Further information about HARRIS (including its annual report and recent financial statements) is available on its website at www.harris.com.

In connection with the Transaction, HARRIS assumed the rights, obligations and liabilities of M/A-COM under the Agreement on May 29, 2009. The purpose of this letter is to seek your consent to the assignment of the Agreement and the rights, obligations and liabilities of M/A-COM under the Agreement to HARRIS on May 29, 2009 (the "**Assignment**") and your acknowledgment and agreement (i) that the consummation and closing of the Transaction shall not be deemed to be a default or breach under the Agreement (including, without limitation, by reason of the Assignment), (ii) that the Agreement will remain in full force and effect, (iii) that no termination of the Agreement will occur solely as a result of the Transaction, (iv) that all consent, notice and other requirements under the Agreement are satisfied with respect to the Transaction, and (v) that as of the date of the Assignment, neither TE nor M/A-COM nor any of their affiliates shall have any further obligations or liabilities under the Agreement.

If the foregoing meets your approval, please sign and date where indicated below and fax a copy of this letter to Tom Kegley at 434-455-6689 and send the original within ten (10) business days of your receipt of this letter to Mr. Kegley at the Lynchburg address which shall constitute our agreement with respect to the subject matter of this letter.

Tyco Electronics
Our commitment. Your advantage.

HARRIS

This letter may be executed in counterparts, each of which shall be deemed an original and which shall together constitute one and the same instrument. If you have any questions concerning the foregoing, please feel free to call Doug Hernandez at (434) 455-6687. Thank you for your prompt attention to this matter.

We appreciate the continued business of Miami-Dade County.

Very truly yours,

M/A-COM, INC.

By: _____

Name: Richard Suminski

Title: President

HARRIS CORPORATION

By: _____

Print Name: CHARLES SHAUGHNESSY

Title: VP, LMR PRODUCTS

The Assignment and the terms provided for in this letter are hereby acknowledged, accepted and agreed

This 23 day of November 2009

MIAMI DADE COUNTY, FLORIDA

By: _____

Print Name: ANGEL PERISCO

Title: INTERIM DEPT DIRECTOR

IN WITNESS WHEREOF, the parties have executed this Agreement effective as of the Contract date herein set forth below.

CONTRACTOR

By: _____

Name: Paul R. Greco

Title: Vice President, Contracts

Date: _____

Miami-Dade County

By: _____

Name: _____

Title: _____

Date: _____

Attest: _____
Clerk of the Board

Approved as to form
and legal sufficiency

_____
Assistant County Attorney

#1691785v11