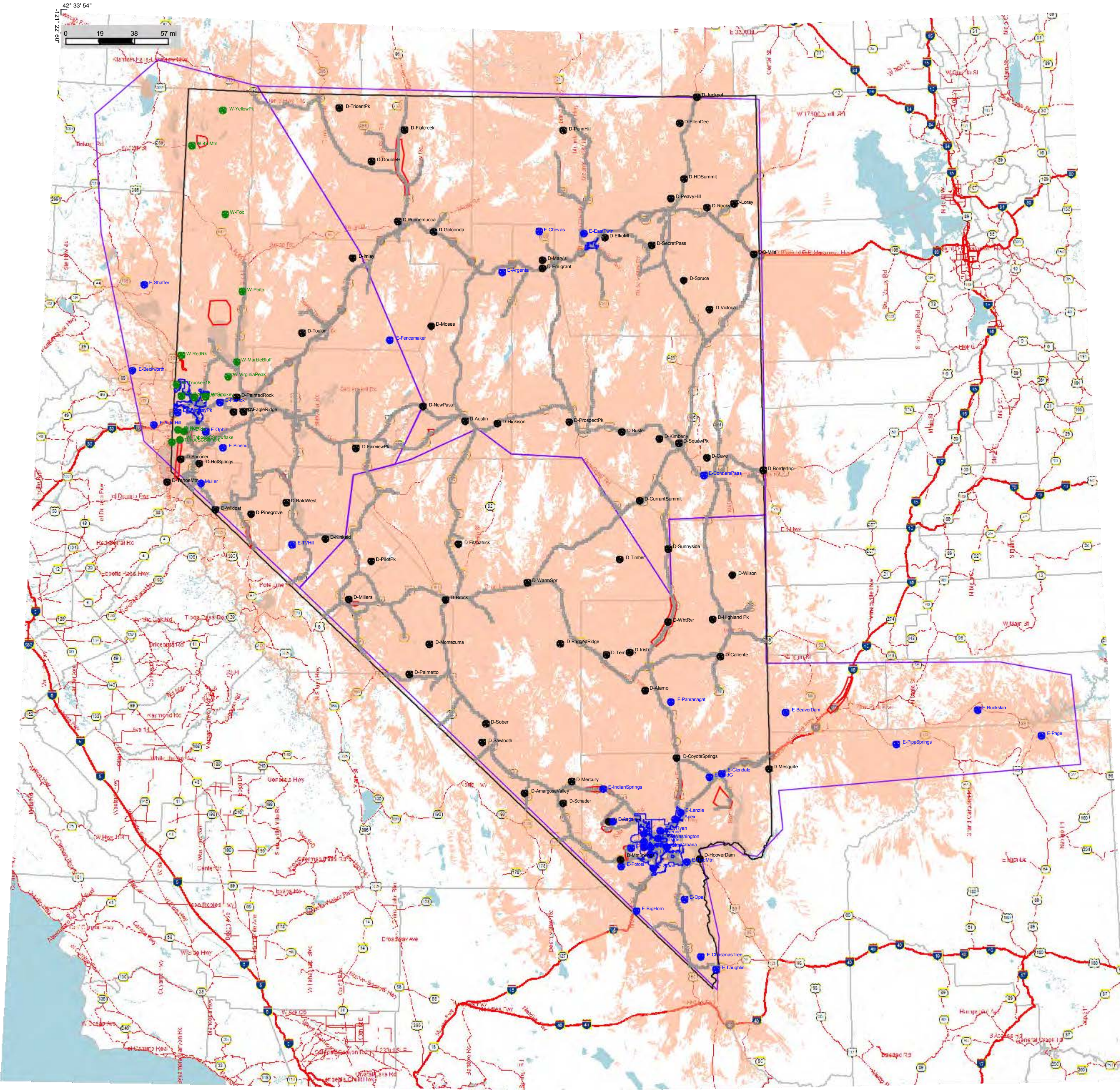


RF Integrity

RAPTR Version 29.2.440
Tuesday, August 07, 2018 16:55:30
Project: NSRS RAPTR_2016
MBP: 16024
Figure: Fig. 01 NSRS Composite 127 Sites Portable Talk Out (Downlink) DAQ 3.4
Engineer:
Map type - 1:2,350,000
Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site

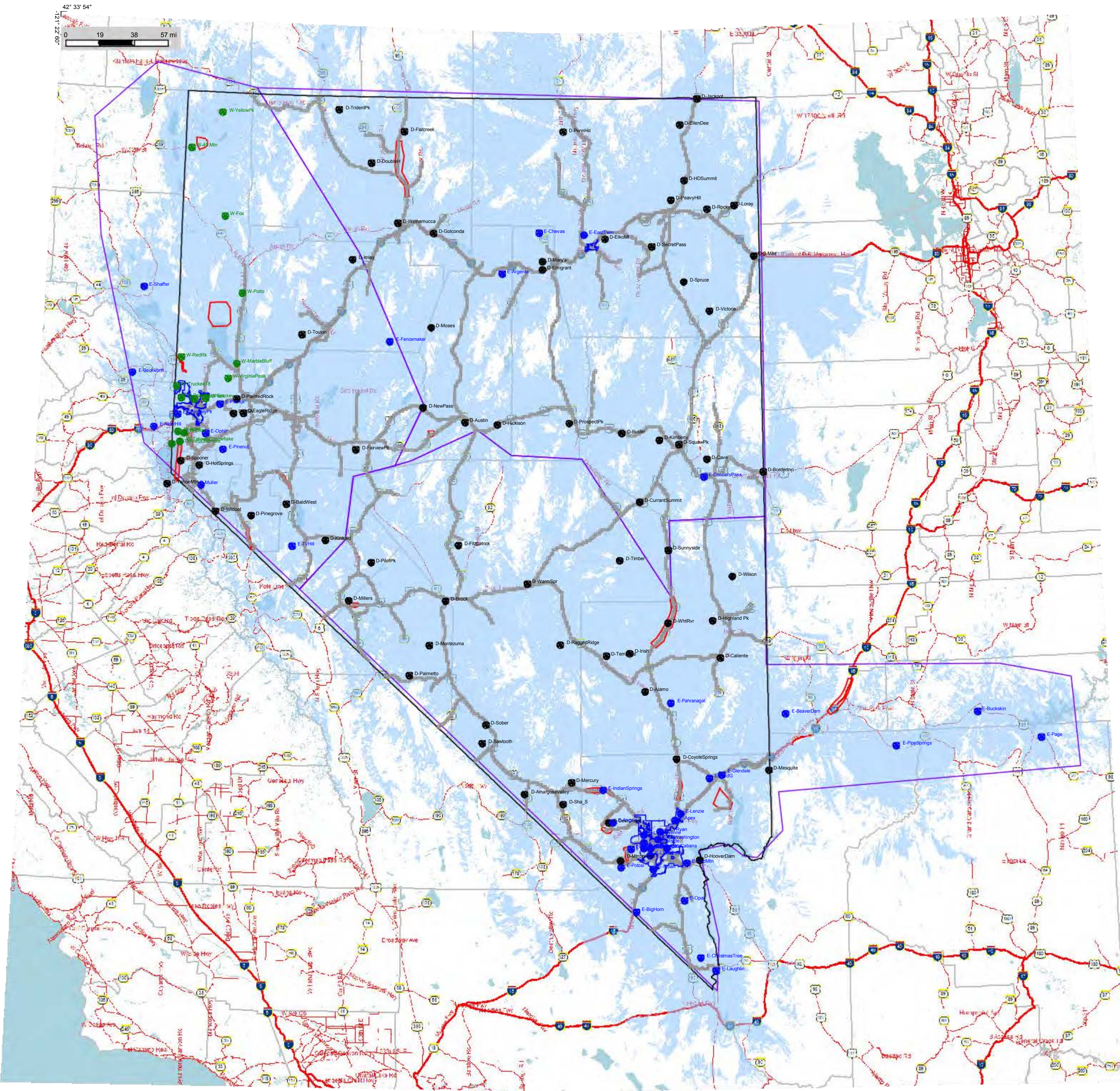


RF Integrity

RAPTR Version 29.2.440
Wednesday, August 08, 2018 17:37:19
Project: NSRS RAPTR_2016
MBP: 16024
Figure: Fig. 02 NSRS Composite 127 Sites Portable TalkBack (Uplink) DAQ 3.4
Engineer:
Map type - 1:2,350,000
Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site



RAPTR Version 29.2.440

Wednesday, August 08, 2018 16:01:58

Project: NSRS RAPTR_2016

MBP: 16024
Figure: Fig. 9

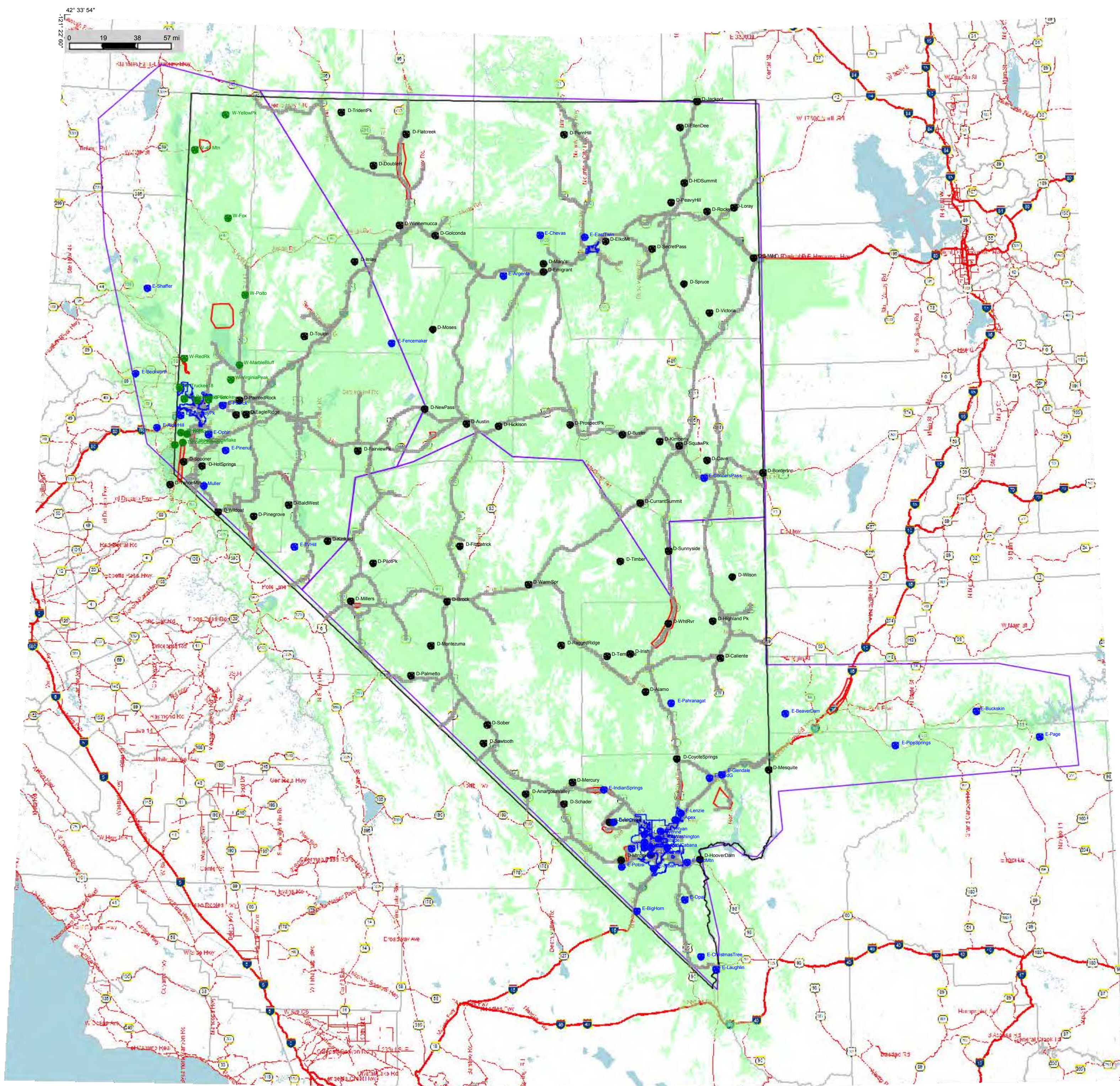
Figure: Fig. 03 NSRS Composite 127 Sites Portable Talk Out (Downlink) DAQ 3.4 Indoors FOR INFORMATION ONLY

Engineer:

Map type - 1:2,350,000

Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.

- NDOT Site
- NVE Site
- Washoe County Site



RF Integrity

RAPTR Version 29.2.440

Wednesday, August 08, 2018 16:24:56

Project: NSRS RAPTR_2016

MBP: 16024

Figure: Fig. 04 NSRS Composite 127 Sites Portable TalkBack (Uplink) DAQ 3.4 Indoors FOR INFORMATION ONLY

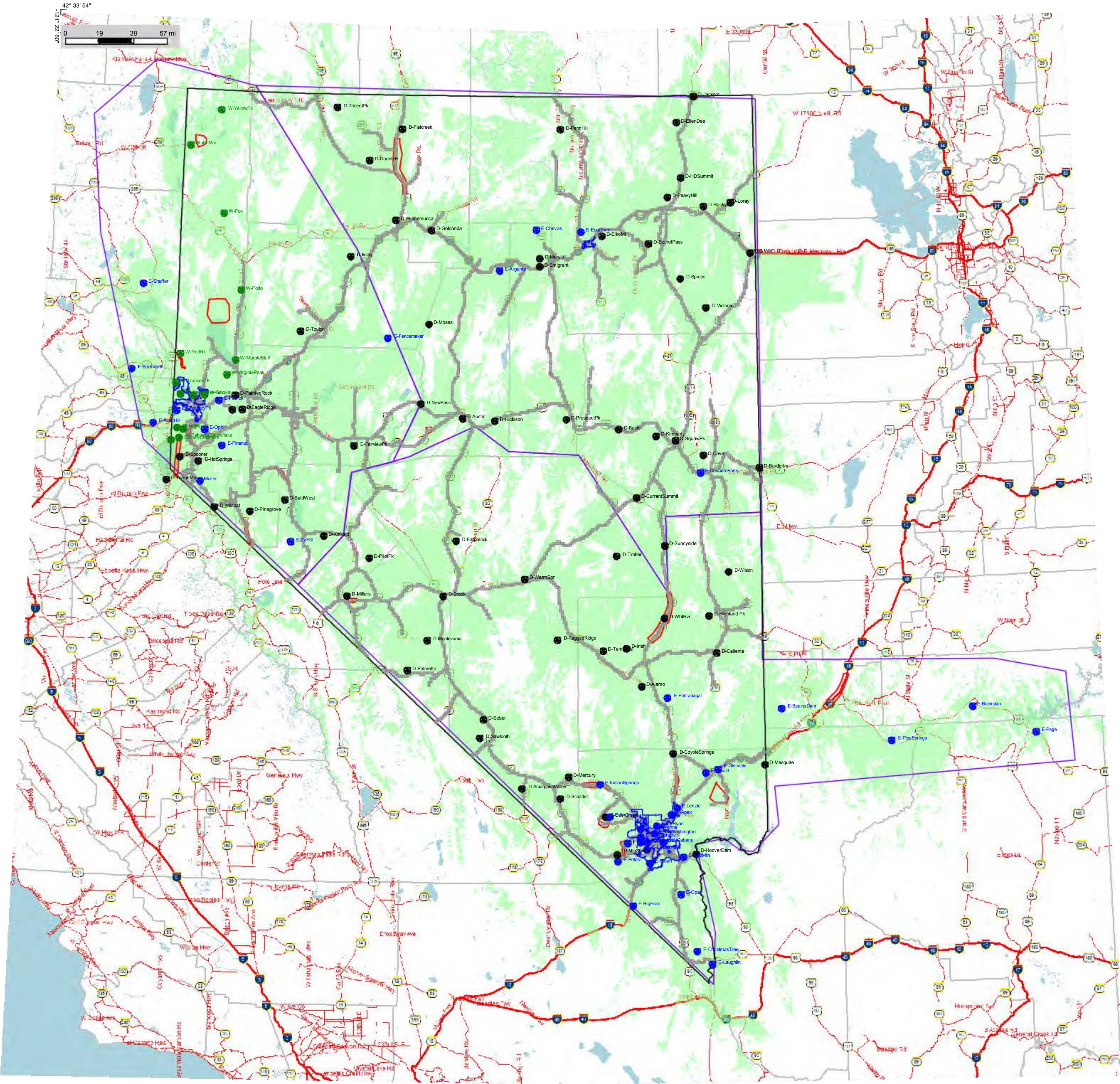
Engineer:

Map type - 1:2,350,000

Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site



RF Integrity

RAPTR Version 29.2.440

Thursday, June 14, 2018 10:55:04

Project: NSRS RAPTR_2016

MBP: 16024

Figure: Fig. 05 NVE Las Vegas Simulcast Portable Talk Out (Downlink) DAQ 3.4 FOR INFORMATION ONLY

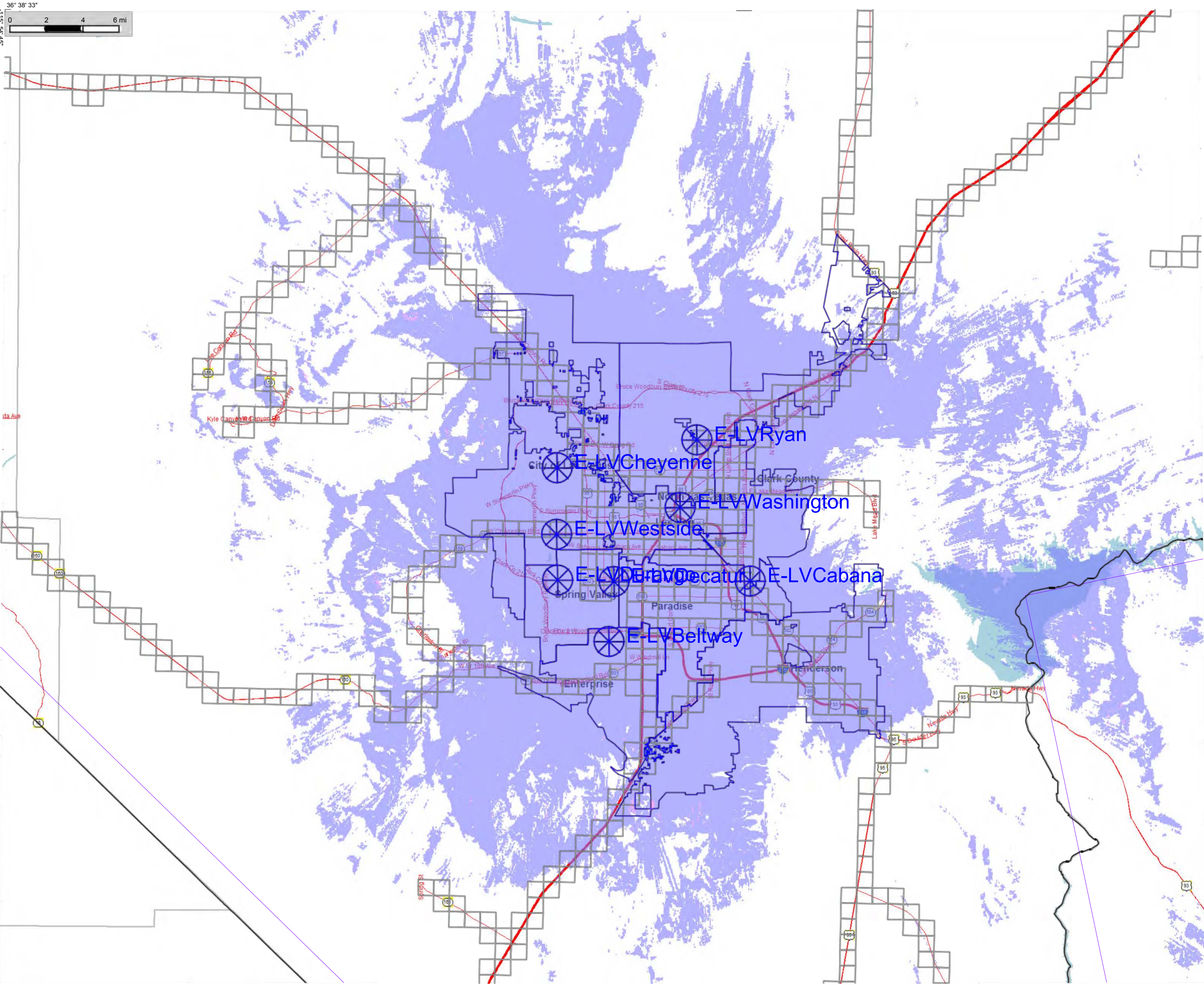
Engineer:

Map type - 1:295,765

Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site



RF Integrity

RAPTR Version 29.2.440

Thursday, June 14, 2018 10:55:44

Project: NSRS RAPTR_2016

MBP: 16024

Figure: Fig. 06 NVE Glendale Reid Gardner Simulcast Portable Talk Out (Downlink) DAQ 3.4 FOR INFORMATION ONLY

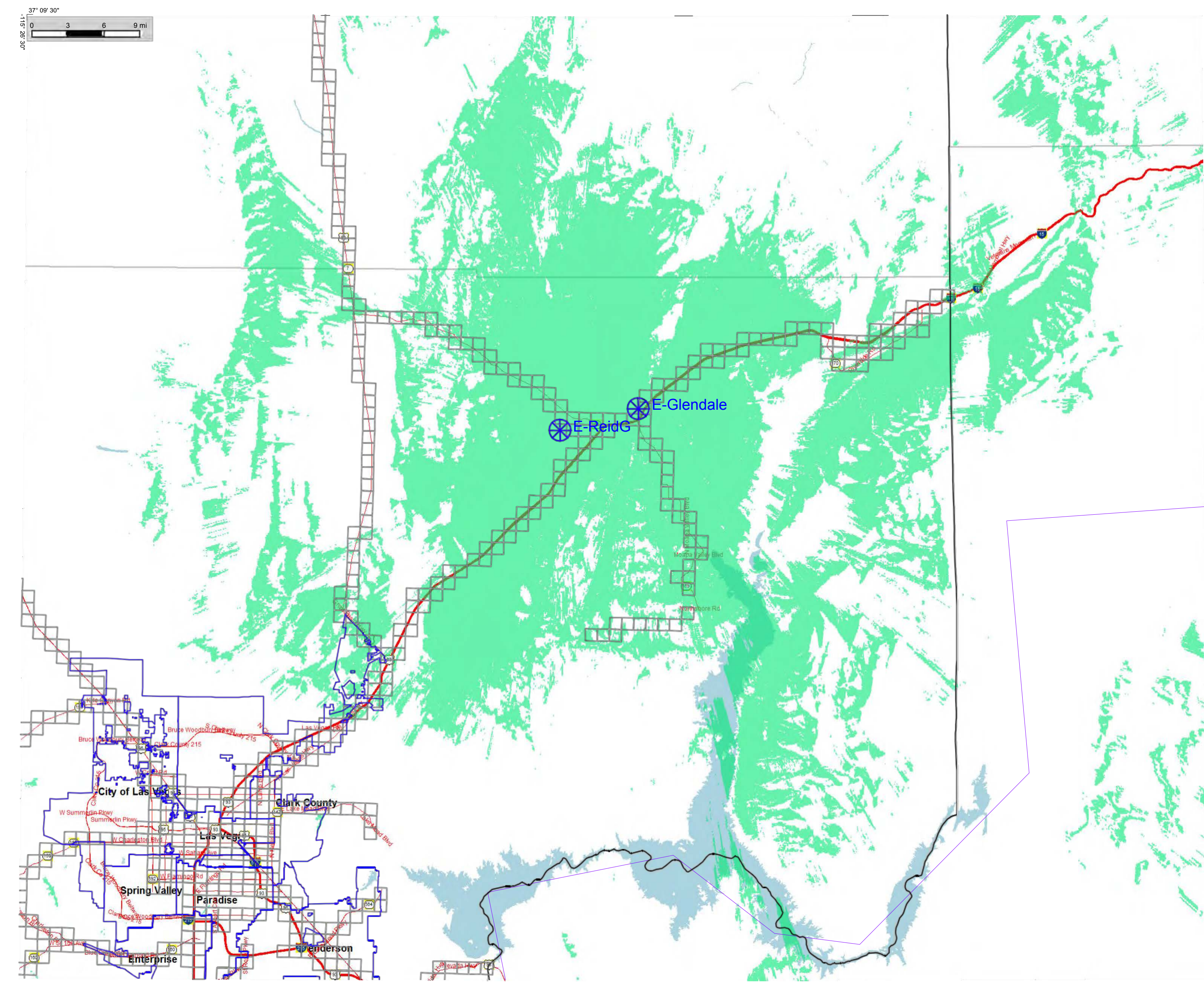
Engineer:

Map type - 1:381,041

Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site



RF Integrity

RAPTR Version 29.2.440

Thursday, June 14, 2018 10:56:24

Project: NSRS RAPTR_2016

MBP: 16024

Figure: Fig. 07 NVE Lenzie Apex Simulcast Portable Talk Out (Downlink) DAQ 3.4 FOR INFORMATION ONLY

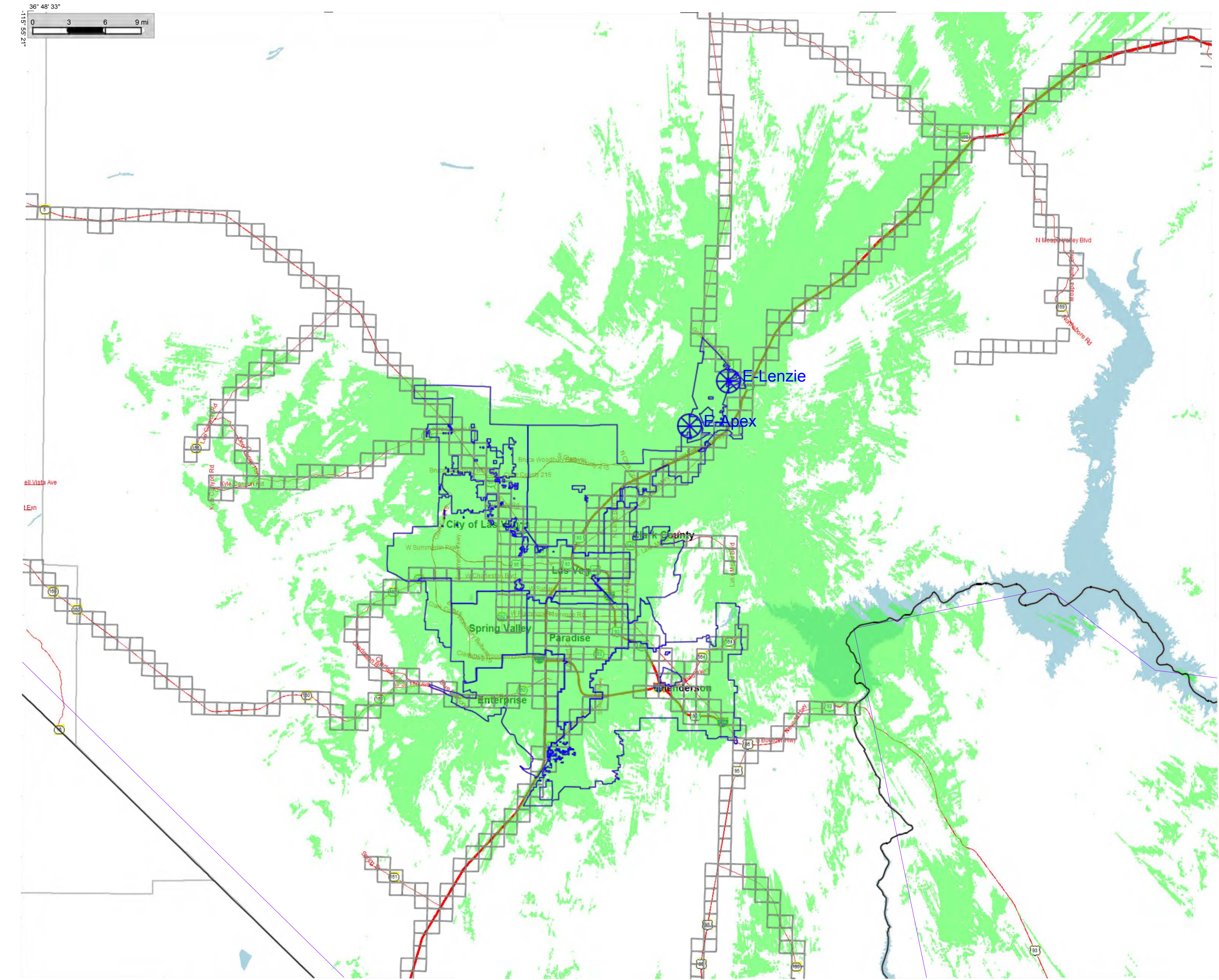
Engineer:

Map type - 1:365,189

Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site



RF Integrity

RAPTR Version 29.2.440

Thursday, July 12, 2018 16:10:33

Project: NSRS RAPTR_2016

MBP: 16024

Figure: Fig. 08 Washoe Metro Chimney Pk Simulcast Portable Talk Out (Downlink) DAQ 3.4 FOR INFORMATION ONLY

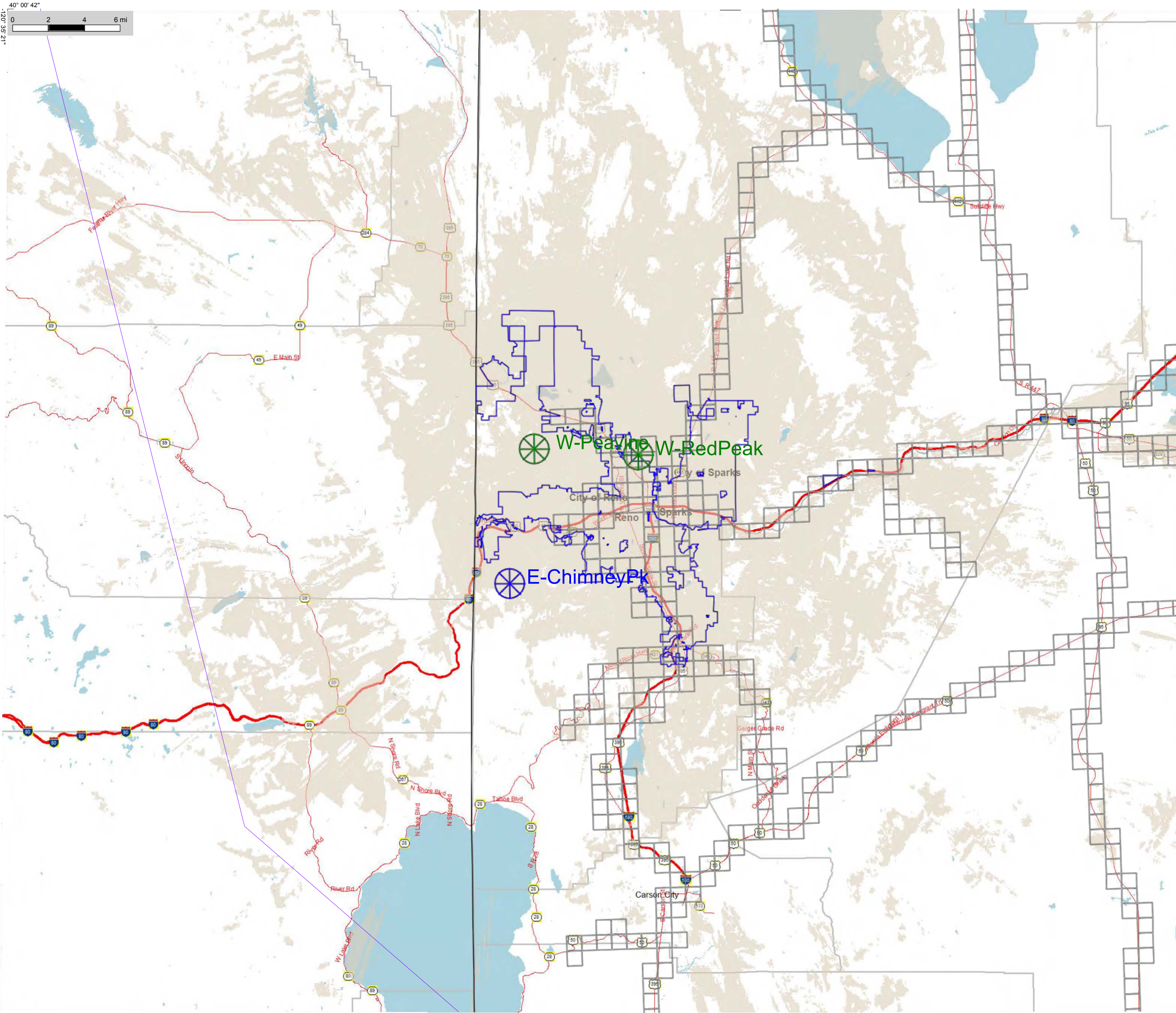
Engineer:

Map type - 1:303,186

Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site



RF Integrity

RAPTR Version 29.2.440

Thursday, June 14, 2018 10:57:42

Project: NSRS RAPTR_2016

MBP: 16024

Figure: Fig. 09 WashoeTahoe Simulcast Portable Talk Out (Downlink) DAQ 3.4 FOR INFORMATION ONLY

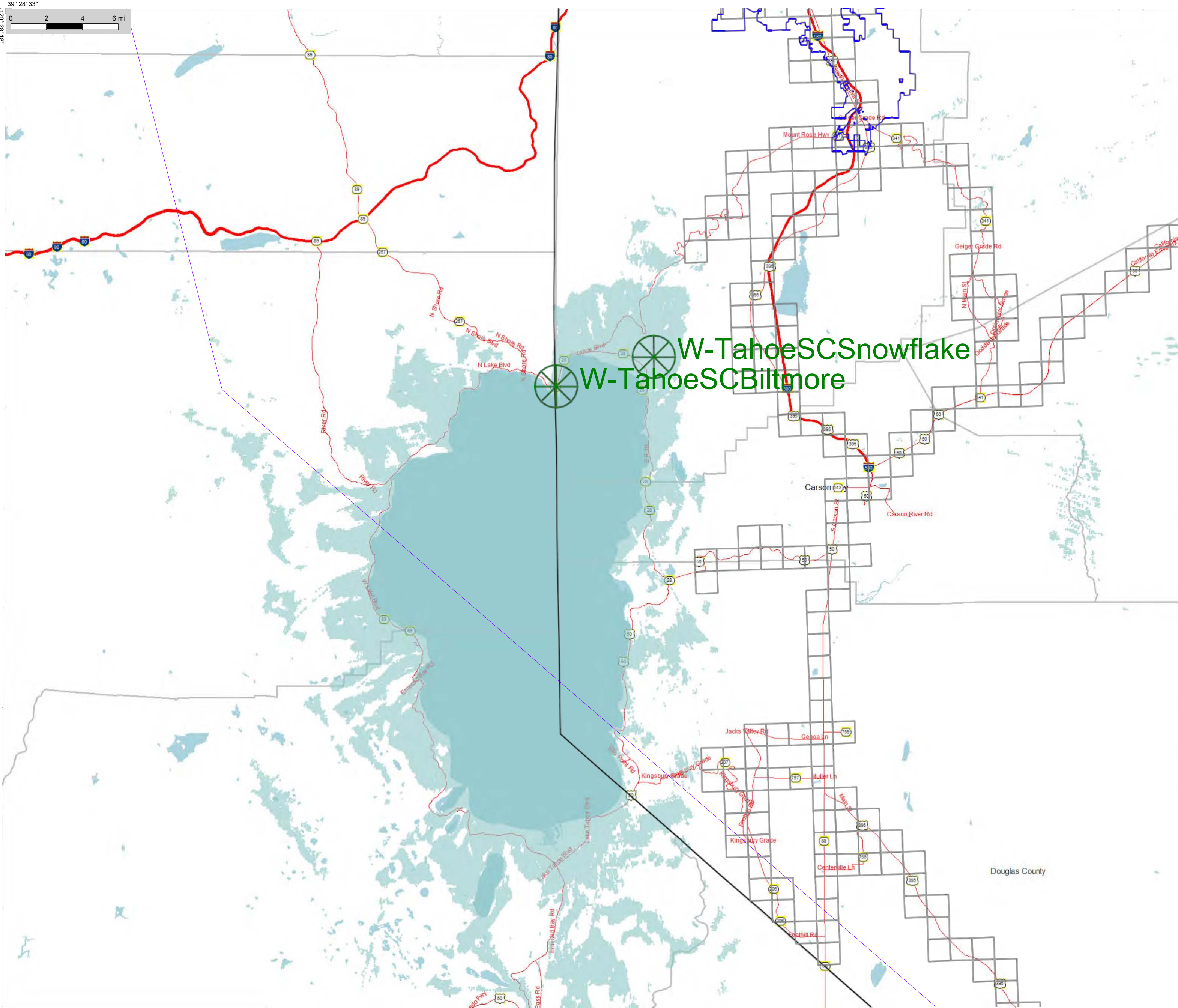
Engineer:

Map type - 1:206,797

Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site



RF Integrity

RAPTR Version 29.2.440

Thursday, July 12, 2018 16:11:26

Project: NSRS RAPTR_2016

MBP: 16024

Figure: Fig. 10 Washoe Slide Rose Simulcast Portable Talk Out (Downlink) DAQ 3.4 FOR INFORMATION ONLY

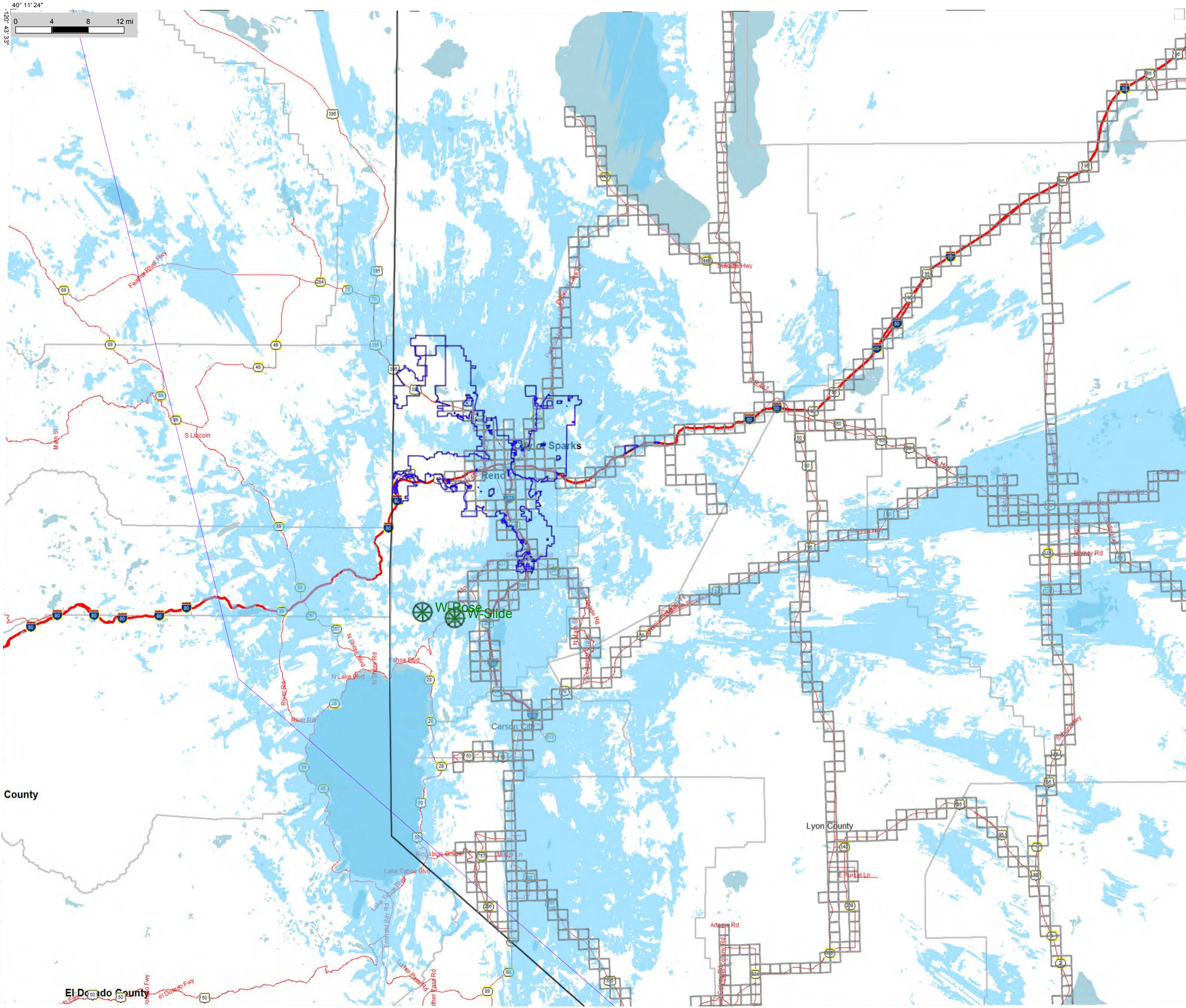
Engineer:

Map type - 1:458,903

Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site



RF Integrity

RAPTR Version 29.2.440

Thursday, June 14, 2018 10:59:50

Project: NSRS RAPTR_2016

MBP: 16024

Figure: Fig. 11 Washoe Marble Virginia Simulcast Portable Talk Out (Downlink) DAQ 3.4 FOR INFORMATION ONLY

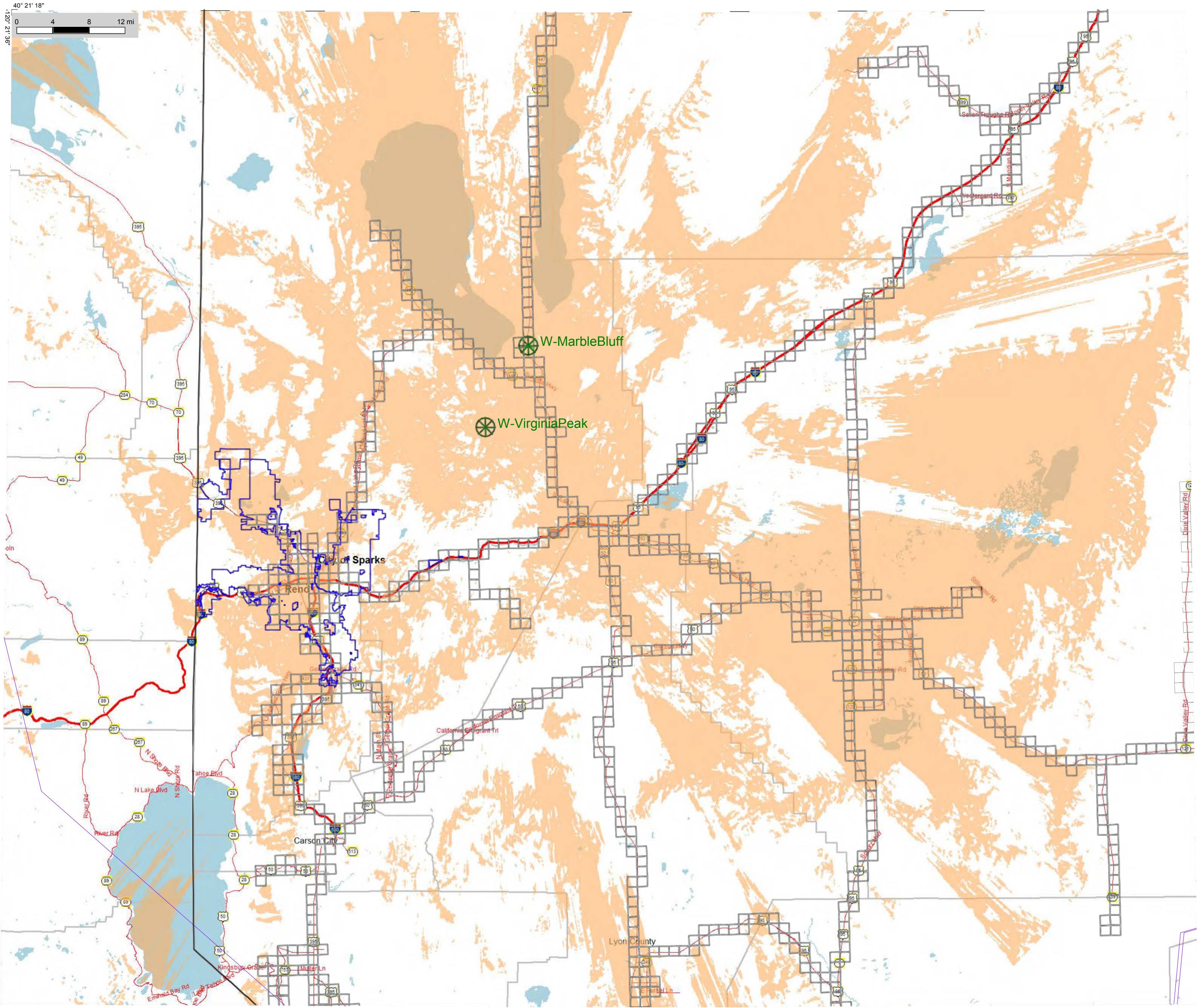
Engineer:

Map type - 1:457,845

Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site



RF Integrity

RAPTR Version 29.2.440

Tuesday, August 07, 2018 17:07:44

Project: NSRS RAPTR_2016

MBP: 16024

Figure: Fig. 12 NSRS Composite 126 Sites Mobile Talk Out (Downlink) DAQ 3.4 FOR INFORMATION ONLY

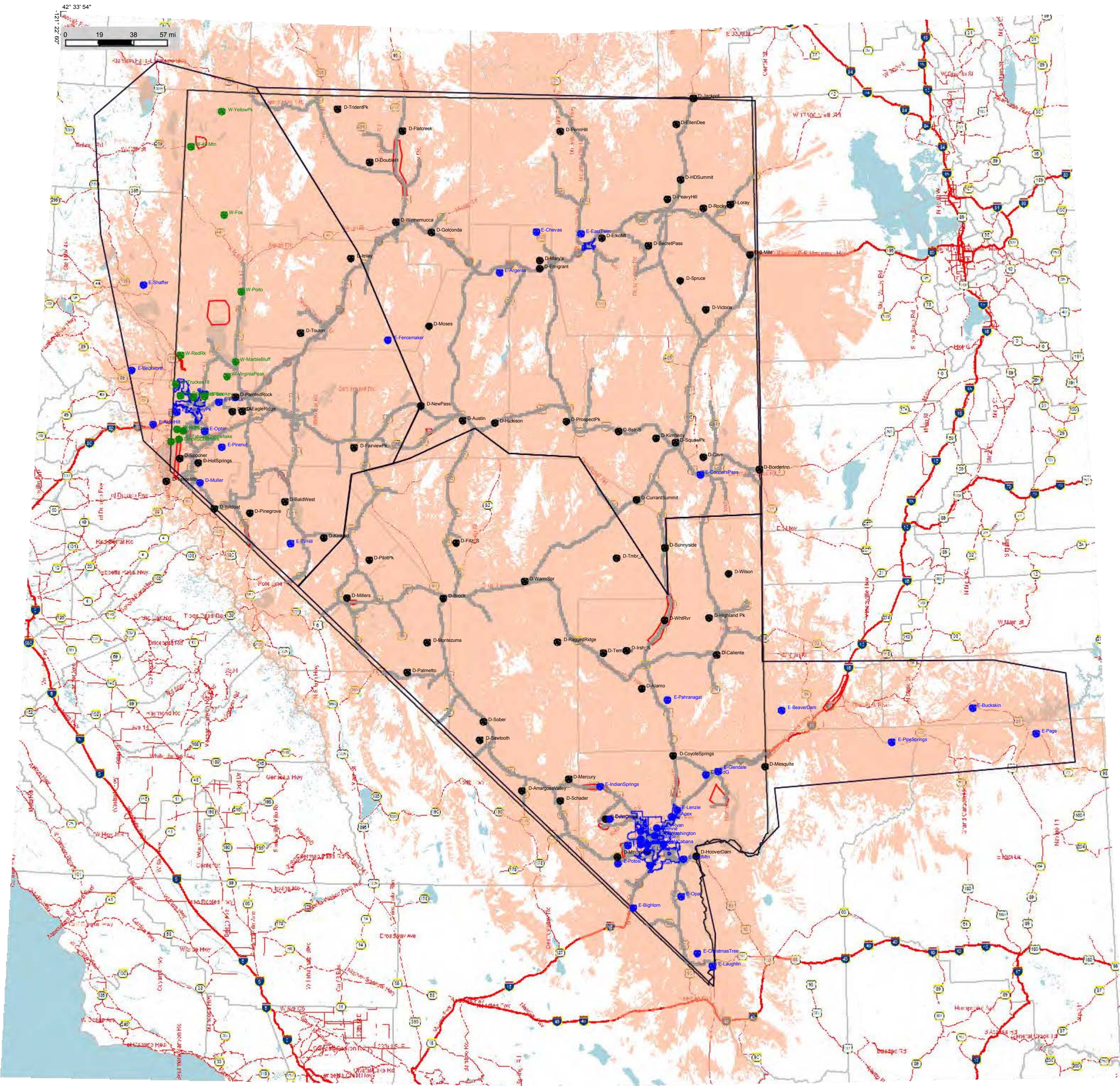
Engineer:

Map type - 1:2,350,000

Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site



RF Integrity

RAPTR Version 29.2.440

Tuesday, August 07, 2018 17:32:01

Project: NSRS RAPTR_2016

MBP: 16024

Figure: Fig. 13 NSRS Composite 126 Sites Mobile Talk Back (Uplink) DAQ 3.4 FOR INFORMATION ONLY

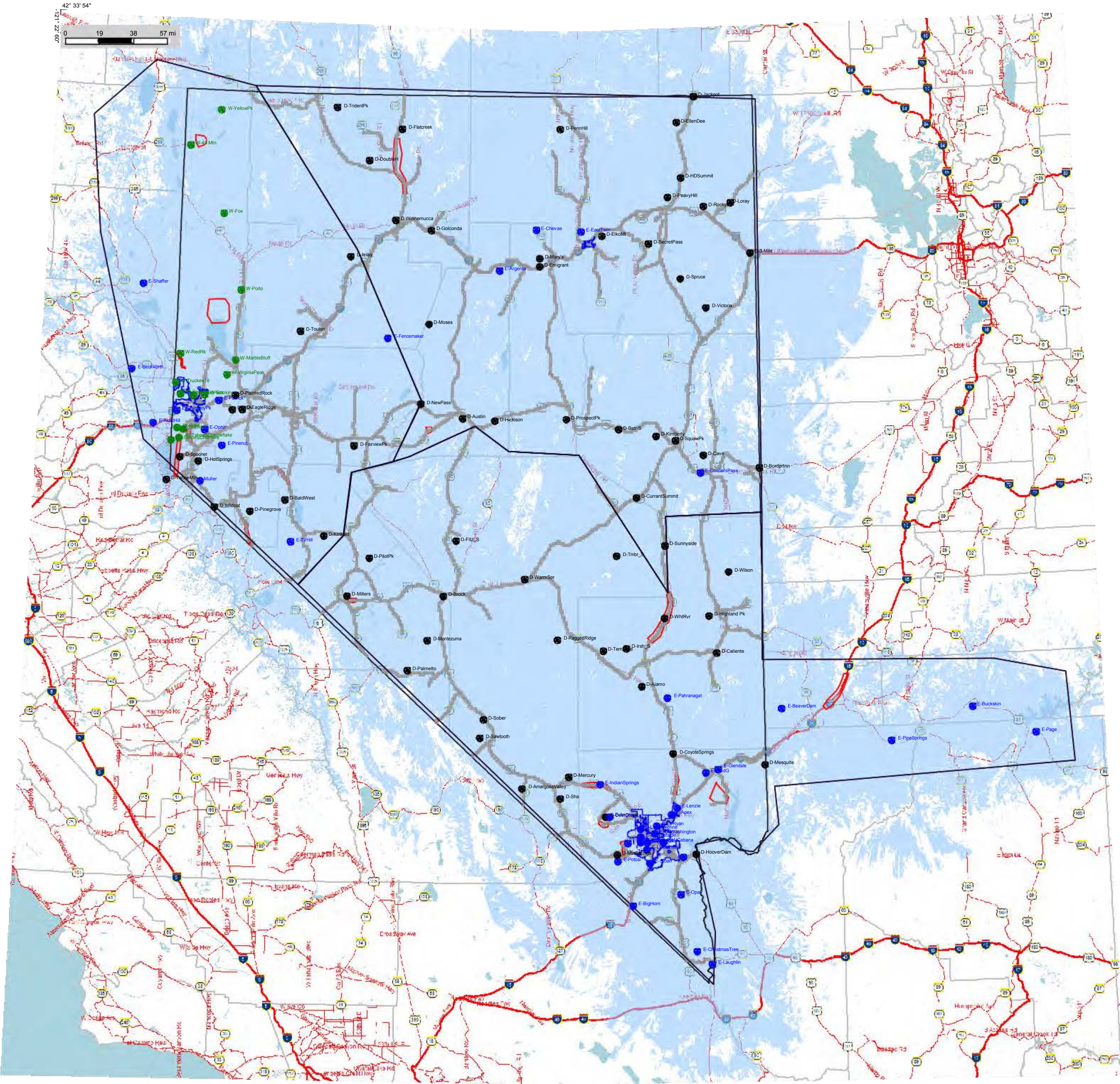
Engineer:

Map type - 1:2,350,000

Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site

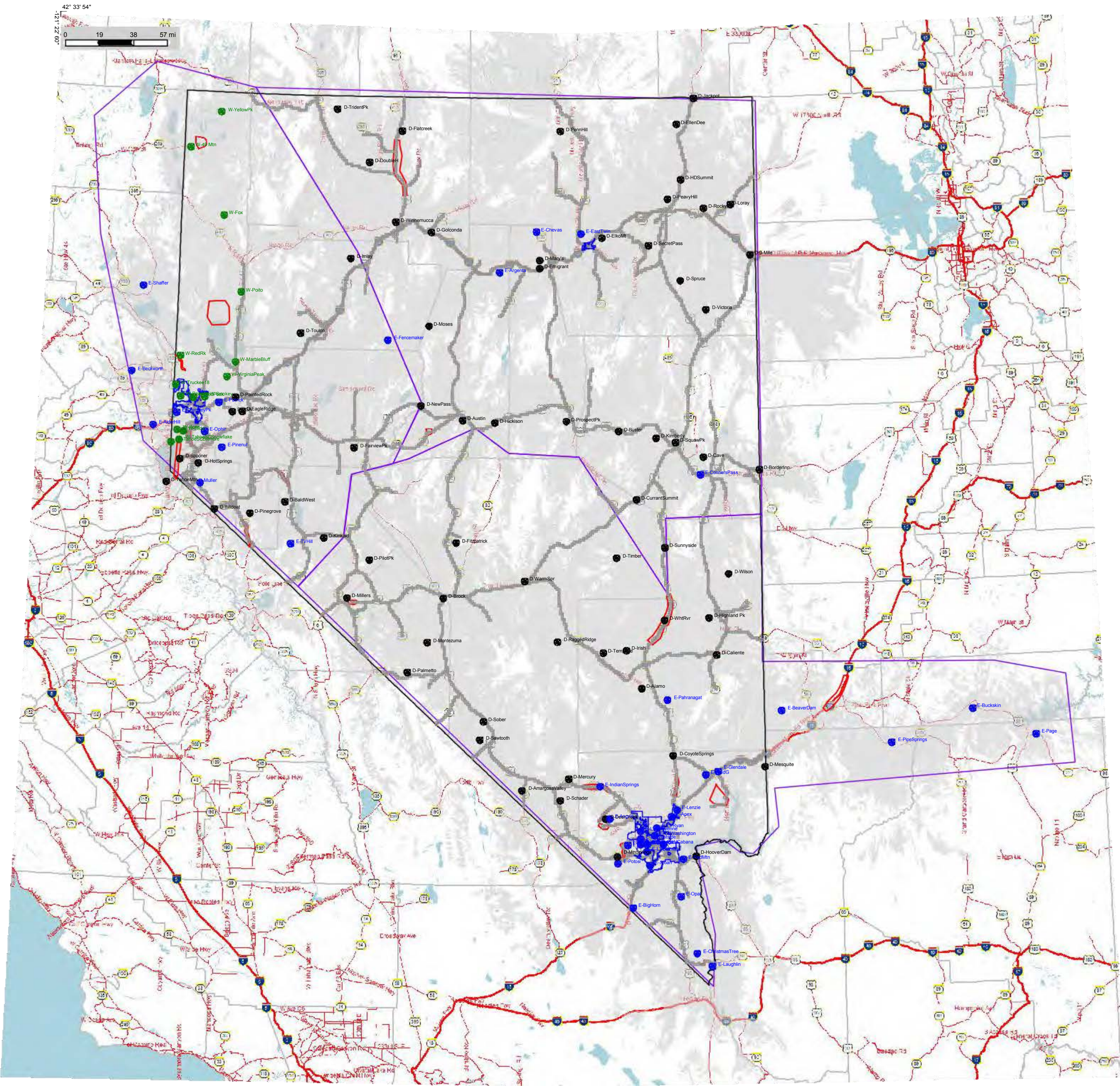


RF Integrity

RAPTR Version 29.2.440
Wednesday, August 08, 2018 16:47:51
Project: NSRS RAPTR_2016
MBP: 16024
Figure: Fig. 14 NSRS Composite 127 Sites Portable Talk Out (Downlink) DAQ 3.0 FOR INFORMATION ONLY
Engineer:
Map type - 1:2,350,000
Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site

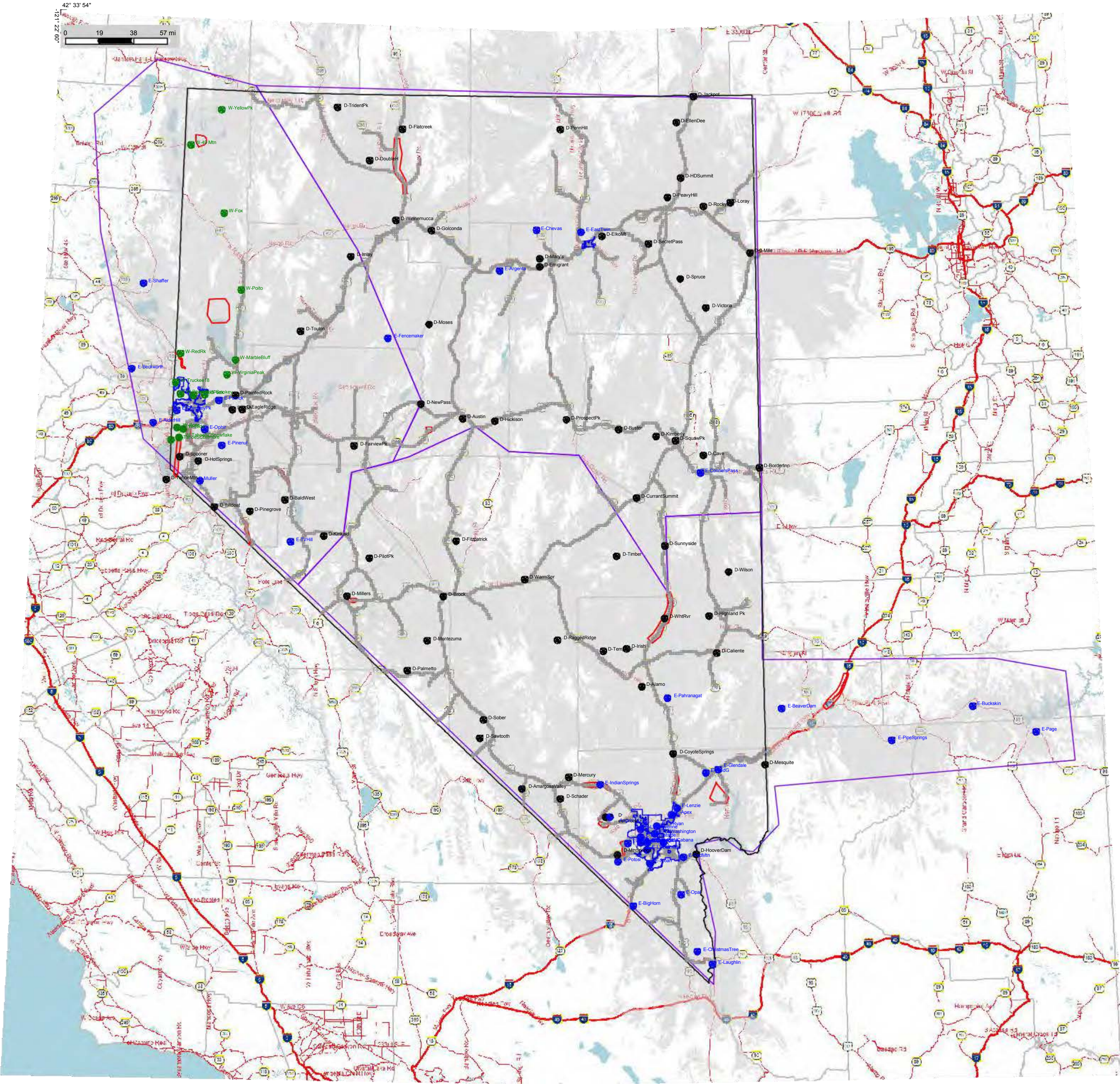


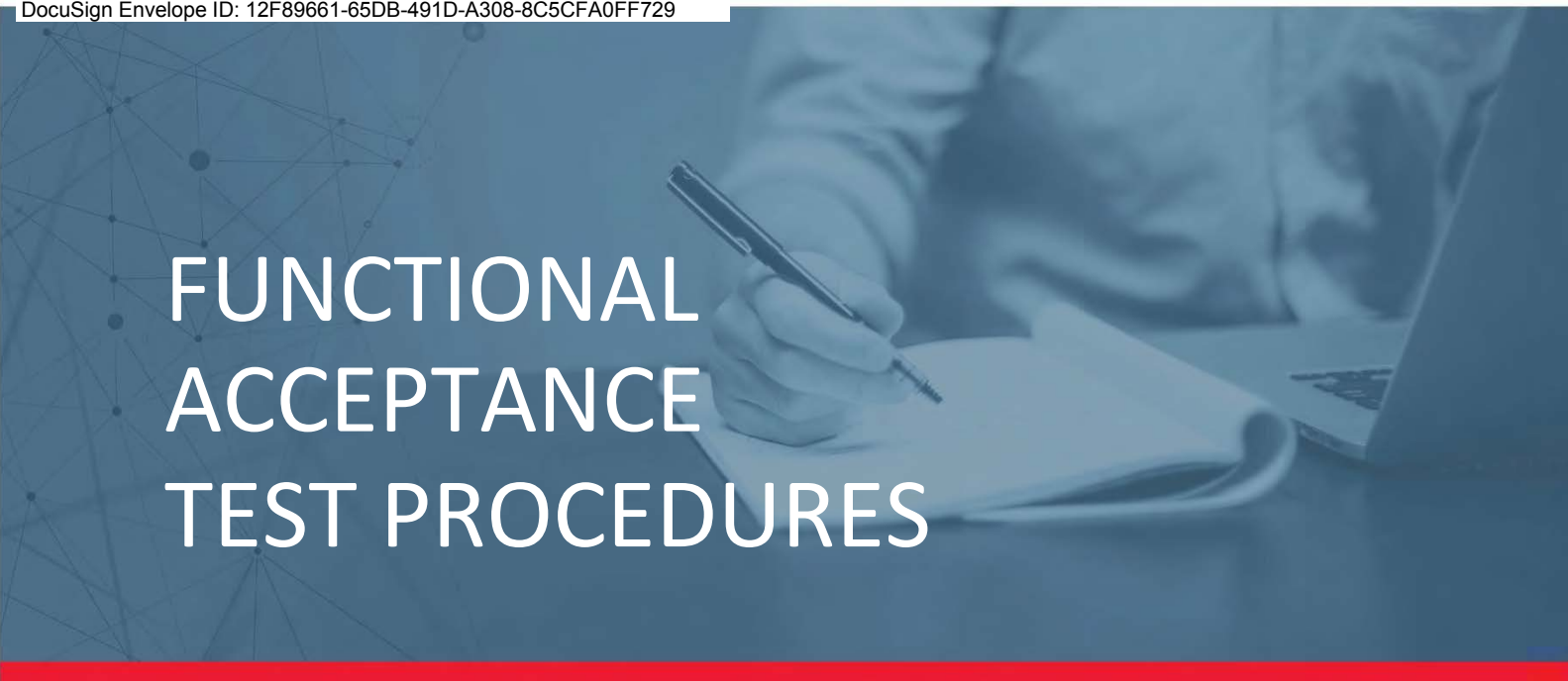
RF Integrity

RAPTR Version 29.2.440
Wednesday, August 08, 2018 17:10:44
Project: NSRS RAPTR_2016
MBP: 16024
Figure: Fig. 15 NSRS Composite 127 Sites Portable Talk Back (Uplink) DAQ 3.0 FOR INFORMATION ONLY
Engineer:
Map type - 1:2,350,000
Note: Map depicts coverage across the defined service area. Statistical variability does not allow for guarantee of coverage in specific locations, but does represent graphically area % coverage.



- NDOT Site
- NVE Site
- Washoe County Site





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Functional Acceptance Test Procedures

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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.

Customer: Nevada Department of Transportation

Prepared By: Smitha Paramashivan

DOCUMENT USAGE

Many of the tests in this document will need to be run on multiple pieces of equipment. 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 production and/or 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)
- Combiner Loss (if applicable)
- Audio line out
- Audio line in

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.

1. CUSTOMER APPROVAL

These Test Procedures have been read and approved for use as the Functional System Acceptance Test.

Customer Representative

Harris Corporation Representative

Signature and Date

Signature and Date

Printed name and title

Printed name and title

2. SYSTEM ACCEPTANCE

This Acceptance Test Procedure has been fully and successfully completed with all action items resolved.

Customer Representative

Harris Corporation Representative

Signature

Signature

Printed name and title

Printed name and title

Date

Date

FUNCTIONAL TESTING CLARIFICATION

Equipment inspection and testing in addition to staging acceptance testing is performed at the Harris staging facility. Staging tests as detailed in this matrix verify basic equipment functionality in addition to its functionality as part of an overall system. Equipment as received from Harris and third party manufacturing suppliers is supplied with manufacturer test results, as applicable. Test results documentation will be that from the staging functional acceptance tests. Equipment tests will be performed in the field after installation both as part of equipment commissioning and overall final functional acceptance testing. Test results documentation will be from the final functional acceptance tests.

3. Facility Test [Field Tests]**3.1 Visual Inspection [Field Tests]**

Purpose: Verify the system has been installed following Harris installation standards.

Expected Results: The installation should look clean and the documentation should reflect the installation.

Setup:
None

Execution:

- Y Verify the area is clean and that all cabinets and racks are both clear of debris and clean.
- Y Verify all equipment racks are spaced per the drawings, secured and grounded.
- Y Verify all nameplates and labels are in place.
- Y Verify all protective foam, tape, and packing material has been removed.
- Y Verify all punchblocks are labeled.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

3.2 Power Backup / UPS Verification [Field Tests]

- Purpose:** To verify that the site can run on the UPS without interruptions.
- Expected Results:** Radio communication should not be interrupted during the transition.
- 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.
- Notes:** Harris will perform this test at all locations. Harris is not responsible for test failures due to inadequate backup power equipment that is under the NDOT's responsibility to provide. Any such failures of NDOT provided backup power equipment will not delay system acceptance. Record in the comments section the names of locations tested and who has provided the backup power equipment (Harris or NDOT).

Execution:

1. From the facility circuit breaker panel, disconnect main power.
Y Verify communication is uninterrupted.
2. After predetermined extent of designed backup power, reapply power.
Y Verify communication is uninterrupted.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

4. VIDA UNIVERSAL ADMINISTRATION SERVER (UAS)**4.1 Create an Agency Level Administrator Account in the UAS**

Purpose: Demonstrate the capability to create Agency Admin Accounts in the UAS.

Expected Results: This test will create a new Agency Level Administrator account.

Setup: Need system level access to an UAS or UAS Client. Predefined Agency and Region in the UAS.

Execution:

1. Browse to the UAS at the address of 'https://s0u1uas.vida.local:8443/nas'
2. Log in with UAS administrator level account.
Y Verify that default accounts are created (see list below) and verify a default Agency administrative class, by selecting System/Administration/Admin User.
3. Select "Add" to display the Administration User Detail screen.
4. Enter a name (e.g., TestAgency), description, and password. Select save to download, and click 'OK'.
5. Log out of the default account.
6. Log in with the newTestAgencyAdmin. Verify access to account.
Y Verify access to account.
7. Log out of the Test AgencyAdmin.
8. Log in with the default account and delete the TestAgencyAdmin.

Admin User	Admin Class	Description
agency998	Agency998	Agency 998 Access
Vida	RSA	RSA
ProvTool	RSA	Provtool
vida2	RSA	vida2
Hp	RSA	Hao for Testing

Nevada Shared Radio Replacement Project
Nevada Department of TransportationExhibit 8 – Statement of Work
Functional Acceptance Test Procedures

Provtool2	RSA	Provtool
Provtool3	RSA	Provtool
Provtool4	RSA	Provtool
Kc	RSA	Kc

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

4.2 Provision Agency with Talk Groups and Subscriber Units in the UAS

Purpose: Demonstrate the capability to add talk-groups and users to the Agency accounts in the UAS.

Expected Results: This test will show that a user can add a new talk group and users to the system.

Setup: System/Region/Agency level access to the UAS or a UAS client.

Talk Groups				
Name	Description	SPNI	Property Id	Priority Id
64000ALL	TG64000 P25	Full Rate All Call	1	3
64100ALL	TG64100 P25	Full Rate All Call	1	3
64101TCL	TG64101 P25	Full Rate Conf Med Priority	1	4
64102TCM	TG64102 P25	Full Rate Conf Med Priority	1	4
64103TCM	TG64103 P25	Full Rate Conf Med Priority	1	4
64104TCM	TG64104 P25	Full Rate Conf Med Priority	1	4
64105TCM	TG64105 P25	Full Rate Conf Med Priority	1	4
64106TCH	TG64106 P25	P25 Full Rate Conf High Priority	1	4

Radios						
Description	RSI	Protocol Mask	Status	Sub Type	Assigned End User	Algorithm Support
Radio1	9980001	P25	Enabled Unit	Harris P5400	010:998:0001	AES
Radio2	9980002	P25	Enabled Unit	Harris P5400	010:998:0002	AES
Radio3	9980003	P25	Enabled Unit	Harris XG-75 Portable	010:998:0003	AES
Radio4	9980004	P25	Enabled Unit	Harris XG-75 Portable	010:998:0004	AES
Console9101	9989101	P25	Enabled Unit	Maestro Console	010:998:9101	AES

Nevada Shared Radio Replacement Project
Nevada Department of Transportation

Exhibit 8 – Statement of Work
Functional Acceptance Test Procedures

Radio5	9980005	P25	Enabled Unit	Harris XG-75 Portable	010:998:0005	AES
Radio6	9980006	P25	Enabled Unit	Harris XG-75 Portable	010:998:0006	AES
Radio7	9980007	P25	Enabled Unit	Harris XG-75 Portable	010:998:0007	AES
Radio8	9980008	P25	Enabled Unit	Harris XG-75 Portable	010:998:0008	AES
Radio9	9980009	P25	Enabled Unit	Harris XG-75 Portable	010:998:0009	AES
Radio10	9980010	P25	Enabled Unit	Harris XG-75 Portable	010:998:0010	AES

Execution:

1. Log into the UAS with one of the default accounts.
2. Under Agency 998, create a talk group by select 'R/W Talk Group' , select Agency/ "agency name"/ R/W Talk Group.
3. Click 'Add' and then on the Talkgroup Detail screen input the TG ID in the table below. All setting not listed use auto setting for setting not listed. Click OK and download.

Y Verify the talk group has been added to the list of Talkgroups

4. Using Putty on an SMT, log into a traffic controller at each control point for simulcast and each site for multisite and issue the command 'show gdb'

Y Verify that group 64454 exists in the traffic controller user data base.

5. Once the group has been verified, delete it from the UAS.

TG Id	Name	Description	SPNI	Property Id
64454	64454ANA	Half Rate Low Priority	1	3

Priority Id	Coverage	Valid Coverage

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5	P25Sites_PSAPs	P25Sites_PSAPs

Results	(Pass/Fail)
Tester: _____	Date: _____
Comments: _____	

4.3 Dynamic Regroup from the UAS

Purpose: Demonstrate the ability to dynamically regroup Subscriber units from the UAS.

Expected Results: This test will combine selected talk groups into a single interop group.

Setup: Radios must have “Allow P25T Unsolicited Dynamic Regroup” checked in the radio personality under General Options.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9980001	TG64051 P25	64001
Radio 2	9980002	TG64052 P25	64002
Radio 3	9980003	TG64053 P25	64003

Execution:

1. At the UAS, select 'Regroup' tab and 'Regroup Profile'.
2. Click 'Add' to add profile detail; name Group 'Regroup1', and Description 'Regroup1 Test'.
 - Y Define regroup profile; select Agency 998 and 'Talk Group 3'.
 - Y Select 'OK', and save changes to the UAS.
3. Click 'End User Group' and click 'Add'. Name Group 'Regroup1' and Description 'Regroup1 test'.
 - Y Select Agency 998 from 'Select a Scope' drop down box.
 - Y Add 'Radio 1' and 'Radio 2' to the 'Selected' windows.
 - Y Select 'OK' to close 'End User Group Detail'.
 - Y Click 'Save' button to Download the new regroup.
4. Click 'Define Regroup' and click 'Add' to name the Regroup 'Regroup1' and Description 'Regroup1 test'.
 - Y Change 'Profile Name' to 'Regroup1' and change 'End User Group Id' to 'Regroup1'.
 - Y Click 'OK' and save to click 'Save' the changes to the UAS.
5. Click 'Manage Regroup' check the box for 'Regroup1' and select the button for 'Regroup'.
 - Y Click 'Save' to start Regroup.
 - Y Verify that Radio 1 and Radio 2 are forced to 'Talk Group 3'.
6. At 'Radio 1' and 'Radio 2', attempt to change talk groups away from 'Talk Group 3'.
 - Y Verify that both radios are forced to remain on 'Talk Group 3'.
7. PTT 'Radio 1' on 'Talk Group 3'.
 - Y Verify that 'Radio 3' hears audio on 'Talk Group 3' and can respond.

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8. Clear the dynamic regroup from the UAS client.
- γ Verify 'Radio 1' and 'Radio 2' are no longer forced to 'Talk Group 3' (i.e., they can select other predefined Talk-Groups).

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

4.4 Unit Deregistration

Purpose: Demonstrate that radio will automatically deregister when the radio is turned off.

Expected Results: This test will show that radio that is off will not create traffic load demand.

Setup: Radio 1 is only radio on 'Talk Group A' for this test.
All other radios should be on different talk groups.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9980001	TG64001 P25	64001
Console	9989101	TG64001 P25	64001

Execution:

- On a client computer, open the windows internet explorer and browse to <https://s0u1rnm.vida.local/nmc>. Choose System Map and select 'Launch Application' button. Open Realtime tab and Click Mobiles.
Y Verify 'Radio 1' LID is shown registered on the site.
- PTT 'Console' on TG 64001 and verify it communicates on the system to 'Radio 1'.
Y Return call from 'Radio 1' to 'Console' on TG 64001.
- Turn off 'Radio 1' and wait for expiration of the radio timeout period.
- Refresh RNM Mobiles screen periodically and verify Radio 1 deregistered after VNIC Remove Demand Timer has passed.
- PTT 'Console' on TG 64001, after the expiration of the timeout.
Y Verify no channel is assigned to site, since no demand exists at the sites.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

4.5 UAS Site Adjacency Configuration

Purpose: Demonstrate the capability to configure site adjacencies in the UAS.

Expected Results: Site adjacencies will be successfully configured and modified.

Setup: UAS installed and functioning on System network.

Execution: Basic test is to follow the manual and SRN instructions to configure site adjacencies using the new graphical interface.

1. In the UAS go to System > System Properties > Site adjacency.
2. Select a site on the left side to configure for adjacency information.
3. Use the left hand side to add adjacencies for the site.
 - Y Confirm the adjacent sites are removed from the non-adjacent site list and display correctly on the right side.
4. Use the right hand side to remove a site adjacency.
 - Y Confirm the removed adjacency disappears on the right side and is displayed as a non-adjacent site on the left side.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

4.6 Unit Enable/Disable from the UAS

Purpose: Demonstrate the ability to disable a lost/stolen radio from the UAS.

Expected Results: This test will disable & re-enable a designated radio.

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 connected to the NSC, and that all sites are online.

[Note: If a radio is encrypted, Unit Disable will automatically delete the encryption key from the radio, as it is disabled. To restore unit functionality for an encrypted radio, the radio must have the encryption key re-installed.]

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 4	998005	TG64001 P25	64001

Execution:

1. In the UAS Select TG 64001 on Radios 1, 2, and 4.
 - Y Verify that the radios can communicate.
2. From the UAS:
 - Y Click Radio 4 ENABLE/DISABLE.
 - Y Under the UNIT Enable/Disable tab, enter the ID of radio 4 to be modified.
 - Y Select the DISABLE button and check the status.
 - Y Attempt to PTT Radio 4 and verify that it will not communicate with the other encrypted radios
 - Y PTT Radio 1 and verify that Radio 4 cannot receive the call.
3. Enable the ID of Radio 4.
 - Y Verify that the Enable/Disable screen indicates that the Current State of the radio is Enabled.
 - Y Confirm that the radios can communicate in unencrypted mode.
4. Switch off Radio 4 and disable it from the Enable/Disable screen.
 - Y Switch on the radio and verify that, on logging into the site, it becomes disabled.
 - Y Verify that the State settings change to Disabled and that the radios cannot communicate.
5. Enable Radio 4.
 - Y Verify that radios can communicate in unencrypted mode.

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Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

5. OVER THE AIR REKEYING (OTAR)**5.1 Generating a system UKEK**

Purpose: This test is setup to verify the KMFs ability to create a UKEK.

Expected Results: The KMF will create a UKEK.

Setup: This test requires a computer that is on the IP network and has 'Harris Key Manager' installed and running.

1. Log into the KMF with the administrator level Active Directory Account
2. Open the 'Network KMF Management'
3. Select the UKEK tab
4. Change the 'Save As' text field to '\\fileshare\fileshare\kmf_files\ProvisionFile.ukek'
5. Generate the UKEK file by selecting the 'Export UKEK' button
6. Select the 'SLN Bindings' tab
7. Change the 'Save As' text field to '\\fileshare\fileshare\kmf_files\SlnBindingsReport/xml'
8. Generate the bindings by selecting 'Generate SLN Bindings Report'. This file will be used in a later test.

(Pass/Fail)	_____	Tester:	_____
Date:	_____	_Comments:	_____
_____			_____
_____			_____
_____			_____

5.2 UKEK a Radio

Purpose: This test is setup to verify the KMFs ability to load UKEKs into a radio.

Expected Results: The radio should accept the UKEK file developed by the KMF.

Setup: This test requires a computer that is on the IP network and has 'Harris Key Manager' installed and running. This test also requires three radios programmed with a talk group utilizing an AES encryption key. All radios should be feature encrypted and enabled for OTAR operation. Two radios should have keys and one radio should not have keys. In test "Unit Enable/Disable from the UAS" they keys were removed from radio 9980005.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 5	998005	TG64001 P25	64001

Execution:

1. On a computer with 'Harris Key Manager' installed, save the file at '\\fileshare\fileshare\kmf_files\ProvisionFile.ukerk' to the local computer.
2. Start 'Harris Key Manager' and connect the radio to the local computer.
3. Select 'Tools' -> 'Key Load Wizard' to open key load wizard
4. Select 'Next' -> Load a UKEK file into one or more devices" and open the UKEK file in step 1 and select 'Next'
5. Once the UKEKs are loaded select 'Next'
6. Choose the com port
7. Power on the radio and put the radio into Key Load Mode
8. Select 'Load' to load UKEK into the radio

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Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

5.3 Warm starting a radio from the UAS Key Management Application

Purpose: This will test the system's ability to push encryption keys to a radio and the radio to hear other radios on the encrypted talk group.

Expected Results: The radio will accept the keys from the system and be able to communicate with other encrypted radios on an encrypted talk group.

Setup: This test requires three radios programmed with a talkgroup utilizing an AES encryption key. The radios and talkgroup need to be in a test crypto net in the UAS Key Management Application. The radios should be both feature encrypted and enabled for OTAR operation. Two radios should have working encryption, and Radio 4 should have the ukek load but no keys.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 5	998005	TG64001 P25	64001

Execution

1. PTT all three radios
 - Y Radios 1 and 2 should communicate normally
 - Y Radio 1 and 2 should hear calls from radio 5 but radio 5 should not be able to hear calls from the encrypted radios
2. From the UAS, warm start radios 5.
 - Y The UAS will report "Warm Starting".
3. After the operation is complete, refresh the UAS screen.
 - Y Verify the UAS reports "Warm Started Success" for radios 5
4. Again PTT radio 1 on the encrypted talk group and talk.
 - Y Radio 1's transmit (TX) indicator should turn on and be amber.
 - Y Verify that radio 1 and 2 now decrypt the call's audio.

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Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

5.4 Rekeying and Changing Over a Crypto Net from the UAS

Purpose: This test will show that the system can change the encryption keys to a new set of keys.

Expected Results: After this test is complete the radio will be able to communicate with the new set of keys sent by the system

Setup: This test requires three radios programmed with a talk group utilizing an AES encryption key. The radios and talk group need to be in a test crypto net in the UAS Key Management Application. All radios should be feature encrypted and enabled for OTAR operation. The radios should have been warm started previously. If a console and/or GWB are present in the system, then these devices should be included in this test also. They need to be in the same test crypto net as the radios and be programmed with the test talk group. They should have been warm started previously.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 5	998005	TG64001 P25	64001

Execution:

- Put radios 1, 2 and 5 on the encrypted talk group.
 - Y Verify that all 3 radios can transmit and receive on the encrypted talk group.
- Leave radios 1 and 2 powered on and power off Radio 5.
- From the UAS, rekey the crypto net. The UAS will report “Rekeying” for the crypto net.
- Select the report icon for the crypto net.
 - Y Radios 1 and 2 should be shown as “Rekeyed.”
 - Y Any consoles and/or GWB’s should also be shown as “Rekeyed.”
 - Y Radio 5 should be shown as “Rekey Failed.”
- From the UAS, change over the crypto net. It should report “Changing Over” for the crypto net.

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6. After the operation is complete, refresh the UAS screen. It should report “Changing Over Complete” for the crypto net
 - Y Verify that radio 2 but not 3 decrypt the call’s audio.
 - Y Verify that any consoles and/or GWB’s decrypt the call’s audio also.
8. PTT Radio 3 on the encrypted talk group and talk.
 - Y The transmit (TX) indicator should turn on and be amber at Radio 3.
 - Y Verify that radios 1 and 2 decrypt the call’s audio.
 - Y Verify that any consoles and/or GWB’s decrypt the call’s audio.
9. From the UAS, do an end user level rekey on Radio 3 for that crypto net.
 - Y The UAS will report “Rekeying” for Radio 3.
10. After the operation is complete, refresh the UAS screen. It should now show “Rekeyed” for Radio 3.
 - Y Select the report icon for the crypto net. Radios 1, 2, and 3 will be shown as “Rekeyed.”
 - Y From the UAS, do an end user change over on Radio 3 for the test crypto net. The UAS will report “Changing Over” for Radio 3.
11. Again PTT radio 1 on the encrypted talk group and talk.
 - Y Verify that Radio 1’s transmit (TX) indicator turns amber.
 - Y Verify that radio 2 and 3 decrypt the call’s audio.
 - Y Verify that any consoles and/or GWB’s decrypt the call’s audio also.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

5.5 Zeroizing a Radio from the UAS Key Management Application

Purpose: This test will verify the system's ability to delete the keys out of a radio that was encrypted.

Expected Results: The test will take a radio that has keys and can communicate with other encrypted radios, and remove the keys so the radio cannot communicate with other encrypted radios.

Setup: This test requires three radios programmed with a talk group utilizing an AES encryption key. The radios and talk group need to be in a test crypto net in the UAS Key Management Application. All radios should be feature encrypted and enabled for OTAR operation. The radios should have been warm started previously.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 5	998005	TG64001 P25	64001

Execution:

- Put radios 1, 2 and 3 on the encrypted talk group.
 - Y Verify that all 3 radios can transmit and receive on the encrypted talk group.
- From the UAS, zeroize Radio 3.
 - Y The UAS will report "Zeroizing" for Radio 3 with the date and time updating to reflect the date and time the operation was initiated.
 - Y After the operation is complete, refresh the UAS screen. Verify the UAS reports "Zeroized" for Radio 3.
- PTT radio 1 on the encrypted talk group and talk.
 - Y The transmit (TX) indicator should turn on and be amber at radio 1.
 - Y Verify that radio 2 decrypts the call's audio.
 - Y Radio 3 should hear garbled audio or muted audio.
 - Y Verify the receive indicator is amber on both radios and the ID of radio 1 should be seen at both radios 2 and 3.

γ Verify Radio 3 shows “No Key 0” when it is PTT’ed on the encrypted talk group.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

5.6 Rekey A Radio From the Radio

- Purpose:** This test will test the system's ability to send keys to a radio when the radio requests the keys.
- Expected Results:** The test will take a radio that has keys and can't communicate with other encrypted radios, and add keys to the radio so it can communicate with the system.
- Setup:** This test requires three radios programmed with a talk group utilizing an AES encryption key. The radios and talk group need to be in a test crypto net in the UAS Key Management Application. All radios should be feature encrypted and enabled for OTAR operation. One of the radios should be the radio that was zeroized in the previous test.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 5	998005	TG64001 P25	64001

Execution:

- Key Radio 1 on an encrypted talk group.
Y Radio 1 should display 'No key' Radio 2, and 3 should not hear the call.
- From the menu on Radio 1 select 'Rekey' to request new key for Radio 1.
Y Once the radio receives the encryption keys, key Radio 1 and verify Radio 2, and 3 hear the call.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

5.7 UKEK and Symphony

Purpose: This test is setup to test the KMFs ability to make UKEK files the Symphony can use.

Expected Results: The Symphony should accept the UKEK file developed by the KMF.

Setup: This test requires three radios programmed with a talk group utilizing an AES encryption key. All radios should be feature encrypted and enabled for OTAR operation.

Execution:

1. Start the Symphony Application
2. With an encrypted radio make a call on an encrypted talkgroup,
 - Y the radio with encryption should play the call,
 - Y the console will not because it does not have keys.
3. Start the 'Manual Key Loader' application.
4. Select 'Load UKEK'
5. Select the 'Browse' button
6. Browse to '\\fileshare/fileshare/KMF_Files/ProvisionFile.ukek'
7. Select the 'Load' button
8. Close the application by hitting the 'Done' button.
9. Select 'Maestro Conductor Application' from the lower right hand side to the console desktop.
10. Select 'Load Encryption' this will bring up a window were the binding and UKEK can be loaded into the console
11. Select the button next to the 'UKEK' text field and select the UKEK saved in step9.
12. Select the button next to the 'binding' text field and select the binding saved in step9.
13. Close the 'Load Encryption' pop up.
14. With an encrypted radio make a call on an encrypted talkgroup
 - Y the radio with encryption should play the call,

- Y the console will now play the call.
15. Choose the talkgroup that the radios are on and select the 'Private' button, this will make the console switch the talkgroup to encrypted mode, the console will display 'PVT' on the talkgroup button.
16. PTT the console the call should be heard on the encrypted radios.

Results	(Pass/Fail)
Tester: _____	Date: _____
Comments: _____	

5.8 Warm Starting a Symphony from the UAS Key Management Application

Purpose: This will test the system's ability to push encryption keys to a console.

Expected Results: The UAS will push keys to the console to allow for communicate on an encrypted talk group.

Setup: This test requires three radios programmed with a talkgroup utilizing an AES encryption key. The radios and talkgroup need to be in a test crypto net in the UAS Key Management Application. All radios should be feature encrypted and enabled for OTAR operation. The radios should have their UKEK's loaded but not have any traffic encryption keys. (Delete Keys if required)

Execution:

1. Attempt to switch a talk group to encrypted mode by selecting the talk group and selecting the private button.

Y Verify that console will not allow you to encrypt the talkgroup because the console does not have the encryption keys.
2. From the UAS, warm start the console. After the operation is complete, refresh the UAS screen.

Y The UAS will report warm started success the console.
3. Attempt to switch a talk group to encrypted mode by selecting the talk group and selecting the private button.

Y The console will now allow you to encrypt the talkgroup because the console has the encryption keys.
4. PTT the console and the encrypted radios should hear the call.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

5.9 Single Site Group Test Call

- Purpose:** The Group Test Call will show that the site will allow a radio to communicate using a group call
- Expected Results:** The test will demonstrate that all radios assigned to a common group will hear a call and all radios assigned to an uncommon group will not hear the call
- Setup:** Set Radios 1, 2, and 3 to (Group A) per test group structure. Make sure Scan is turned OFF. All radios should not be in encrypted mode but have encryption keys.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 3	998003	TG64001 P25	64001

Execution:

1. PTT Radio 1 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 1.
 - Y Audio should be heard in Radios 2 and 3.
 - Y The ID of Radio 1 should be seen on Radios 2 and 3.
2. Set Radio 3 to (TG64002 P25). PTT on Radio 1 and talk.
3. The transmit (TX) indicators should turn on at Radio 1.
 - Y Audio should be heard in Radio 2 only.
 - Y The ID of Radio 1 should be seen at Radio 2 only.
4. Repeat sets 1-3 for encrypted mode

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

5.10 Single Site Individual (Private) Call

Purpose: The Individual Call test will verify that the site will allow two radios to communicate on a private call

Expected Results: This test will demonstrate that two radios can communicate on an individual call and other radios will not hear the private conversation.

Setup: Set Radios 1, 2, and 3 to (TG64001) per test group structure. All radios should not be in encrypted mode but have encryption keys.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 3	998003	TG64001 P25	64001

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.

Y Verify that Radio 2 receives the call and displays the ID of Radio 1. Verify that Radio 3 remains idle.

2. Release the PTT on Radio 1 and immediately PTT on Radio 2.

Y Verify that Radio 1 receives the call and displays the ID of Radio 2.

Y Verify Radio 3 remains idle.

3. 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.

Y Verify that Radio 3 receives the call and displays the ID of Radio 1.

Y Verify that Radio 2 remains idle.

4. Release the PTT on Radio 1 but do not immediately PTT Radio 3.

Y Verify that Radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication.

5. Make a return call from Radio 3 back to Radio 1.

Y Verify that Radio 1 receives the call and displays the ID of Radio 3.

Y Verify Radio 2 remains idle.

6. Repeat steps 1-5 for encrypted mode.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

5.11 Multi-Site Encrypted Group Test Call

- Purpose:** The Group Test Call will show that the site will allow a radio to communicate using a group call
- Expected Results:** The test will demonstrate that all radios assigned to a common group will hear a call and all radios assigned to an uncommon group will not hear the call
- Setup:** Set Radios 1, 2, and 3 to (Group A) per test group structure. Make sure Scan is turned OFF. All radios should not be in encrypted mode but have encryption keys.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 3	998003	TG64001 P25	64001

Execution:

1. PTT Radio 1 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 1.
 - Y Audio should be heard in Radios 2 and 3.
 - Y The ID of Radio 1 should be seen on Radios 2 and 3.
2. Set Radio 3 to (TG64002 P25), PTT on Radio 1 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 1.
 - Y Audio should be heard in Radio 2 only.
 - Y The ID of Radio 1 should be seen at Radio 2 only.

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Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

5.12 Multi-site Encrypted Individual (Private) Call

Purpose: The Individual Call test will verify that the site will allow two radios to communicate on a private call

Expected Results: This test will demonstrate that two radios can communicate on an individual call and other radios will not hear the private conversation.

Setup: Set Radios 1, 2, and 3 to (TG64001) per test group structure. All radios should not be in encrypted mode but have encryption keys.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 3	998003	TG64001 P25	64001

Execution:

- 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.
 - Y Verify that Radio 2 receives the call and displays the ID of Radio 1.
 - Y Verify that Radio 3 remains idle.
- Release the PTT on Radio 1 and immediately PTT on Radio 2.
 - Y Verify that Radio 1 receives the call and displays the ID of Radio 2.
 - Y Verify Radio 3 remains idle.
- 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.
 - Y Verify that Radio 3 receives the call and displays the ID of Radio 1.
 - Y Verify that Radio 6 remains idle.
- Release the PTT on Radio 1 but do not immediately PTT Radio 3.

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- Y Verify that Radio 3 gives a Call Back Alert (WHC-"Who Has Called") Indication.
- Y Then make the return call from Radio 3 back to Radio 1.
- Y Verify that Radio 1 receives the call and displays the ID of Radio 3.
- Y Verify Radio 2 remains idle.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

5.13 Encrypted Group Test

- Purpose:** The Group Test Call will show that the site will allow a radio to communicate using a group call
- Expected Results:** The test will demonstrate that all radios assigned to a common group will hear a call and all radios assigned to an uncommon group will not hear the call
- Setup:** Set Radios 1, 2, and 3 to (Group A) per test group structure. Make sure Scan is turned OFF. All radios should not be in encrypted mode but have encryption keys.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 3	998003	TG64001 P25	64001

Execution:

1. PTT Radio 1 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 1.
 - Y Audio should be heard in Radios 2 and 3.
 - Y The ID of Radio 1 should be seen on Radios 2 and 3.
2. Set Radio 3 to (TG64002 P25). PTT on Radio 1 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 1.
 - Y Audio should be heard in Radio 2 only.
 - Y The ID of Radio 1 should be seen at Radio 2 only.

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Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

5.14 Encrypted Individual (Private)

Purpose: The Individual Call test will verify that the site will allow two radios to communicate on a private call

Expected Results: This test will demonstrate that two radios can communicate on an individual call and other radios will not hear the private conversation.

Setup: Set Radios 1, 2, and 3 to (TG64001) per test group structure. All radios should not be in encrypted mode but have encryption keys.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 3	998003	TG64001 P25	64001

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 6 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.

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

5.15 Phase 2 DES

Purpose: Confirms the operation of DES encryption for phase 2 voice calls.

Expected Results: The encrypted talk groups can communicate.

Setup Console 1 programmed with a DES encrypted phase 2 talk group and two radios programmed with the same DES Talk group and key, one radio with the group but no key and one radio with the DES group with a different key.

Execution:

1. Place a call from one of the radios with the correct key on the DES group
 - Y Confirm that the call is heard on the other radio and the console
 - Y Confirm the call is not heard on the two radios that do not have the correct key.
2. Place a call on the DES group from the console
 - Y Confirm that the call is heard on the two radios with the correct key
 - Y Confirm the call is not heard on the two radios that do not have the correct key.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

6. ENCRYPTED DATA**6.1 Encrypted data on an unencrypted radio**

Purpose: Confirm that when the system is setup for encrypted data, the data **communication** leaves the system encrypted and cannot be read by a radio that does not have the encryption key.

Expected Results: The radio can't be pinged and the radio personality can't be read/programmed.

Setup: This test requires: section 'Unit Enable/Disable from the UAS' has been **performed**, radio 9880005 is enabled but not encrypted, needs to run from edata terminal, edata setup not set to best effort.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9980001	TG64001 P25	64001
Radio 2	9980002	TG64001 P25	64001
Radio 5	9980005	TG64001 P25	64001

Execution:

1. From the edata terminal.
 - Y Verify that a host can't ping the radio.
 - Y Verify the radio personality can't be read.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

6.2 Unencrypted data With Encrypted Radio

Purpose: Confirm when a radio does have the encryption key it can communicate with the Encrypted Data Terminal.

Expected Results: The radio can be pinged and the radio personality can be read/programmed.

Setup: This test requires: Radio 9880004 is enabled and encrypted, needs to run from edata terminal, edata setup not set to best effort.

Radio 4 needs to be part of the “eData CryptoNet”, and also have “keys” loaded.

Description	Radio LID	TG Description	TG ID
Radio 4	9980004	TG 64001 P25	64001

Execution:

1. From the edata terminal.
 - Y Verify that a host can ping the Radio 4.
 - Y Verify the radio personality can be read.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

7. IN-CALL STATUS REPORTING**7.1 In-Call Location Reporting Radio**

Purpose: This test will demonstrate system ability to send location status from a radio.

Expected Results: The system will display the radio location, and the location will change when the radio moves.

Setup: The system needs to be setup using the 'In-Call Status Reporting Manual' and the CLTsim need to be set up using **Appendix A**. This test will not work unless the radio has GPS lock so this test may not work indoors.

Execution:

1. Log into CLTsim and open two terminal windows
 - a. In terminal windows 1 type './cltsim -ccltsim.cfg' do not close the window
 - b. In **terminal** windows 2 type
'cltcmd -1 10.128.1.209 -u 21225 -s -j ipv4.10.128.79.1@vida.local -n location -n userStatus'
2. PTT radio 1 for at least 3 seconds
3. Terminal widow 1 will show the output of the GPS data.

Y Check to make sure GPS data is displayed.
4. Move radio 1 about 50 feet and PTT again for 3 seconds

Y Verify GPS Data changes.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

7.2 In-Call Status Reporting Radio

Purpose: This test will demonstrate system ability to send status from a radio.

Expected Results: The system will display the status from a radio.

Setup: The system needs to be setup using the 'In-Call Status Reporting Manual' and the CLTsim need to be set up using **Appendix A**.

Execution:

1. Use **terminal** windows from pervious test
 - a. In **terminal** windows 2 type
'cltcmd -1 10.128.1.209 -u 21225 -s -j vuid.99999.10.998.6401@harris.com -n groupAlert -n userStatus
 2. PTT radio 1 for at least 3 seconds
 3. Terminal widow 1 will show the status **of** radio 1.
- Y Check to make sure radio 1 status is 'Open'.

Results	(Pass/Fail)
Tester: _____	Date: _____
Comments: _____	

7.3 In-Call Emergency Reporting Radio

Purpose: This test will demonstrate system ability to send location status from a radio.

Expected Results: The system will display the radio emergency.

Setup: The system needs to be setup using the 'In-Call Status Reporting Manual' and the CLTsim need to be set up using Appendix A.

Execution:

1. Use terminal windows from pervious test
 - a. In terminal windows 2 type
'cltcmd -1 10.128.1.209 -u 21225 -s -j vuid.99999.10.998.6401@harris.com -n groupAlert -n userStatus
2. Create emergency on Radio1.

Y Check to make sure Emergency is displayed as '1'.
3. Clear emergency on Radio 1
Y Check to make sure Emergency is changed to '0'

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

7.4 In-Call Location Reporting Be-On

Purpose: This test will demonstrate system ability to send location status from a BeOn terminal.

Expected Results: The system will display the radio location, and the location will change when the radio moves.

Setup: The system needs to be setup using the 'In-Call Status Reporting Manual' and the CLTsim need to be set up using **Appendix A**. This test will not work unless the radio has GPS lock so this test may not work indoors.

Execution:

1. Log into CLTsim and open two terminal windows
 - a. In terminal windows 1 type './cltsim -ccltsim.cfg' do not close the window
 - b. In **terminal** windows 2 type
'cltcmd -1 10.128.1.209 -u 21225 -s -j ipv4.10.128.79.1@vida.local -n location -n userStatus'
2. PTT radio 1 for at least 3 seconds
3. Terminal widow 1 will show the output of the GPS data.

Y Check to make sure GPS data is displayed.
4. Move radio 1 about 50 feet and PTT again for 3 seconds

Y Verify GPS Data changes.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

7.5 In-Call Status Reporting Be-On

Purpose: This test will demonstrate system ability to send status from a radio.

Expected Results: The system will display the status from a radio.

Setup: The system needs to be setup using the 'In-Call Status Reporting Manual' and the CLTsim need to be set up using **Appendix A**.

Execution:

1. Use **terminal** windows from pervious test
 - a. In **terminal** windows 2 type
'cltcmd -1 10.128.1.209 -u 21225 -s -j vuid.99999.10.998.6401@harris.com -n
groupAlert -n userStatus
 2. PTT radio 1 for at least 3 seconds
 3. Terminal widow 1 will show the status **of** radio 1.
- Y Check to make sure radio 1 status is 'Open'.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

7.6 In-Call Emergency Reporting Be-On

Purpose: This test will demonstrate system ability to send location status from a radio.

Expected Results: The system will display the radio emergency.

Setup: The system needs to be setup using the 'In-Call Status Reporting Manual' and the CLTsim need to be set up using Appendix A.

Execution:

1. Use terminal windows from pervious test
 - a. In terminal windows 2 type
'cltcmd -1 10.128.1.209 -u 21225 -s -j vuid.99999.10.998.6401@harris.com -n groupAlert -n userStatus
2. Create emergency on Radio1.

Y Check to make sure Emergency is displayed as '1'.
3. Clear emergency on Radio 1

Y Check to make sure Emergency is changed to '0'

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

8. HIGH AVAILABILITY WIDE AREA ROUTER FAILURE**Purpose:** Demonstrate the capabilities of the system to work after a WAR failure**Expected Results:** System components that are set-up with High Availability will continue to work after a WAR failure.**Setup:** These tests are setup to be run twice, once on each router. So after completing step 4 restart the WAR router if not already running wait 20 minutes, and rerun the tests for the second router. These tests will simulate a WAR failure by disconnecting it from the Wide Area Network, so the WAR to WAN connection will need to be known.

1. Use Radio 1 to initiate a call

Y Verify that the call is heard on the Radio 2. Keep the call active during fail-over.
2. Use Radio 3 to initiate a call

Y Verify that the call is heard on Radio 4. Keep the call active during fail-over.
3. Log in to s0u1nss and s0u2nss, and change your user to the root user by typing 'su –' and entering the password.
4. Type 'HARunning' into both NSSs, one will report that it is the 'Stand By' and one will report that it is the 'Primary' log the information in the chart below.

	Name Of Primary NSS	Name of Primary WAR	Name of Primary RNM	Name of Primary RSM	Shutdown Time
Test 1					
Test 2					

5. Log into the 'Primary' WAR that is associated with the 'Primary' NSS. Shut off the connection to the WAN by performing a shut on the necessary ports.

Y The call from Radio 3 to Radio 4 will be dropped.

Y The call from radio 1 to 2 will continue and the console will lose connectivity to the VNIC.

- γ Verify that after a short delay, the Backup server NSS2 automatically takes over as the primary server.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

8.1 UAS Site Access Control for Invalid User ID

Purpose: This test will demonstrate access control for Subscriber units with invalid radio IDs and High Availability of the RSM.

Expected Results: This test will deny a radio with an invalid Subscriber ID access to the system. Once the radio is added to the system the primary RSM will download it to the sites and allow the radio access. When the primary RSM is turned off and the radio is deleted from the UAS the secondary RSM will delete the radio from the system. Once the radio is deleted from the system the radio will again be denied access.

Setup: Use the table below to set up the new radio in the UAS

Voice End User								
User Id	Name	Description	Personality	User Privilege	Enable P25 AES OTAR	Manually-Keyed	P25 Voice Auth	Preferred Vocoder
010:998:9150	Rad9150	Radio9150	Pers1	998_10_supervisor	FALSE	FALSE	FALSE	P25 Full Rate
OS Voice Auth	Transc Allowed Flag							
FALSE	TRUE							
Subscriber Unit								
Description	RSI	Electronic Serial Number	Protocol Mask	Status	Sub Type	Assigned End User	Algorithm Support	
Radio9150	99899150	109989150	P25	Enabled Unit	Harris P5400	010:998:9105	AES	

Execution:

1. **Logging** into a site traffic controller and type 'show udb 109989150'
 Verify the radio is not present in the traffic controller database
2. Program Radio 9801 with an ID 9989150.

3. Attempt to PTT Radio 9150.

Y Verify access to the site is denied and audio is not heard on Radio 2.

Y Verify the system is still functional by PTT Radio 2 and verify the audio is heard on Radio 3.

4. Use the supplied table to enter radio 109989150 in to the UAS database.

a. Select Agency/"agency name"/Voice End User. Click Add Entry and then on the End User Detail screen input the User ID, password ("p25user"), Name, Description, etc. of the user. Click OK and download.

Y Verify the user ID has been added to the list of users\

b. 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.

5. Login into a site traffic controller issue a "show udb 109989150

Y Verify the radio is now present in the traffic controller database

6. Key radio 9150

Y Verify access to the site is permitted and audio is heard on radio.

7. Restart radio 9150 and PTT the radio

Y Verify access to the site is permitted and audio is heard on radio 9012.

8. Delete 10998999150 from the UAS database

9. Key radio 9150 from UAS

Y Verify access to the site is not permitted and audio is not heard.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

8.2 Site Activity using the Activity Warehouse

Purpose: Demonstrate the capability to create various Agency level system usage reports.

Expected Results: This test will create an Agency level user reports.

Setup: Ensure radio traffic has occurred across the network recently. If necessary or desired, place some calls with a known radio ID on multisite talk groups prior to running the test for reference during the test.

Execution:

1. Log into the SMT PC as a System level administrator.
2. Open Internet Explorer and browse to 'https://s0u1pro.vida.local/reports' and log in with active directory credentials.
3. Select Activity Reports → Call Activity
 - a. enter the time period for the report (example: 2-hour window before this test).
4. Enter additional report information required.
5. Click on "View Report"
 - Y Check to make sure that there is call activity. These reports can be up to 2 hours behind.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

8.3 VIDA REGIONAL NETWORK MANAGER (RNM)

Purpose: Demonstrate the capability to monitor real-time call activity from the RNM.

Expected Results: This test will show active call traffic on specific talk groups and SIDs.

Setup: Administrator access to the RNM.

Execution:

1. On a client computer, open the windows Internet Explorer and browse to <https://s0u1rnm.vida.local/nmc> and log in with an Active Directory account.
2. Choose the system map and select the 'Launch Application' button.
3. Open the Realtime tab and Click Site Calls.
4. Select the site and expand.
5. Check the box next to the channels and select to add the channels to the target list. Select the 'ok' button to launch the application.
6. Place a group call from Radio 1 to Radio 2 on the site.
 - Y Verify that the event viewer displays the talkgroup ID and calling party ID.
 - Y Verify the state changes from Free to Talk.
 - Y Verify the TG Alias displays the Group Number.
7. Use Internet Explorer to browse to <https://s0u2rnm.vida.local/nmc> and repeat test steps 1-6 for the second RNM.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

8.4 Regional Network Manger Test

Purpose: Demonstrate the capability to monitor system alerts from the RNM.

Expected Results: This test will show system level equipment icons.

Setup: Administrator access to the RNM.

Execution:

1. On a client computer, open the windows Internet Explorer and browse to <https://s0u1rnm.vida.local/nmc> and log in with the active directory account.
2. Choose the system map and select the 'Launch Application' button. Select the 'Network' tab and expand the tree in the left hand panel until you can see a site in the right hand panel.
 - Y Verify the Infrastructure is presented.
 - Y Select an object and right click to select properties to view information related to the object.
3. Substitute <https://s0u2rnm.vida.local/nmc> and repeat test steps 1-3 for the second RNM.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

8.5 RF System Alarms Indications are reported to the RNM

Purpose: Demonstrate the capability to monitor system faults & alarms at the RNM.

Expected Results: System level equipment will indicate faults & alarms at the RNM.

Setup: Access to the site under test and the regional RNM. The alarm will need to be generated by equipment being physically powered-down. Note the time of the alarm condition for later tests. Call up the RNM Domain screen and verify that all map icons are either green or blue. On the Fault Browser screen delete any prior alarms.

Execution:

1. On a client computer, open the windows Internet Explorer and browse to <https://s0u1rnm.vida.local/nmc> and log in with an Active Directory account.
2. Choose the system map and select the 'Launch Application' button.
3. Select the 'Network' tab and expand the tree in the left hand panel until you can see a site in the right hand panel.
4. Generate an alarm on a device (see chart) by powering down or otherwise disabling the device.

Y Verify that the RNM indicates a site alarm for the affected device.
5. Turn the device back ON.

Y Verify that the device alarm clears and displays green.
6. Review alarm details by performing a Right Mouse Click on an Object. Select the desired menu option.
7. Repeat steps 1-4 for all equipment listed in the below chart.

8. Substitute <https://s0u2rnm.vida.local/nmc> and repeat test steps 1-5 for the second RNM.

Record the results below for each site. (Note: This form can be modified to reflect actual as-built alarms

Tester:		Results:	Date:	

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Alarm #	Name	Pass/Fail	Remarks
1	Traffic Controller		
2	Router		
3	Switch		
4	Network Sentry		
5	MME		

Results	(Pass/Fail)
Tester: _____	Date: _____
Comments: _____	

8.6 Network Sentry Site Alarm Indications are reported to the RNM

Purpose: Demonstrate the capability to monitor site faults & alarms at the RNM.

Expected Results: Site level equipment will indicate faults & alarms at the RNM.

Setup: This test verifies that the Site & Shelter Alarms are connected to the new system and alarm names are programmed to show the alarm types and locations. Site specific digital alarm inputs connected to the alarm management system (NetGuardian or Network Sentry) alarm unit.

Execution:

1. On a client computer, open the windows Internet Explorer and browse to <https://s0u1rnm.vida.local/nmc> and log in with the Active Directory account.
2. Choose the system map and select the 'Launch Application' button.
3. Select the 'Network' tab and expand the tree in the left hand panel until you can see a site in the right hand panel.
4. Select a physical site to test alarm inputs.
5. Create a condition that will either simulate an alarm (jumper alarm contacts) or the actual event to trigger each alarm
 - Y Verify that the alarm is detected and displayed in the RNM Network Viewer and is listed in the Fault Browser
6. Clear the alarm condition
 - Y Observe that the alarm indication has cleared in both the Network Viewer and the Fault Browser
7. Repeat for each alarm and for each site in the system

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8. Record the results below for each site. (Note; This form can be modified to reflect actual as-built alarms).

Site #:			Site Name	
Tester:		Results:	Date:	
Alarm #	Name	Pass/Fail	Remarks	
1	Door			
2	Smoke Detector			
3	Heat Detector			
4	Building Low Temp			
5	Building High Temp			
6	Main Power Fail			
7	ATS Normal			
8	ATS Emergency			
9	Generator Low Oil			
10	Generator Over Temp			
11	Generator Over Crank			
12	ACH1 L.O.			
13	ACH2 L.O.			
14	Surge Arrestor 1			
15	Surge Arrestor 2			
16	Multicoupler Top			
17	Multicoupler Bottom			

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

9. CONTROL POINT MOVEMENT**9.1 DCP Forced Control Point Movement**

Purpose: This test will demonstrate the DCP system can move the control point in response to user command.

Expected Results: This test will verify that the Control Point can be moved from the active site to an alternate Control Point Site. After the control point is switched to the alternate Control Point the system should operate normally.

Setup: The DCP system is operating with an active control point and at least two sites are enabled to be the control point.

Execution:

1. Log into the RNM
2. In Network view identify the site which is the active control point.
3. Right click on the control point site icon and select 'Change Control Point to Best Site Available' .
4. Verify system is still functioning (i.e. voice calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged') .
5. Verify that the RNM indicates a different site as control point and the previous control point is now a TX site. (note – a CP only site displays “zzzz” when it is not the active control point.)
Y
6. On the RNM right click on the previous control point site and select “Change to be the Control Point”.
7. Verify system is still functioning (i.e. calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged'). .
8. Verify that the RNM indicates the control point has moved to the site selected in step 6 and the previous control point is now a TX site. (note – a CP only site displays “zzzz” when it is not the active control point.)

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

9.2 DCPControl Point Movement in response to Faults at the Active Control Point

Purpose: This test will demonstrate that the Control Point will move in response to failures at the active Control Point.

Expected Results: This test will verify that the DCP system will move the active Control Point to an alternate control point site when the active control point experiences failures. After the Control Point moves the old control point should drop into bypass and the rest of the system should operate normally as a Simulcast cluster.

Setup: The DCP system is operating with an active control point and is properly configured with at least two sites enabled to be the control point.

Execution:

1. Verify system is functioning (i.e. calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged')).
2. At the control point site disconnect the 1pps cable from GPS B.
3. Verify the system is still functioning (i.e. calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged')) and control point has not moved. The traffic controllers at the control point display 'CC xx' and 'TC xx' when idle; at a satellite site the traffic controllers display "TR xx" where xx is the channel number.(>
4. At the control point site disconnect the 1pps cable from GPS A.
5. Verify that the control point moved to next ranked site and the old control point is now in bypass. The traffic controllers at the control point display 'CC xx' and 'TC xx' when idle: Any channels that are configured to be active at the old control point site when it is in bypass will have all their status LED red. In bypass all the traffic controllers display 'CC xx' and 'TC xx' when idle and the status LED will be red.
6. Verify the RNM indicates the new control point and shows the old control point site is now in bypass.
7. Verify the simulcast system is still functioning (i.e. calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged')). .
8. If the old control point has channels active in bypass verify radios switched to this bypass site acquire the control channel and can communicate. (note – this step could be skipped; the bypass tests in sections 20.x will do this) >
9. Restore the connections to the GPS receivers at the site in bypass (the old control point site).
10. Verify that the site exits bypass and joins the simulcast cluster.

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

10. P25 TRUNKED CALLS AND SITE FEATURES

Purpose: These tests will verify that the site can provide radio communications at the site level.

Expected Results: These tests will demonstrate that the site can provide communications for radios.

Setup: All tests in this section assume that the UAS setup matches the configuration in this test. All testing in this section is to be done with phase 1 radios.

10.1 Transmit Grant Tone

Purpose: Demonstrate the system channel grant tone is heard on the radio.

Expected Results: This test will show that the radio will play a grant tone when the radio is assigned a working channel.

Setup: One radio with valid ID and a 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:	_____ _____ _____	

10.2 Transmission Trunking

Purpose: This test will demonstrate that the System is working as a Transmission Trunking system.

Expected Results: The tests verify that the Control Channel will assign a working channel to the radio and that the radio and site will work as a trunking set.

Setup: Radios 1, 2, and 3 should be the only radios on the system.

Monitor System channel assignment in RSM Site Activity Real-Time Viewer.

All Radios are registered on Site 1.

Description	Radio LID	TG Description	TG ID
Radio 1	9980001	TG 64001 P25	64001
Radio 2	9980002	TG 64001 P25	64001
Radio 3	9980003	TG 64001 P25	64001

Execution:

1. Log into RNM and start RSM Site Activity application in the real time viewer. Observe all channels on Site 1.
2. PTT Radio 1 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 1.
 - Y Verify the number of the channel assigned.
3. PTT Radio 2 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 2.
 - Y Verify the next channel is assigned.
4. PTT Radio 3 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 3.
 - Y Verify the next channel is assigned.

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

10.3 Message Trunking on Phase 1

Purpose: This test will demonstrate that the system, for FMDA Phase 1 group calls, operates as Enhanced Message Trunking for Group Calls.

Expected Results: Verify that the system will assign the same working channel to a Message Trunking call if the next call happens within the Message Trunking hang time. During the hang time, the transmitting radio will return to the Control Channel for Phase 1 Group Calls.

Setup: Radios 1, 2, and 3 should be the only radios on the system. Each call needs to happen within 3 seconds of each other for this test to work.
TG 64301 is a FDMA (Phase 1) MT Group.

Monitor System channel assignment in RSM Site Activity Real-time viewer.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	9980001	TG 64301 P25	64301	1
Radio 2	9980002	TG 64301 P25	64301	1
Radio 3	9980003	TG 64301 P25	64301	1

Execution:

- Log into RNM and start RSM Site Activity application in the real time viewer. Observe all channels on Site 1 for each of the steps below.
- PTT Radio 1 and talk.
 - Y The transmit (TX) indicators (red light) should turn on at Radio 1.
 - Y On the RNM, observe the number of the channel assigned.
 - Y Verify audio from Radio 1 is heard at Radio 2 and Radio 3.
- Un-PTT Radio 1.
 - Y Verify Radio 1's LED light turns off, no color, to indicate Radio 1 is on the Control Channel (CC), during the Hang Time. (This is Enhanced Message Trunking for FDMA).
- PTT Radio 2, within the 3 second hang time, and talk.
 - Y The transmit (TX) indicators (red light) should turn on at Radio 2.
 - Y Verify the same channel is assigned, as in step 2.
 - Y Verify audio from Radio 2 is heard at Radio 1 and Radio 3.
- Un-PTT Radio 2.
 - Y Verify Radio 2's LED light turns off, no color, to indicate Radio 2 is on the Control Channel (CC), during the Hang Time.
- PTT Radio 3, within the 3 second hang time, and talk.
 - Y The transmit (TX) indicators (red light) should turn on at Radio 3.
 - Y Verify the same channel is assigned as in steps 2, & 4.
 - Y Verify audio from Radio 3 is heard at Radio 1 and Radio 2.
- Un-PTT Radio 3
 - Y Verify Radio 3's LED light turns off, no color, to indicate Radio 3 is on the Control Channel (CC), during the Hang Time.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

10.4 Message Trunking on Phase 2

Purpose: Demonstrate the system, for TDMA Phase 2 group calls, operates as Standard Message Trunking for Group Calls.

Expected Results: System will assign the same working channel to a Message Trunked call, if the next call happens within the Message Trunked hang time. During the hang time, the transmitting radio will remain on the Traffic (Working) Channel for Phase 2 Group Calls.

Setup: TDMA Enabled Radios 1, 2, and 3 should be the only radios on the system. Each call needs to happen within 3 seconds of each other for this test to work. TG 64353 is a TDMA (Phase 2) MT Group

Monitor System channel assignment in RSM Site Activity Real-time Viewer.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	9980001	TG 64353 P25	64353	1
Radio 2	9980002	TG 64353 P25	64353	1
Radio 3	9980003	TG 64353 P25	64353	1

Execution:

1. Log into RNM and start RSM Site Activity application in the real time viewer. Observe all channels on Site 1 for each of the steps below.
2. PTT Radio 1 and talk.
 - Y The transmit (TX) indicators (red light) should turn on at Radio 1.
 - Y On the RNM, observe the number of the channel assigned and the channel slot assigned.
 - Y Verify audio from Radio 1 is heard at Radios 2 and 3.
3. Un-PTT Radio 1
 - Y Verify Radio 1's LED Receive (RX) indicator turns green, to indicate Radio 1 remains on the Traffic (Working) channel, during the Hang Time.
4. PTT Radio 2, within the 3 second hang time, and talk.
 - Y The transmit (TX) indicators (red light) should turn on at Radio 2.
 - Y Verify the same channel / slot is assigned, as in step 2.
 - Y Verify audio from Radio 2 is heard at Radios 1 and 3.
5. Un-PTT Radio 2
 - Y Verify Radio 2's LED light turns green, to indicate Receive (Rx). Indicates Radio 2 remains on the Traffic (Working) channel, during the Hang Time.
6. PTT Radio 3, within the 3 second hang time, and talk.
 - Y The transmit (TX) indicators (red light) should turn on at Radio 3.
 - Y Verify the same channel / slot is assigned in steps 2 & 4.
 - Y Verify audio from Radio 3 is heard at Radios 1 and 2.
7. Un-PTT Radio 3
 - Y Verify Radio 3's LED light turns green, to indicate Receive (Rx). Indicates Radio 3 remains on the Traffic (Working) channel, during the Hang Time.

γ After the hang time expires, verify Radio 3's LED light turns off.

Results	(Pass/Fail)
Tester: _____	Date: _____
Comments: _____	

10.5 Group Test Call

Purpose: The Group Test Call will show that the site will allow a radio to communicate using a group call.

Expected Results: The test will demonstrate that all radios assigned to a common group will hear a call and all radios assigned to an uncommon group will not hear the call.

Setup: Set Radios 1, 2, and 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Description	Radio LID	TG Description	TG ID
Radio 1	9980001	TG 64001 P25	64001
Radio 2	9980002	TG 64001 P25	64001
Radio 3	9980003	TG 64001 P25	64001

Execution:

1. PTT Radio 1 and talk.
 - γ The transmit (TX) indicators should turn on at Radio 1.
 - γ Audio should be heard in Radios 2 and 3.
 - γ The ID of Radio 1 should be seen on Radios 2 and 3.
2. Set Radio 3 to (TG64002 P25). PTT on Radio 1 and talk.
 - γ The transmit (TX) indicators should turn on at Radio 1.
 - γ Audio should be heard in Radio 2 only.
 - γ The ID of Radio 1 should be seen at Radio 2 only.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

10.6 Individual (Private) Call

Purpose: The Individual Call test will verify that the site will allow two radios to communicate on a private call

Expected Results: This test will demonstrate that two radios can communicate on an individual call and other radios will not hear the private conversation.

Setup: Set Radios 1, 2, and 3 to (TG64001) per test group structure.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 3	998003	TG64001 P25	64001

Execution:

- 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.
 - Y Verify that Radio 2 receives the call and displays the ID of Radio 1.
 - Y Verify that Radio 3 remains idle.
- Release the PTT on Radio 1 and immediately PTT on Radio 2.
 - Y Verify that Radio 1 receives the call and displays the ID of Radio 2.
 - Y Verify Radio 3 remains idle.
- 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.
 - Y Verify that Radio 3 receives the call and displays the ID of Radio 1.
 - Y Verify that Radio 2 remains idle.
- Release the PTT on Radio 1 but do not immediately PTT Radio 3.
 - Y Verify that Radio 3 gives a Call Back Alert (WHC-“Who Has Called”) Indication.
- Make the return call from Radio 3 back to Radio 1.
 - Y Verify that Radio 1 receives the call and displays the ID of Radio 3.

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Y Verify Radio 2 remains idle.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

10.7 Unit to Unit Call Alert Paging

Purpose: To demonstrate that a radio can send a page to a different radio on the system.

Expected Results: This test will verify that radio 1 can send a page to radio 2

Setup: Radio 1 with Call Alert programmed into a button ("PAGE") and Radio 2's ID programmed into its Individual Call list. Radio 1 and 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.
 - Y Verify Radio 1 displays "**TX PAGE" on the second line.
 - Y Verify Radio 2 displays the ID of Radio 1 on its first line and "**RX PAGE" on the second line.
 - Y Verify Radio 2 beeps multiple times to indicate a received page.
 - Y Verify Radio 1 beeps multiple times to indicate the page was successfully sent.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

10.8 Multi-site Announcement Group Call

Purpose: This test will demonstrate that the system will allow a group call to function in a multi-site environment

Expected Results: The test will demonstrate that all radios assigned to a common group will hear a call, even though some of the radios are at distant sites and all radios assigned to an uncommon group will not hear the call

Setup: Groups 64101 and 64102 are in Announcement Group 64107 per test group structure. Ensure Scan is turned OFF.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64002 P25	64002
Radio 3	998002	TG64003 P25	64003

Execution:

1. PTT Radio 1 and talk.
2. The transmit (TX) indicators should turn on at Radio 1.
 - Y Audio should be heard on Radios 2 and 3.
 - Y ANNOUNCE should be displayed on Radios 2 and 3.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

10.9 Multisite Emergency Group Call

- Purpose:** Demonstrate the capability of the system to process an emergency group call.
- Expected Results:** This test will verify that when a radio indicates an emergency group call. All other radios in the group indicate an emergency and the emergency can be cleared by an administrator radio.
- Setup:** Program 3 Radios with the same emergency home group. Set the supervisor (Radio 1) & Radio 2 to the home group. Set Radio 3 to a different group (not home group). A console will be used to clear the emergency.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	9980001	TG 64001 P25	64001	1
Radio 2	9980002	TG 64001 P25	64001	2
Radio 3	9980003	TG 64003 P25	64003	1

Execution:

- Press the Emergency call button on Radio 1 and talk within the pre-defined EmergencyAuto-key time, and/or PTT Radio 1 during or just after that time.
 - Y Verify that Radio 1 indicates the “TX EMER” declaration and that it reverts to the home group.
 - Y 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.
 - Y Verify Radio 3 does not display the emergency.
- Clear the emergency with the Console.
 - Y Verify the emergency clears in the radios.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

10.10 System All Call

Purpose: Demonstrate the capability of the system to route a call to all radios on the system.

Expected Results: This test will demonstrate the system's ability to route a single call to all available radios on the system.

Setup: Note: If want to create demand for a Full Rate All Call, then one radio must be on the Full Rate All Call.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9980001	TG64000 P25	64000
Radio 2	9980002	TG64001 P25	64001
Radio 3	9980003	TG64002 P25	64002

Execution:

1. With Radio 1 place an Individual call to talk group 64000 (All Call Talk Group)

Y Audio should be heard at Radios 2 and 3.

Results	(Pass/Fail)
Tester: _____	Date: _____
Comments: _____	

10.11 Transmit Denied (for Invalid radio ID)

Purpose: This test is set up to demonstrate that a radio can be denied transmission on a site

Expected Results: This test will verify the systems ability to deny a radio to transmit on one site and allow the radio to work on a different site.

Setup: Program system so that radio ID is not valid on the site under test.
Download database to site.

Execution:

1. Program Radio 1 with an invalid ID
2. PTT Radio 1

Y Verify the radio is prohibited access to system.
3. Reprogram the radio to the original personality.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

10.12 Single Site Call Queue Declaration Alert

Purpose: This test will demonstrate the system queuing.

Expected Results: This test will verify that the system will assign users in a queue when the system has no available channels and assign users a working channel when the system has an available channel.

Setup: This test requires four radios and two working channels. Disable channels (if necessary) until there are two working channels at the site. This test is to be run with no other users on the system.

Description	Radio LID	TG Description	TG ID
Radio 1	9980001	TG 64001 P25	64001
Radio 2	9980002	TG 64002 P25	64002
Radio 3	9980003	TG 64003 P25	64003
Radio 4	9980004	TG 64003 P25	64003

Execution:

1. Busy up all talk paths on the system with radio 1, and 2 by pressing and holding the PTT button.
2. With all talk paths busied, momentarily press and release the PTT button on test Radio 3
Y Verify that a Call Queued tone is heard at the radio.
3. Unkey (release PTT button) radio 2.
Y Verify that Radio 3 is assigned to the free talk path.
4. The grant tone is heard at the radio, without having to rekey the radio (repressing the PTT button).
5. Press the PTT button on Radio 3 within the auto key time applicable to the radiotype (approx. 2 seconds) to keep the assigned channel.
Y Verify that audio from Radio 3 is heard at Radio 4.
6. Unkey all radios.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

10.13 Recent User Priority

Purpose: Demonstrate system's ability to prioritize recent users in queueing situations.

Expected Results: When radios of the same priority level enter the queue, one that has been recently active will exit the queue first.

Setup: This test requires four radios and two working channels.

Disable channels (if necessary) until there are two working channels at the site. Set the radio according to the table below. 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 Traffic Controller module). This will only work if preformed quickly.

Description	Radio LID	TG Description	TG ID
Radio 1	9980001	TG 64001 P25	64001
Radio 2	9980002	TG 64002 P25	64002
Radio 3	9980003	TG 64003 P25	64003
Radio 4	9980004	TG 64004 P25	64004

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
r Verify that Radio 1 un-queues and transmits.
6. Unkey all radios.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

10.14 Call Priority for Group IDs

Purpose: This test is set up to demonstrate the system's ability to allow a user with a higher priority to get assigned a channel before a user with a lower priority despite who enter the queue first.

Expected Results: This test will verify that a user that has a higher priority will get assigned a channel before users with a lower priority regardless of who entered the queue first. In this test radio 4 should get the first available channel, because it has a higher priority, and radio 3 will get assigned a channel next because it has a lower priority.

Setup: This test requires two working channels on the site. Disable channels (if necessary) until there are two working channels on the site. Setup the radio according to the table below. This test is to be run with no other users on the system.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9980001	TG64001 P25	64001
Radio 2	9980002	TG64002 P25	64002
Radio 3	9980003	TG64004 P25	64003
Radio 4	9980004	TG64003 P25	64004

Execution:

1. PTT Radios 2 and 4 and hold on transmit to busy both working channels.
2. PTT and release Radio 1 (medium priority entry into the queue).
3. PTT and release Radio 3 (high priority entry into the queue).
4. Un-key Radio 4

Y Verify that Radio 3 un-queues and keys.
5. Un-key Radio 2

Y Verify that Radio 1 un-queues and keys.
6. Un-key all radios.

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

10.15 Emergency Call Priority for Group IDs In Phase 1

Purpose: Demonstrate the system's ability to allow a user with a higher priority to get assigned a channel before a user with a lower priority, despite who enters the queue first.

Expected Results: This test will verify that a user who has a higher priority will get assigned a channel before users with a lower priority regardless of who entered the queue first. In this test radio 4 should get the first available channel, because it has a higher priority, and radio 3 will get assigned a channel next because it has a lower priority.

Setup: This test requires two working channels on the site. Disable channels (if necessary) until there are two working channels on the site. Setup the radio according to the table below. This test is to be run with no other users on the system.

Description	Radio LID	TG Description	TG ID
Radio 1	9980001	TG 64001 P25	64001
Radio 2	9980002	TG 64002 P25	64002
Radio 3	9980003	TG 64003 P25	64003
Radio 4	9980004	TG 64004 P25	64004

Execution:

1. PTT Radios 4 and 3 and hold on transmit to busy both working channels.
2. PTT and release Radio 2 (high priority entry into the queue).
3. Declare an emergency on Radio 1 (medium priority entry into the queue but now at Emergency Priority).
4. Un-key Radio 4
Y Verify that Radio 1 un-queues and is assigned a channel without having to PTT. (Key the radio within the specified auto key time in order to keep the channel.)
5. Un-key all radios and clear the emergency with the Radio 1.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

10.16 Group Scan

Purpose: Verify when scan is enabled, calls from groups in the radio's scan list are received.

Expected Results: In this test the radio will play calls from multiple talk groups while scan is enabled

Setup: All radios for this test need to have scan ability.

Radio 1 set up with TG64001 P25 and TG64002 P25 in the scan list, TG64001 P25 selected, and Group scan initially disabled.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64002 P25	64001

Execution:

1. Place a call from Radio 2 on talk TG64001 P25.
Y Verify the call is received and audio is heard on Radio 1.
2. Place a call from Radio 2 on talk TG64002 P25.
Y Verify the call is not received by Radio 1.
3. Enable group scan on Radio 1.
4. Place another call from Radio 2 on talk TG64002 P25.
Y Verify that the call is now received and audio is heard on Radio 1.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

10.17 Priority Scan

Purpose: Demonstrate groups assigned a higher priority in the scan list override groups of a lower priority.

Expected Results: Radio will play calls with a higher level of priority.

Setup: Set Radio 1 to priority scan TG64001 P25, and scan (at lower priority – 3 bars) TG64002 P25. Set Radio 1 to TG64003. Have scan enabled on Radio 1.

Description	Radio LID	TG Description	TG ID
Radio 1 (SCAN)	9980001	TG 64003 P25	64003
Radio 2	9980002	TG 64002 P25	64002
Radio 3	9980003	TG 64001 P25	64001

Execution:

1. Have Radio 1 selected to TG64003 P25. Place a call from Radio 2 on TG64002 P25.
r Verify Radio 1 scans to TG64002 P25 and hears audio from Radio 2. Continue transmitting from Radio 2.
2. Place a call from Radio 3 on TG64001 P25. [Radio 2 is still transmitting on TG64002 P25.]
r Verify Radio 1 priority scans to TG64001 P25 and hears audio from Radio 3.
3. Unkey all radios, and turn off scan.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

10.18 Transmit Busy Lockout

Purpose: Demonstrate a radio cannot key on a group, on which a group call is already active.

Expected Results: A radio will not be allowed to transmit on a talk group while a different radio is transmitting on the same talk group.

Setup: Talk group used for test must be set up as Transmission Trunked. This feature does not apply to Message Trunked calls.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001

Execution:

1. Place a call from Radio 1 on selected talk group by pressing and holding the PTT button.

Y Verify the call is received and audio is heard on Radio 2.
2. While the call is in progress, press the PTT button on Radio 2.

Y Verify that Radio 2 does not transmit over (step on) the call in progress. (A double bump busy sound will be heard).

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

10.19 Continuous Control Channel Update

Purpose: This test will demonstrate that a radio will join a call that is already in progress

Expected Results: This test will verify that a radio will join a call that is already in progress.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001

Execution:

1. Set both radios to the test group.
2. Turn radio 2 OFF.
3. Key radio 1 and hold. Turn ON the radio 2 (and set it to the test group if necessary).

Y Verify that the second radio joins the call in progress and hears audio from the call in progress.
4. Unkey radio 1.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

10.20 Convert Too Callee

Purpose: Demonstrate when radios are simultaneously keyed, only one radio is given talk privilege.

Expected Results: When two radios on the same talkgroup are keyed simultaneously, only one radio will receive access to the working channel. The other radio will play the audio from the first.

Setup: Test of single site simultaneous call arbitration.
Radio 1 and Radio 2 are registered on the same site and TG.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001

Execution:

1. Set two radios to the same site and group.
2. Key both radios at the same time.
 - γ Verify that one radio ends up transmitting and the other ends up receiving.
 - γ Verify that the call audio is routed and received by one of the units even though the PTT is pressed.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

10.21 Multi-site Routing (for Multi-site Logout)

Purpose: Demonstrate the system will not route a call to a site if all the radios logged into the site have moved to a different site.

Expected Results: When the radio moves away from a site, the system will not route calls to the site that it has roamed away from.

Setup: 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. Radio 1 logged in to Site 1 and Radio 2 logged into Site 2.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG641001 P25	64001
Radio 2	998002	TG641001 P25	64001

Execution:

1. Key Radio 1 on Site 1.
Y Verify channel assignments occur on Site 2. Un-key radio.
2. Switch Radio 2 to site 1.
3. Key Radio 1 on site 1.
Y Verify no channel assignment on site 2

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

10.22 Site Trunking (Failsoft) Indication

Purpose: Demonstrate that radio displays a Failsoft Icon, when the site is unable to communicate with the system/network.

Expected Results: This test will verify that the radio will display an 'F' when the site it is logged into is not connected to the system.

Setup: Radios must be programmed to display Failsoft.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	998001	TG641001 P25	64001	1
Radio 2	998002	TG641001 P25	64001	1
Radio 3	998003	TG641001 P25	64001	2

Execution:

- PTT Radio 1
 - Y Verify that the Radio 1, Radio 2, and Radio 3 can communicate on the system.
- Disconnect the network connection from the Network Switching Center to the Site Router, causing loss of communication from the site back to the Network Switching Center.
 - Y Verify that Radio 1 and Radio 2 indicate a Failsoft alarm ("F") on their displays this may take several minutes.
- PTT Radio 1 on Talkgroup A. Verify audio is heard at Radio 2. Verify audio is not heard on Radio 3.
- Re-connect the network from the Network Switching Center to the Site Router.
 - Y Verify the Failsoft alarm disappears on the radios and that communications with Radio 3 is **reestablished**.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

10.23 Unconfirmed Call (Multisite Late-Enter)

Purpose: Verify a radio will late enter an ongoing group call made from another site.

Expected Results: A radio creates demand for talkgroups even when no channels are available at a site. Ongoing calls on a talkgroup will be joined as channel resources become available.

Setup: Site 1 should only have one working channel, disable all other working channels at site 1.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	998001	TG64001 P25	64001	1
Radio 2	998002	TG64002 P25	64002	1
Radio 3	998003	TG64001 P25	64001	2
Radio 4	998004	TG64001 P25	64001	2

Execution:

- Key up radio 2 on site 1, and hold the call up.
- Key up Radio 3 on TG64001 on Site 2, and hold the call up.
 - Y Verify that Radio 3 should get the grant tone and the call should go through to Radio 4 on Site 2.
 - Y Since Site 1 has no channels available, the call should not go through to Radio 1 on Site 1.
- While Radio 2 is still keyed up, free up a channel on Site 1 by unkeying radio 2.
 - Y 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: _____	

10.24 Confirmed Call [Non Single Cell Simulcast/Multisite Only]**Purpose:** This test will demonstrate that the system will allow confirmed calls.**Expected Results:** When a radio attempts PTT it will get a wait tone until there are available channels at all site that have demand for the call, or the confirmed call timer expires.**Setup:** Additional radios maybe required for this test, this test requires two more radios than the number of channels available at the site to be tested.**Site 1 should only have one working channel, disable all other working channels at site 1.**

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	998001	TG64001 P25	64101	1
Radio 2	998002	TG64002 P25	64002	1
Radio 3	998003	TG64001 P25	64101	2
Radio 4	998004	TG64001 P25	64101	2

Execution:

- Key up Radio 2 on site 1, and hold the call up.
- Key up Radio 3 on TG64001 on Site 2, and hold the call up.
Y The call will not be granted because there are no available channels on site 1.
- Hold the call up until the confirmed call timer expires.
Y Once the timer expires the call will go through but only to site 2 only
- While Radio 2 is still keyed up, free up a channel on Site 1 by unkeying radio 2.
Y Verify that the call gets routed to Site 1 and that Radio 1 late-enters into the call.

Results	(Pass/Fail)	_____
Tester: _____	Date: _____	
Comments: _____		

10.25 Roaming (ProRoam) [This needs work before Final] [Field Only Test] [Non Single Cell Simulcast/Multisite Only]

Purpose: This test will demonstrate the system ability to direct the radios to adjacent sites Control Channels.

Expected Results: As the signal quality degrades the radio will scan the adjacent Control Channels and log on to adjacent available Control Channel.

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. 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 not 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.

Execution:

1. Start with both radios at 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 and towards site 2, the signal quality will deteriorate. Once the signal level of Site 2 exceeds the programmed ProRoam parameters in the personality
 - Y Radio 1 and Radio 2 will switch to the Site 2.
 - Y The radios will generate audible tones and will visually indicate that they have switched to Site 2 Cell.
 - Y After the radios have both switched to the Site 2 Cell, verify communications continue.

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Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

10.26 Priority System Scan (Preferred Site) [Field Only Test] [Non Single Cell Simulcast/Multisite Only]

Purpose: This test will demonstrate the radios ability to prefer one site over another site.

Expected Results: As the signal degrades the radio will switch to the preferred site even though the signal strength of the preferred site is lower than the non-preferred site.

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 not 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.

Execution:

1. Continued from Roaming test.
2. Begin slowly travelling from Site 2 back to the coverage of Site 1.
3. As you travel from Site 2 back to Site 1, Radio 1 will log back onto Site 1 (its Priority System) as soon as an acceptable signal is available, even if Site 2 has a stronger signal.
4. Radio 2 will roam onto Site 1 only when its signal is stronger than the signal of Site 2.

Y Verify that Radio 1 scans back to Site 1 sooner than does Radio 2.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

11. EMERGENCY IN 10A.2**11.1 Local Emergency Multisite on 10A.2 System FDMA [Non Single Cell Simulcast/Multisite Only]**

Purpose: This test is set up to demonstrate the multisite FDMA **emergency**.

Expected Results: This test will verify that the system will not drop a channel to assign a channel **in an** emergency in FDMA mode.

Setup: This test requires six radios and two working **working** talk paths on the site. Disable channels (if necessary) until there is only two working talk paths on the site.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	9980001	TG64101 P25	64101	1
Radio 2	9980002	TG64102 P25	64102	1
Radio 3	9980003	TG64103 P25	64103	1
Radio 4	9980004	TG64101 P25	64101	2
Radio 5	9980005	TG64102 P25	64102	2
Radio 6	9980006	TG64103 P25	64103	2

Execution:

1. Disable channels at site 1 and 2 so that only the site only has two working FDMA talk paths.
2. PTT Radio 1 & 2 to **busy** up the sites.
3. Declare an emergency on Radio 3.
Y Radio 3 Should enter the Queue.
4. Un-key Radio 4
Y Verify Radio is assigned the call
5. Un-key all radios and clear the emergency with the Radio 1.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

11.2 Local Emergency Multisite on 10A.2 System TDMA

Purpose: This test is set up to demonstrate the multisite TDMA local emergency.

Expected Results: This test will verify that the system will drop a local channel to assign a channel **in an** emergency in TDMA mode.

Setup: This test requires six radios and two working **working** talk paths on the site. Disable channels (if necessary) until there is only two working talk paths on the site.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	9980001	TG64151 P25	64151	1
Radio 2	9980002	TG64152 P25	64152	1
Radio 3	9980003	TG64153 P25	64153	1
Radio 4	9980004	TG64151 P25	64151	2
Radio 5	9980005	TG64152 P25	64152	2
Radio 6	9980006	TG64153 P25	64153	2

Execution:

1. Disable channels at site 1 and 2 so that only the site only has two working TDMA talk paths.
2. PTT Radio 1 & 2 to busy up the sites.
3. Declare an emergency on Radio 3.
 - Y Verify call is dropped to Radio 1 and tone is heard
 - Y Verify Radio 3 is assigned a channel / one TDMA slot.
 - Y Verify a console hears calls from Radio 2 and 3
4. Un-key all radios and clear the emergency with the Radio 1.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

11.3 Remote Emergency Multisite on 10A.2 System TDMA

Purpose: This test is set up to demonstrate the multisite TDMA local emergency.

Expected Results: This test will verify that the system will not drop a remote channel to assign a channel **in an** emergency in TDMA mode.

Setup: This test requires six radios and two working **working** talk paths on the site. Disable channels (if necessary) until there is only two working talk paths on the site.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	9980001	TG 64151 P25	64151	1
Radio 2	9980002	TG 64152 P25	64152	1
Radio 3	9980003	TG 64153 P25	64153	1
Radio 4	9980004	TG 64151 P25	64151	2
Radio 5	9980005	TG 64152 P25	64152	2
Radio 6	9980006	TG 64153 P25	64153	2

Execution:

1. Disable channels at site 1 and 2 so that only the site only has two working TDMA talk paths.
2. PTT Radio 4 & 5 to **busy** up the sites.
3. Declare an emergency on Radio 3.
 - Y Verify audio is dropped to Radio 1
 - Y Verify calls from radio 4 and 5 continue
 - Y Verify Radio 3 is assigned a channel
 - Y Verify a console hears calls from Radio 3, 4 and 5
4. Un-key all radios and clear the emergency with the Radio 1.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

12. TRANSCODER TEST

Purpose: This test will demonstrate the transcoder ability to transcode calls made with different vocoders

Expected Results: This test will verify that the transcoder is needed to transcode a call, and each transcoder will transcode calls.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9980001	TG 64400OS	64400
Console 9110	9989110	TG 64400OS	64400

Execution:

1. Shutdown s0u1xcda.vida.local, s0u2xcda.vida.local and s0u1xcdb.vida.local.

Transcoder	State
s0u1xcda.vida.local	Off
s0u2xcda.vida.local	Off
s0u1xcdb.vida.local	Off

2. From the console place a call on talk group 64400OS
Y Verify that the call is not heard on a P25 radio on talk group 6400OS, this called failed because there is no working transcoder.
3. Restart s0u1xcda.vida.local.

Transcoder	State
s0u1xcda.vida.local	On
s0u2xcda.vida.local	Off
s0u1xcdb.vida.local	Off

4. From the console place a call on talk group 64400OS
Y Verify that the call is heard on a P25 radio
5. Restart s0u2xcda.vida.local wait for 15 minutes for services to start
6. Shutdown s0u1xcda.vida.local.

7. From the
Y Verify
group

Transcoder	State
s0u1xcda.vida.local	Off
s0u2xcda.vida.local	On
s0u1xcdb.vida.local	Off

console place a call on talk group 64400OS that the call is heard on a P25 radio on talk 6400OS this call is using s0u2xcda.vida.local.

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8. Restart s0u1xcdb.vida.local
9. Shutdown s0u1xcda.vida.local

Transcoder	State
s0u1xcda.vida.local	Off
s0u2xcda.vida.local	Off
s0u1xcdb.vida.local	On

10. From the console place a call on talk group 64400OS
Y Verify that the call is heard on a P25 radio on talk group 6400OS this call is using s0u3xcda.vida.local.
11. Restart s0u2xcda.vida.local and s0u1xcda.vida.local
12. From the console place a call on talk group 64400OS verify that the call is heard on a P25 radio on talk group 6400OS

Transcoder	State
s0u1xcda.vida.local	On
s0u2xcda.vida.local	On
s0u1xcdb.vida.local	On

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

13. P25 PHASE 2 FUNCTIONALITY (Single Site/Simulcast Single Site)

Purpose: The tests below verify that the P25 Phase 2 implementation provides the additional traffic channel capacity and features of P25 Phase 2 while allowing backwards compatibility with Phase 1 radios and talkgroups.

Expected Results: This will verify that a P25 Phase 1 call will work on a Phase 2 system

Setup: In the following tests, portables 1 and 2 will be set up as Phase 1 only. Portables 3 and 4 will be set up as Phase 2 and Phase 1 capable, depending upon talk-group. FDMA refers to Phase 1 and TDMA refers to Phase 2. Start a session on the RNM and setup to watch channel assignments using the real time viewer function.

On a client computer, open the windows internet explorer and browse to <https://s0u1rnm.vida.local/nmc> and log in with an Active Directory account. Choose the system map and select the 'Launch Application' button. Open the Realtime tab and Click Site Calls. Select the site and expand. Check the box next to the channels and select the to add the channels to the target list. Select the 'ok' button to launch the application. 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 #.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	System
Radio 1	998001	TG64051 P25	64051	MAC PH 1
Radio 2	998002	TG64051 P25	64051	MAC PH 1
Radio 3	998003	TG64051 P25	64051	MAC PH 2
Radio 4	998004	TG64051 P25	64051	MAC PH 2

13.1 Mixed Mode site to Mixed Mode site Call Phase 1- Phase 1**Purpose:** Demonstrates that a Phase 1 call will work on a Phase 2 system**Expected Results:** This will verify that a P25 Phase 1 call will work on a Phase 2 system**Setup:** Turn off radios 3 and 4.**Execution:**

1. PTT Radio 1 and talk. The transmit (TX) indicators should turn on at Radio 1
 - Y Verify that the call is assigned as an FDMA by viewing the Real Time Viewer Site Activity on the RNM.
 - Y Verify Radios 2 can hear Radio 1.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

13.2 Mixed Mode site to Mixed Mode site Call - Phase 1 and Phase 2

Purpose: Demonstrates that a mixed mode call can function on a Phase 2 system

Expected Results: This test will verify that a Phase 2 radio will hear a call from a Phase 1 radio.

Setup: Turn on Radios 1, 2, 3, 4

Execution:

1. PTT Radio 1 and talk. The transmit (TX) indicators should turn on at Radio 1
 - Y Verify that the call is assigned as an FDMA by viewing the Real Time Viewer Site Activity on the RNM.
 - Y Verify Radios 2, 3 and 4 can hear Radio 1.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

13.3 Mixed Mode site to Mixed Mode site Call - Phase 1

Purpose: Demonstrates that a mixed mode call can function on a Phase 2 system

Expected Results: This test will verify that a Phase 1 radio will hear a call from a Phase 2 radio.

Setup: Turn on Radios 1, 2, 3, 4

Execution:

1. PTT Radio 3 and talk. The transmit (TX) indicators should turn on at Radio 3
 - Y Verify that the call is assigned as an FDMA by viewing the Real Time Viewer Site Activity on the RNM.
 - Y Verify Radios 1, 2 and 4 can hear Radio 3.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

13.4 Phase 2 site Call**Purpose:** Demonstrates that a Phase 2 call work on a Phase 2 system**Expected Results:** This will verify that a P25 Phase 2 call will work on a Phase 2 system**Setup:** Turn off Radios 1, and 2**Execution:**

1. PTT Radio 3 and talk. The transmit (TX) indicators should turn on at Radio 3
 - Y Verify that the call is assigned as an TDMA by viewing the Real Time Viewer Site Activity on the RNM.
 - Y Verify Radios 4 can hear Radio 1.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

14. P25 PHASE 2 FUNCTIONALITY [Non Single Cell Simulcast/Multisite Only]

Purpose: The tests will show that the system will allow radios that are on different sites to communicate while the radios are on different phases on P25.

Expected Results: This test will verify that the system will allow Phase 1 and Phase 2 radio to inter communicate.

Setup: In the following tests, portables 1 and 2 will be set up as Phase 1 only. Portables 3 and 4 will be set up as Phase 2 and Phase 1 capable, depending upon talk-group. FDMA refers to Phase 1 and TDMA refers to Phase 2. Start a session on the RNM and setup to watch channel assignments using the real time viewer function.

On a client computer, open the windows internet explorer and browse to <https://s0u1rnm.vida.local/nmc> and log in with an Active Directory account. Choose the system map and select the 'Launch Application' button. Open the Realtime tab and Click Site Calls. Select the site and expand. Check the box next to the channels and select the to add the channels to the target list. Select the 'ok' button to launch the application.

Place a group call from Radio 1 to Radio 2 on the site, and verify that the event viewer displays the talk-group ID and calling party ID. Verify the state changes from Free to Talk. Verify the TG Alias displays the Group #.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	System	Site	On/Off
Radio 1	998001	TG64051 P25	64051	MAC PH 1	1	On
Radio 2	998002	TG64051 P25	64051	MAC PH 1	1	On
Radio 3	998003	TG64051 P25	64051	MAC PH 2	2	On
Radio 4	998004	TG64051 P25	64051	MAC PH 2	2	On

**14.1 Mixed Mode site to Mixed Mode site Call Phase 1- Phase 1 [Non Single Cell
Simulcast/Multisite Only]****Purpose:** Demonstrates that a Phase 1 call work on a Phase 2 system**Expected Results:** This will verify that a P25 Phase 1 call will work on a Phase 2 system**Setup:** Turn off radios 2 and 4.

Description	Radio LID	TG Description	TG ID	System	Site	On/Off
Radio 1	9980001	TG 64051 P25	64051	MAC PH 1	1	On
Radio 2	9980002	TG 64051 P25	64052	MAC PH 2	1	Off
Radio 3	9980003	TG 64051 P25	64051	MAC PH 1	2	On
Radio 4	9980004	TG 64051 P25	64052	MAC PH 2	2	Off

Execution:

- PTT Radio 1 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 1
 - Y Verify that the call is assigned as FDMA at Site 2 by viewing the Real Time Viewer Site Activity on the RNM.
 - Y Verify Radio 3 can hear Radio 1.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

14.2 Mixed Mode site to Mixed Mode site Call - Phase 1 and Phase 2 [Non Single Cell Simulcast/Multisite Only]**Purpose:** Demonstrates that a mixed mode call can function on a Phase 2 system**Expected Results:** This test will verify that Phase 2 radios will hear a call from a Phase 1 radio.**Setup:** Turn on Radios 1, 2, 3, 4

Description	Radio LID	TG Description	TG ID	System	Site	On/Off
Radio 1	9980001	TG 64051 P25	64051	MAC PH 1	1	On
Radio 2	9980002	TG 64051 P25	64051	MAC PH 1	1	On
Radio 3	9980003	TG 64051 P25	64051	MAC PH 2	2	On
Radio 4	9980004	TG 64051 P25	64051	MAC PH 2	2	On

Execution:

1. PTT Radio 1 and talk.

Y The transmit (TX) indicators should turn on at Radio 1

Y Verify that the call is assigned as an FDMA at site 2 by viewing the Real Time Viewer Site Activity on the RNM.

Y Verify Radios 2, 3 and 4 can hear Radio 1.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

14.3 Mixed Mode site to Mixed Mode site Call - Phase 1 [Non Single Cell Simulcast/Multisite Only]**Purpose:** Demonstrates that a mixed mode call can function on a Phase 2 system.**Expected Results:** This test will verify that a Phase 1 radio will hear a call from a Phase 2 radio.**Setup:** Turn on Radios 1, 2, 3, 4

Description	Radio LID	TG Description	TG ID	System	Site	On/Off
Radio 1	9980001	TG 64051 P25	64051	MAC PH 1	1	On
Radio 2	9980002	TG 64051 P25	64051	MAC PH 1	1	On
Radio 3	9980003	TG 64051 P25	64051	MAC PH 2	2	On
Radio 4	9980004	TG 64051 P25	64051	MAC PH 2	2	On

Execution:

1. PTT Radio 3 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 3
 - Y Verify that the call is assigned as an FDMA at site 2 by viewing the Real Time Viewer Site Activity on the RNM.
 - Y Verify Radios 1, 2 and 4 can hear Radio 3.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

14.4 Phase 2 site Call [Non Single Cell Simulcast/Multisite Only]**Purpose:** Demonstrate that a Phase 2 call works on a Phase 2 system.**Expected Results:** Verify that a P25 Phase 2 call will work on a Phase 2 system.**Setup:** Turn off Radios 1 and 2

Description	Radio LID	TG Description	TG ID	System	Site	On/Off
Radio 1	9980001	TG 64051 P25	64051	MAC PH 1	1	Off
Radio 2	9980002	TG 64051 P25	64051	MAC PH 1	1	Off
Radio 3	9980003	TG 64051 P25	64051	MAC PH 2	2	On
Radio 4	9980004	TG 64051 P25	64051	MAC PH 2	1	On

Execution:

1. PTT Radio 3 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 3
 - Y Verify that the call is assigned as a TDMA at Site 1 by viewing the Real Time Viewer Site Activity on the RNM.
 - Y Verify Radios 1, 2, & 4 can hear Radio 3.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

15. SYMPHONY DISPATCH FEATURE SET

All Testing done in this section should be done with a user that is in the 'Console' User Group.

15.1 Transmitting With a Microphone (Group Calls, I Calls)

Purpose: Confirms the console operator can initiate communication with a terminal radio using the console select functions and foot pedal, for both Group and I Calls.

Expected Results: Confirms communication with the terminal radio

Setup: Radio set to TG64001 P25 and console programmed with talk group TG64001 P25

Execution:

1. Press the INSTANT TX function (for example right mouse button) on the module with the test group. Verify
 - Y that a channel access tone is heard, a
 - Y ripple effect on the 'TX' indicator is displayed
 - Y that the call is heard on the radio.
2. Release the Instant TX key
3. Right click on the gear symbol for TG64002 and select 'Select' to make TG64002 the selected talk group. Verify
 - Y that the module for TG64002 is highlighted indicating that it is the selected talk group
 - Y the module at the top center of the screen changes to 'TG64002'
4. Make call on 64002TG by:
 - a. Press the PTT foot pedal.
 - Y verify that a channel access tone is heard,
 - Y the halo around the 'TX' indicator is displayed
 - Y that the call is heard on the radio
 - Y verify audio is heard at a radio on talk group 64002TG
 - i. Release the foot pedal to end the call
 - b. Press the headset button.

- Y verify that a channel access tone is heard
- Y the halo around the 'TX' indicator is displayed
- Y that the call is heard on the radio
- Y verify audio is heard at a radio on talk group 64002TG
- i. Release the headset button to end the call.
- c. Select the 64002TG button with the mouse.
 - Y verify that a channel access tone is heard
 - Y the halo around the 'TX' indicator is displayed
 - Y that the call is heard on the radio
 - Y verify audio is heard at a radio on talk group 64002TG
 - i. Release the mouse button to end the call.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

15.2 Receiving Calls (Unit ID Display, Talk group ID Display, Aliasing)

Purpose: Confirm the console operator can receive communications from a terminal radio, using both talkgroup and individual calling.

Expected Results: Communications are initiated and received on the appropriate speaker (select or unselect) and the radio's ID is displayed.

Setup: Console should have talk groups 64001TU and 64002TU programmed with 64002TU selected and Radio set to TG64001 P25

15.2.1 Talk Group Call**Execution:**

1. Key the radio and verify
 - Y That the call is heard at the unselect speaker
 - Y That the calling radio ID is displayed on the module for TG64001
 - Y A green light **is** displayed indicating **an** incoming call on module TG64001
2. Switch the radios talk group to 64002TU and key the radio.
 - Y That the call is heard at the select speaker
 - Y That the calling radio ID is displayed on the module for TG64002
 - Y A green light **is** displayed indicating **an** incoming call on module TG64002

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

15.2.2 Individual Call (Unit – Unit)**Execution:**

1. Right click on the 'Harris' box on the top left hand side of the screen.
2. Select 'Open Directory' this will open a pop up window for the 'Directory'
3. Select the 'Users' tab
4. Select 'Radio 1' under the "ALIAS" column
5. Press the 'Radio 1' button the right side to the screen to place **an** individual call to radio 1.
 - Y Verify the ripple effect on the 'TX' indicator is displayed
 - Y Verify a ringing tone will be heard at the console and the radio
 - Y Verify radio displays 'INDV' and consoles 'ID'
6. Respond to the console by PTTing the radio
 - Y Verify that the call is heard on the console and that the calling radio's ID and the Call Indicator are displayed.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

15.3 Emergency Call and Emergency Alarm

Purpose: Confirms the console indicates an emergency declared by a terminal radio and can reset and clear the emergency.

Expected Results: The console indicates and can clear the emergency.

Setup: This test requires a test radio capable of generating and clearing an emergency (i.e. Supervisor Radio).

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001

Execution:

1. Select the 64002TG in the console. Using the test radio, declare an emergency on 64001TG.
 - Y Verify the module for '64001TG' turns red,
 - Y Verify the ID/Name of the test radio is displayed
 - Y Verify emergency alert tone is heard on the console.
2. Select the triangle with a '!' to access the emergency menu.
 - Y the acknowledge 'Ack' button is red
 - Y the check box is red
3. Using the radio, transmit on the talk group
 - Y Verify that the call is received by the console.
4. With the console, transmit on the group with the emergency.
 - Y Verify the test radio receives the call, and is still in emergency mode.
5. Acknowledge the emergency by selecting the 'Ack' button
 - Y Verify the button changes from 'Ack' to clear
 - Y verify the radio and the console are still in emergency mode
6. Clear the emergency by selecting the 'Clear X' button

- Y Verify the console clears the emergency
- Y Verify the radio clears the emergency
7. Transmit on the radio
8. Verify the emergency is cleared and normal group calls have resumed.
9. Select 64001TG group selected on the console, declare an emergency on the test group by pressing the 'Emer Declare'.
- Y Verify the console and radio have the same indications as steps 2 to 4.
10. Acknowledge by hitting 'Ack' in step 4
11. Clear the emergency with the console.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

15.4 System Wide Call (All Call & Announcements)

Purpose: Confirm the console can initiate system wide calls.

Expected Results: The console can initiate both All Calls and Announcement Calls.

Setup: Program console modules with the 'TG64000 P25' talk group

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64051 P25	64051
Radio 2	998002	TG64052 P25	64052
Radio 3	998003	TG64001 P25	64001
Radio 4	998004	TG64001 P25	64002

Execution:

1. Press INSTANT TX on the module with 'TG64000 P25'.
 - Y Verify that a channel access tone is heard,
 - Y Verify the ripple effect on the 'TX' indicator is displayed
 - Y Verify that the call is heard at all radios
2. Release the Instant TX key.
3. Press INSTANT TX on the module with 'TG64051 P25'.
 - Y Verify that a channel access tone is heard,
 - Y Verify the ripple effect is displayed
 - Y Verify the call is heard at Radios 1. Verify Radios 2, 3
 - Y Verify radio 4 did not hear the audio.
4. Release the Instant TX key.
5. Press INSTANT TX on the module with 'TG64001 P25'.

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- Y Verify that a channel access tone is heard,
 - Y The ripple effect is displayed,
 - Y The call is heard at Radios 3.
 - Y Verify that Radios 1 2
 - Y Radio 4 did not hear the audio.
6. Release the Instant TX key.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

15.5 Alert Tones

Purpose: Confirm the console can initiate alert tones which can be heard at the terminal radio.

Expected Results: The tones can be initiated and heard.

Setup: Console 1 programmed with TG64002 and TG64001 selected.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64002 P25	64002

Execution:

1. Make TG64001 P25 the selected talk group.
2. Select the tones tab on the talk group module.
3. Select one of the three ALERT TONE keys by selecting the drop down list next to the orange button the console with a method other than the mouse.
4. Radio 1 will receive the call.
5. Test that all three alert tones can be heard on the radio.
 - Y Verify the ALERT TONE is received by Radio 1 and also heard on the console (to hear the tones on the console, press and hold the foot pedal and listen for the tone on the SELECT speaker).
6. When the ALERT TONE key is released
 - Y Verify the call on Radio 1 drops

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

15.6 Console Pre-Empt**Purpose:** Confirm the console can pre-empt an ongoing call between terminal radios.**Expected Results:** The call started by the radio will be interrupted by the console.**Setup:** Console 1 programmed with talk-group TG64001 P25

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9981001	TG64001 P25	64001
Radio 2	9981002	TG64001 P25	64001

Execution:

1. Key Radio 1 on the TG64001 and hold the call up. Verify that audio is heard at Radio 2 and the console.
2. Key the console on TG64001 and hold the while continuing to hold the call up on Radio 1
 - Y Verify the console pre-empts
 - Y Verify that the transmit indicator is displayed along with the pre-empted caller LID and CALL indicator
 - Y Verify that the second radio begins to hear the console audio and not the first radio call.
 - Y Verify that the pre-empted radio audio is still heard on the pre-empting console.
3. Un-key the first Radio.
 - Y 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. Un-key the console.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

15.7 Simulselect

Purpose: Confirms operation of the console Simulselect feature, which allows multiple talk groups to be selected for communication simultaneously.

Expected Results: The console can select multiple talk groups and communication is allowed.

Setup Console 1 programmed with talk groups TG64051 P25, TG64052 P25, TG64053 P25, and TG64054 P25.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64051 P25	64051
Radio 2	998002	TG64052 P25	64052
Radio 3	998003	TG64001 P25	64001
Radio 4	998004	TG64001 P25	64002

Execution:

1. Create simulselect group on the 4 test group modules
2. Place a call from the console on the simulselect group
 - Y Verify that the call is heard all four radios
3. Place a call from each radio
 - Y Verify that only the console hears the calls
 - Y Verify only the radios on similar talk groups here the call
4. Deactivate the simulselect group.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

15.8 Patch

Purpose: Confirms the console patch feature creates shared communication between multiple selected talk groups.

Expected Results: The patched talk groups can communicate.

Setup Console 1 programmed with talk groups TG64051 P25, TG64052 P25, TG64053 P25, and TG64054 P25.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64051 P25	64051
Radio 2	998002	TG64052 P25	64052
Radio 3	998003	TG64001 P25	64001
Radio 4	998004	TG64001 P25	64002

Execution:

1. Create patch on PATCH 1 with all four groups above.
2. Place a call from the newly created patch
 Y Verify that the call is heard on all the radios
3. Place a call from each radio
 Y Verify that the call is heard on the console and each radio.
4. Deactivate the patch.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

15.9 Console to Console Cross-mute

Purpose: Confirm creation of a cross-mute of another console to quiet the muted consoles audio on the local console.

Expected Results: The cross-muted console's audio cannot be heard on the local console.

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.

Y Verify that console B can hear console A.
2. Open the Symphony Configuration Utility for console B in the 'General' section add the ID for console A to the 'Cross Mute' list.
3. Select 'Apply' to save the changes.
4. Place a call on console A on the test group

Y Verify the call can't be heard at console B.
5. Restore the desired cross mute setup.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

15.10 Call History

Purpose: Confirms a history of calls processed at the console.

Expected Results: The history is accessible and valid.

Setup: This test 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.
Y Compare these calls with known activity.
2. Press the ‘Scroll Up’ and ‘Scroll Down’ buttons to scroll through the selected call history list.
Y 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.
5. Use the ‘scroll up’ and ‘scroll down’ buttons to scroll through the calls for the picked module.
Y Compare these calls with known activity.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

15.11 Group Call

Purpose: Confirms the scan function which allows a smartphone to hear audio on selected talk-groups other than the current talk-group.

Expected Results: Selected talk-group call audio is heard.

Setup: Set smart-phones 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

1. PTT on BeOn_202 and talk.
 - Y The transmit (TX) indicators should turn on at BeOn_202.
 - Y Audio should be heard in BeOn_203, and BeOn_204 .
 - Y The ID of BeOn_202 should be seen at BeOn_203, and BeOn_204.
2. Set BeOn_204 to TG64152 P25. PTT on BeOn_202 and talk.
 - Y The transmit (TX) indicators should turn on at BeOn_202.
 - Y Audio should be heard in BeOn_203 only.
 - Y The ID of BeOn_202 should be seen at BeOn_203 only.

Results	(Pass/Fail)
Tester: _____	Date: _____
Comments: _____	

15.12 Individual (Private) Call

Purpose: Confirms individual calls can be initiated using BeOn enabled smartphones.

Expected Results: Individual calls are confirmed.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

- Using the BeOn_202, select the pre-stored ID of BeOn_203 or enter the BeOn_203 ID directly from the keypad, and PTT smartphone 1.
 - Y Verify that BeOn_203 receives the call and displays the ID of smartphone 1.
 - Y Verify that BeOn_204 remains idle.
- Release the PTT on BeOn_202 and immediately PTT on BeOn_203.
 - Y Verify that BeOn_202 receives the call and displays the ID of BeOn_203.
 - Y Verify BeOn_204 remains idle.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

15.13 Group Scan

Purpose: Confirms the scan function which allows a smartphone to hear audio on selected talk-groups other than the current talk-group.

Expected Results: Selected talk-group call audio is heard.

Setup: BeOn_202 set up with TG64151 P25 and TG64152 P25 in the scan list, TG64151 P25 selected, and group scan initially disabled.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

1. Place a call from BeOn_203 on TG64151 P25.
Y Verify the call is received and audio is heard on BeOn_202.
2. Place a call from BeOn_203 on TG64152 P25.
Y Verify the call is not received by BeOn_202.
3. Enable group scan on BeOn_202.
4. Place another call from BeOn_203 on TG64152 P25.
Y Verify that the call is now received and audio is heard on BeOn_202.

Results	(Pass/Fail)
Tester: _____	Date: _____
Comments: _____	

15.14 Emergency Group Call

Purpose: Confirms an emergency can be declared, recognized and cleared by a smartphone.

Expected Results: The emergency is declared, recognized and cleared.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64152 P25	64152
BeOn_204	998204	TG64153 P25	64153

Execution:

1. Press the Emergency call button on BeOn_204 and then PTT BeOn_204.
 - Y Verify that BeOn_204 indicates the “TX EMER” declaration and that it reverts to the home group.
 - Y Verify that BeOn_202 and BeOn_203 indicate a “RX EMER” and hear audio on the emergency home group.
2. Clear the emergency with the Supervisor smartphone (BeOn_202).
 - Y Verify the emergency clears in the smartphones.

Results	(Pass/Fail)
Tester: _____	Date: _____
Comments: _____	

16. BEON FEATURES**Purpose:** These will test the BeOn features.**Expected Results:** This test will demonstrate that BeOn works as designed.**Setup:** This test will show that the BeOn system allows a smartphone to communicate with the radio system.**16.1 Transmit Grant Tone****Purpose:** This test will demonstrate the grant tone on BeOn.**Expected Results:** When the smartphone PTTs on the BeOn app it will play a grant tone.**Setup:** Grant tone (Ready to Talk tone) enabled in smartphone radio personality.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

1. Press PTT button on smartphone with valid group selected.

Y Verify grant tone is heard at smartphone 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: _____	

16.2 Group Call

Purpose: Confirms the scan function which allows a smartphone to hear audio on selected talk-groups other than the current talk-group.

Expected Results: Selected talk-group call audio is heard.

Setup: Set smart-phones 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

3. PTT on BeOn_202 and talk.
 - Y The transmit (TX) indicators should turn on at BeOn_202.
 - Y Audio should be heard in BeOn_203, and BeOn_204.
 - Y The ID of BeOn_202 should be seen at BeOn_203, and BeOn_204.
4. Set BeOn_204 to TG64152 P25. PTT on BeOn_202 and talk.
 - Y The transmit (TX) indicators should turn on at BeOn_202.
 - Y Audio should be heard in BeOn_203 only.
 - Y The ID of BeOn_202 should be seen at BeOn_203 only.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

16.3 Individual (Private) Call

Purpose: Confirms individual calls can be initiated using BeOn enabled smartphones.

Expected Results: Individual calls are confirmed.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

3. Using the BeOn_202, select the pre-stored ID of BeOn_203 or enter the BeOn_203 ID directly from the keypad, and PTT smartphone 1.
 - Y Verify that BeOn_203 receives the call and displays the ID of smartphone 1.
 - Y Verify that BeOn_204 remains idle.
4. Release the PTT on BeOn_202 and immediately PTT on BeOn_203.
 - Y Verify that BeOn_202 receives the call and displays the ID of BeOn_203.
 - Y Verify BeOn_204 remains idle.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

16.4 Group Scan

Purpose: Confirms the scan function which allows a smartphone to hear audio on selected talk-groups other than the current talk-group.

Expected Results: Selected talk-group call audio is heard.

Setup: BeOn_202 set up with TG64151 P25 and TG64152 P25 in the scan list, TG64151 P25 selected, and group scan initially disabled.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

5. Place a call from BeOn_203 on TG64151 P25.

Y Verify the call is received and audio is heard on BeOn_202.
6. Place a call from BeOn_203 on TG64152 P25.

Y Verify the call is not received by BeOn_202.
7. Enable group scan on BeOn_202.
8. Place another call from BeOn_203 on TG64152 P25.

Y Verify that the call is now received and audio is heard on BeOn_202.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

16.5 Emergency Group Call

Purpose: Confirms an emergency can be declared, recognized and cleared by a smartphone.

Expected Results: The emergency is declared, recognized and cleared.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64152 P25	64152
BeOn_204	998204	TG64153 P25	64153

Execution:

3. Press the Emergency call button on BeOn_204 and then PTT BeOn_204.
 - Y Verify that BeOn_204 indicates the “TX EMER” declaration and that it reverts to the home group.
 - Y Verify that BeOn_202 and BeOn_203 indicate a “RX EMER” and hear audio on the emergency home group.
4. Clear the emergency with the Supervisor smartphone (BeOn_202).
 - Y Verify the emergency clears in the smartphones.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

17. TRUNKED LOGGING RECORDER**17.1 Group Call**

Purpose: Confirms group call audio is captured, recorded and accessible on the logging recorder

Expected Results: Calls are captured, recorded and accessible.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64051 P25	64051
Radio 2	998002	TG64051 P25	64051
Radio 3	998003	TG64051 P25	64051

1. PTT radio 1 and talk.

Y Audio should be heard on radio 2. Note the Start time of the call and the approximate duration.

2. Retrieve the call from the Logging Recorder.

Y Verify the Caller, Callee, Start Time, and duration.

Y The Caller should be the LID for Radio 1 and the Callee should be the GID for 64051. Verification should include the LID/GID and its Alias as defined by the UAS.

Y Verify that the call is identified as a Group Call.

3. Playback the audio

Y Confirm that the playback audio is all recorded and intelligible.

Results	(Pass/Fail)	_____
Tester: _____	Date: _____	
Comments: _____		

17.2 Emergency Group Call

Purpose: Confirms emergency group call audio is captured, recorded and accessible on the logging recorder

Expected Results: Calls are captured, recorded and accessible.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64051 P25	64051
Radio 2	998002	TG64051 P25	64051
Radio 3	998003	TG64051 P25	64051

Execution:

1. Press the Emergency call button on radio 2. Talk during the Hot Mic transmit time.
2. Clear the emergency with the radio 1.
3. Retrieve the call from the Logging Recorder.
 - Y Verify the Caller
 - Y Verify the Callee
 - Y Verify the start time
 - Y Verify the duration
 - Y The Caller should be the LID for Radio 2 and the Callee should be the GID for the Home Group.
 - Y Verification should include the LID/GID and its Alias as defined by the UAS.
 - Y Verify that the call is identified as an Emergency.
 - Y Playback the audio and confirm that it is all recorded and intelligible.

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

18. P25 SIMULCAST BYPASS OPERATION

Program the MASTR V modules (both Control Points and Transmit Sites) to the Final Configuration. Refer to the installation manual for the guide to setting TX Traffic Controllers / CP Traffic Controllers 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 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.

18.1 Site OFF - Final Configuration

Purpose: Confirm sites configured to be in the “OFF” condition during BYPASS are in the expected BYPASS mode.

Expected Results: The “OFF” site traffic controllers have no control channel.

Setup: Sites intended to be “OFF” in event of BYPASS must have all channels set to disabled (unchecked in Device Manager, TC personality).

Execution:

1. At one of the sites designated as an “off” site, create a condition to force BYPASS by disconnecting the router to MPLS connection. All other sites will have the HPAs disabled locally.
 - Y Verify transmit site is in BYPASS mode.
 - Y The Traffic Controller module display indicates “TC” instead of “TR”. Note: TC= Working Traffic Channel, standalone mode, TR=Working Channel, simulcast mode, and Control Channel, simulcast mode is indicated by the transmit LED indicator.
2. Observe the repeater (station) Traffic Controller modules.
 - Y Verify there is no active control channel.
 - Y Verify no stations are keyed or producing RF power.
3. Restore the site to normal by returning the site to simulcast mode by reconnecting the router to MPLS connection.

- γ Verify transmit site is in normal simulcast mode. The Traffic Controller modules will indicate “TR(n)”, where n is the channel number.
4. Repeat steps 1-3 for the remaining “OFF” bypass sites in the simulcast system under test.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

18.2 Site ON (trunking) - Final Configuration

Purpose: Confirm sites configured to be in the “ON” condition during BYPASS are in the expected BYPASS mode.

Expected Results: The “ON” site traffic controllers have a control channel and calls to terminal radios can be initiated.

Setup:

Execution:

1. Create a condition to force BYPASS by disconnecting the router to MPLS connection.
 - Y Verify transmit site is in BYPASS mode. BYPS LED on Baseband module and the Traffic Controller module display indicates either “TC” or “CC” instead of “TR.”
 - Y Observe the stations/repeater Traffic Controller modules. Verify there is an active control channel on one of the Traffic Controller modules. The remaining repeater/stations Traffic Controller modules will indicate “TC”.
 - Y Verify the station appearing as control channel is keyed, producing RF power and modulated with control channel data.
 - Y 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.
2. Key the terminal radio on a group call.
 - Y Verify a working channel assignment is made within the channel group allowed in the personality.
 - Y Verify the call is heard on a second terminal radio set to the active BYPASS system.
3. Restore the site to simulcast mode by reconnecting the router to MPLS connection.
 - Y Verify transmit site is in normal simulcast mode. Traffic Controller modules indicate “TR(n).”
4. Repeat steps 1-3 for the remaining “ON” bypass sites in the simulcast system under test.

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

18.3 Control Point Trunking Reset Control

Purpose: A properly set up Simulcast BYPASS system will disable CP Traffic Controller 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 Traffic Controller modules to be held OFF.

Expected Results: This test will verify that the Control Point Traffic Controller modules will be held OFF corresponding to the active channels at a site as a result of the TX site being in BYPASS.

Setup:

Execution:

1. Force a TX site that will become active into BYPASS by disconnecting the router to MPLS connection.
 - Y Verify TX site is in BYPASS mode.
 - Y Verify transmit site is in BYPASS mode. Traffic Controller module display indicates either "TC" or "CC" instead of "TR".
 - Y Verify the CP Traffic Controller modules on the channels intended to be OFF are held OFF.
2. Observe the RNM screen for the simulcast system.
 - Y Verify the channels intended to be OFF at the Control Point are reported as OFF (RED).
3. Restore the site to simulcast mode by reconnecting the router to MPLS connection.
 - Y Verify the TX site Traffic Controller modules revert to normal Simulcast.
 - Y Verify the CP Traffic Controller modules associated with the site in BYPASS are returned to normal.

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

18.4 Bypass – Site Minimum Channels

Purpose: Confirm a site enters bypass when active channels fall below site minimum channels setting.

Expected Results: The site enters bypass mode.

Setup: Sites are configured with cluster minimum channels set to 6 and site minimum channels to 7.

Bypass Plan: TR Site 1 Ch 3,4,5; TR Site 2 Ch 6,7,8; TR site 3 Ch 9,10,11 TR Sites 4 and 5 dark

Note Settings and bypass plan can be customer final settings; execution will have to adjust to accommodate those settings.

Execution:

1. At TR site 1 disable channels 8 - 11 using the TX disable switch on the PA (only channels 1-7 are still functioning).
 - Y Verify system and site still functioning in simulcast; the disabled channels 8-11 are in alarm state at the control point site.
 - Y At TR site 1 the Traffic Controller modules displays still indicates “TR” not “TC” or “CC”. Note: TC= Working Traffic Channel, standalone mode, TR=Working Channel, simulcast mode, and Control Channel, simulcast mode is indicated by the transmit LED indicator.
2. At the same site disable channel 7 using the TX disable switch on the PA.
 - Y Verify system is still functioning in simulcast. Control Point ch 3,4 and 5 in alarm state.
 - Y Verify TR site 1 is in bypass. The Traffic Controller module display indicates “TC” instead of “TR”. All channels status indicates alarm. Note: TC= Working Traffic Channel, standalone mode, TR=Working Channel, simulcast mode, and Control Channel, simulcast mode is indicated by the transmit LED indicator always on.
3. At the same site restore all channels back to service (enable the PA using the TX disable switch on the PA).
 - Y Verify transmit site 1 is in normal simulcast mode. The Traffic Controller modules will indicate “TR(n)” , where n is the channel number.
 - Y Verify all channels are in service at the control point.

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

18.5 Bypass – Cluster Minimum Channels – TR site failures

Purpose: Confirm all sites enter bypass when available channels fall below the cluster minimum channels setting. Depending upon the system size, bypass plan and which channels have been failed a subset of sites may subsequently come out of bypass and operate as a cluster before any channels are restored to service.

Expected Results: All site in the system enter bypass mode.

Setup: Sites are configured with cluster minimum channels set to 6 and site minimum channels set to 7 (these settings are normally lower; they are set high to simplify testing) .

Execution:

1. At TR site 1 disable channels 9, 10 and 11 using the TX disable switch on the PA (8 channels are still functioning).
 - Y Verify system and site still functioning in simulcast.
 - Y The Traffic Controller module displays still indicates “TR” not “TC” or “CC”. Note: TC= Working Traffic Channel, standalone mode, TR=Working Channel, simulcast mode, and Control Channel, simulcast mode is indicated by the transmit LED indicator.
2. At TR site 3 disable channels 6, 7 and 8 using the TX disable switch on the PA (5 channels are still functioning).
 - Y Verify All sites have entered bypass (the TCs display “TC” and “CC”, not “TR” and every channel status indicates failed at every site.
3. Enable the PAs at the sites using the TX disable switches.
 - Y Verify the system recovers to simulcast mode with all transmit sites in normalsimulcast mode. The Traffic Controller modules will indicate “TR(n)” , where n is the channel number.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

18.6 Site ON (trunking) - Enhanced bypass Final Configuration

Purpose: Confirm sites configured to be in the “ON” condition during BYPASS are in the expected BYPASS mode and can connect to VNIC.

Expected Results: The “ON” site traffic controllers have a control channel and calls between terminal radios and dispatch can be made.

Setup:

Execution:

1. Create a condition to force BYPASS that does not disrupt network connectivity by logging into both GPS receivers and configuring their notifications to set the major alarm threshold to minimum satellites 12 and duration below threshold 5 seconds. This will cause the GPS receivers to set a major alarm after 5 seconds.
2. Configure Notifications from Spectracom GPS Receivers

Navigate to: **Management → Notifications**



2. In the **Events** window pane, click the **GPS** tab.
3. Set the Major Alarm Threshold as follows:
 - a. Minimum Satellites: **12**
 - b. Duration Below Threshold: **5**
4. Click: **[Submit]**

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Event	Mask Alarm	SNMP Trap	Email	Email A
Too Few GPS Sat. Minor Alarm	☐	☒	☐	☐
Too Few GPS Sat. Minor Cleared	☐	☒	☐	☐
Too Few GPS Sat. Major Alarm	☐	☒	☐	☐
Too Few GPS Sat. Major Cleared	☐	☒	☐	☐
GPS Antenna Problem	☐	☒	☐	☐
GPS Antenna OK	☐	☒	☐	☐
GPS Receiver Fault	☐	☐	☐	☐
GPS Receiver Fault Cleared	☐	☐	☐	☐

Minor Alarm Threshold

Minimum Satellites: Duration Below Threshold (s):

Major Alarm Threshold

Minimum Satellites: Duration Below Threshold (s):

3. Verify transmit site is in BYPASS mode. The Traffic Controller module display indicates either "TC" or "CC" instead of "TR".
- Y Observe the stations/repeater Traffic Controller modules. Verify there is an active control channel on one of the Traffic Controller modules. The remaining repeater/stations Traffic Controller modules will indicate "TC".
- Y Verify the station appearing as control channel is keyed, producing RF power and modulated with control channel data.
- Y 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.
4. Key the terminal radio on a group call.
- Y Verify a working channel assignment is made within the channel group allowed in the personality.
5. Restore the site to simulcast mode by restoring the GPS major alarm notification threshold to minimum satellites = 1 and duration = 345600 for both GPS receivers.

- γ Verify transmit site is in normal simulcast mode. Traffic Controller modules indicate "TR(n).

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

19. VIDA INTER-OPERABILITY GATEWAY TEST**19.1 Local Interoperability**

Purpose: The purpose of this test is to verify correct functionality of the Interoperability Gateway.

Expected Results: Verify that the

Setup: The Interoperability Gateway connects via 4-wire audio connections in its Universal Access Cards(UAC) cards to interoperability radio units (mobile or desktop). The Gateway also connects to a router and the Network Switching Center (NSC) to provide call functionality across the network.

Execution:

1. Select Inter-op group 1 on the radio.
2. Initiate a call from the radio to group 1

Y Verify that audio is heard on inter-op group 1 radio.
3. Initiate a call from the inter-op group 1 radio to group 1

Y Verify that audio is heard on the radio.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

20. INFORMATION ASSURANCE TESTING**20.1 Active Directory**

Purpose: The purpose of this test is to view the GPO structure on an Active Directory server.

Expected Results: The GPO structure is valid.

Setup: None

Execution:

1. Log into an Active Directory Server.
2. Open AD Users/Groups
 - Y Validate that the computers have been added to AD.
3. Open Group Policies Management
 - Y Verify VIDA GPO Structure

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

20.2 Cisco Works

Purpose: This test will test the Cisco Works.

Expected Results: This test will verify that the Cisco Works is communicating with the necessary devices.

Setup: The purpose of this test is to verify that Cisco Works is configured and is capable of accessing the Cisco devices on the network.

Execution:

1. Use Internet Explorer on a client PC to browse to CiscoWorks
2. Select 'RME'
3. Expand 'Devices'
4. Select 'Inventory'
5. Select 'View Inventory Connection Status'
6. Select the number on Inventory Collected
7. Select a device
8. Expand 'All Devices'
9. Select a device
10. Select 'Cisco View'
11. Select a port
12. Select 'Configure'
13. Click on a Device
14. View 'Configuration'
14. Close windows and log out

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

20.3 ePolicy Orchestrator

Purpose: The purpose of this test is to verify that ePolicy Orchestrator is communicating with its end devices and that it will report actions that have been taken by McAfee Antivirus on a remote computer.

Expected Results: ePolicy Orchestrator is accessible and displays valid reporting.

Setup: None

Execution:

1. Use Internet Explorer on a client PC to navigate to the McAfee E-Policy Orchestrator server
2. Log in using proper credentials
3. Go to the Main Screen

γ Verify all servers have been added to policies.

Results	(Pass/Fail)
Tester: _____	Date: _____
Comments: _____	

20.4 Backup

Purpose: The purpose of this test is to verify that the Unitrends server has a schedule for performing backups of network computers and that it can display the backup status of those computers

Expected Results: The test will verify that the backup are configured.

Setup: None

Execution:

1. Use Internet Explorer on a client PC to navigate to the Unitrends Backup UAC
2. Log in using proper log in credentials
3. Go to the Main Screen

γ Verify that devices are visible and backups are configured.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

20.5 Intrusion Detection

Purpose: The purpose of this test is to verify that the SouceFire Defense Center is communicating with its IDS sensors at remote sites across the network.

Expected Results: SouceFire Defense Center is communicating with its IDS sensors.

Setup: None

Execution:

1. Use Internet Explorer on a client PC to navigate to the Sourcefire Defense Center
2. Log in using proper credentials
3. Go to Defense Center Dashboard
4. Click Operations. Go to Sensors

γ Verify that all Sensors are visible.

Results	(Pass/Fail)
Tester: _____	Date: _____
Comments: _____	

20.6 SysLog

Purpose: The purpose of this test is to verify that network devices are sending SysLog messages to the LogLogic server.

Expected Results: This test will verify that the clients are reporting to the Log Logic.

Setup: None

Execution:

1. Use Internet Explorer on a client PC to navigate to the LogLogic Syslog web page
2. Log in using proper log in credentials
3. Go to LogLogic System Status Dashboard
4. Click Log Source Status

Y Verify current devices are reporting.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

20.7 SUMS

Purpose: To demonstrate that the SUMS server is communicating with the remote client.

Expected Results: This test will verify that the SUMS server is communicating with the remote clients and that the remote clients are updated.

Setup: None

Execution:

1. Log into the SUMS server and launch the 'IBM Endpoint Manager Console' and log into the console with the SUMS administrators user.
2. Expand 'Sites' 'Custom Sites' 'Vida' and select 'Subscribed Computers'
 - Y Verify that each Computer is listed, in the Subscribed Computers window
 - Y Check to make sure that each computer has reported to the SUMS server with in the last 30 minutes by checking the 'Last Report Time' column.
 - Y To check to make sure all the Subscriber Computers are update by selecting the 'Baseline' in the left hand window.
 - Y Make sure the 'Baseline' window is empty or all computer in the window are gray.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

22. ACRONYMS AND DEFINITIONS

AD	Active Directory
AES	Advanced Encryption Standard
Confirmed Call	A confirmed call is a special type of call where the call is queued until all sites have resources available, or until the confirmed call timer expires (configurable, typically one or two seconds)
DM	Device Manager
DNS	Domain Name Server
FDMA	Frequency Division Multiple Access
FIPS 140-2	Federal Information Processing Standard, publication 140-2. The title is "Security Requirements for Cryptographic Modules"
FM	Frequency Modulation
HA	High Availability
IFW	Internet Firewall
Individual Call	An individual call is a private call between one user and another. It can be between two radios, or between one radio and a dispatch console
IP	Internet Protocol
IPS	Intrusion Prevention System
ISSI	Inter Sub System Interface. This is the interface between WACNs, in the Harris architecture an interface between a VNIC and a foreign P25 system
KEK	Key Encryption Key
KID	16 bit Encryption Key ID
KMF	Key Management Facility
LED	Light Emitting Diode
MASTR V	A Harris base station product

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MDIS	Mobile Data Intermediate System, a Harris data switch used in Harris' OpenSky Architecture
MES	Mobile End System, a subscriber radio
MME	Miniature Mobility Exchange, which consists of Harris software running on a SitePro card at the base site. The MME runs the SNDCP layer of the data protocol and is the equivalent of the P25 RFG (RF Gateway)
NSC	Network Switching Center
NSS	Network Switching Server
NWS	Network Sentry
OTAP	Over The Air Programming
OTAR	Over The Air Rekeying
P25	Project 25, a suite of standards for digital radio communications, developed by the Association of Public Safety Communications Officials (APCO) under the TIA TR-8 engineering committee, and published as the TIA-102 set of documents
Priority Talkgroup	The priority talkgroup selected on the subscriber device. Usually this is the talkgroup that the radio will transmit on when the user presses PTT
ProFile	A Harris product used for configuring radios over the P25 radio channel
ProScan	A Harris software algorithm used for radio roaming
PSAP	Public Safety Access Point, usually an agency dispatch center
PSTN	Public Switched Telephone Network
PTT	Push To Talk
RAR	Regional Access Router
RF	Radio Frequency
RFW	Regional Firewall
RMS	Regional Management Server

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RNM	Regional Network Manager
RS	Reed Solomon, a form of error detection and correction coding
RSM	Regional Site Manager, a server which runs the RSM, Activity Warehouse and Device Manager applications
SACCH	Slow Associated Control Channel (Phase 2)
SAN	Storage Area Network
Sourcefire DFC	Defense Center
SS	Status Symbol (a two bit field in the control channel, used for channel access control signaling)
SSL	Secure Socket Layers
SSH	Secure Shell is a program to log into another computer over a network, to execute commands in a remote machine, and to move files from one machine to another. It provides strong authentication and secure communications over insecure channels. It is a replacement for rlogin, rsh, rcp, and rdist.
SUMS	Security Update Management Service (a Harris product)
System ID	The System ID is a 12 bit field of the network address which identifies the VNIC
TAC	Technical Assistance Center, a Harris service
TACACS	Terminal Access Controller Access Control System
TDMA	Time Division Multiple Access
TDU	Terminator Data Unit, used to terminate a voice message
TEK	Traffic Encryption Key
Telnet	A terminal emulation program for TCP/IP networks such as the Internet. The Telnet program runs on your computer and connects your PC to a server on the network.
TGID	Talkgroup ID (16 bit, equivalent to GID). The P25 documents usually use GID but some of the older documents use TGID
Traffic Controller	Software entity which resides in a base station at the site and generates the P25 control channel

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TRC	Tone Remote Control
TSBK	Trunking Signaling Block (a 196 bit field in the control channel)
Tx	Transmit
UAC	Unified Audio Card
UAS	Unified Administration Server
UID	Unified ID. This is a Harris specific acronym referring to an ID composed of the System ID and SID. The UID is a ten digit number in the form 604-415-4003, representing region, agency, and individual
Unitrends	Enterprise backup for VIDA networks
UPS	Uninterrupted Power Supply
VAS	VIDA Application Server
VCE	VIDA Console Exchange
VCH	Voice Channel (Phase 2)
VDOC	Voice and Data on Control (the control channel can assign itself as a traffic channel)
VIDA	Voice, Interoperability, Data, Access (a Harris system product)
VME	Versa Module Eurocard (IEEE 1014)
VNIC	Voice Network Interface Controller, the Harris voice switch
VTI	VIDA Telephone Interconnect
WACN	Wide Area Communication Network (20 bit network ID, part of SUID). This is a customer network which can include many VNICs
Zeroize	A P25 control channel command which causes the mobile radio to erase its encryption keys (but then requires manual loading to restore encryption keys)

23. UAS DATA BASE

23.1 Subscriber Units

Region Id	Agency Id	P25 IP Address	OpenSky IP Address	Description	Electronic Serial Number	Protocol Mask	Status	Sub Type	Assigned End User	Algorithm Support
10	998		10.128.111.19	OS_Radio_19	0	OpenSky	Enabled Unit			
10	998		10.128.111.20	OS_Radio_20	0	OpenSky	Enabled Unit			
10	998		10.128.111.2	OS_Radio_02	0	OpenSky	Enabled Unit			
10	998		10.128.111.3	OS_Radio_03	0	OpenSky	Enabled Unit			
10	998		10.128.111.4	OS_Radio_04	0	OpenSky	Enabled Unit			
10	998		10.128.111.5	OS_Radio_05	0	OpenSky	Enabled Unit			
10	998		10.128.111.6	OS_Radio_06	0	OpenSky	Enabled Unit			
10	998		10.128.111.7	OS_Radio_07	0	OpenSky	Enabled Unit			
10	998		10.128.111.8	OS_Radio_08	0	OpenSky	Enabled Unit			
10	998		10.128.111.9	OS_Radio_09	0	OpenSky	Enabled Unit			
10	998		10.128.111.10	OS_Radio_10	0	OpenSky	Enabled Unit			
10	998		10.128.111.11	OS_Radio_11	0	OpenSky	Enabled Unit			

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10	998	10.128.111.12	OS_Radio_12	0	OpenSky	Enabled Unit			
10	998	10.128.111.13	OS_Radio_13	0	OpenSky	Enabled Unit			
10	998	10.128.111.14	OS_Radio_14	0	OpenSky	Enabled Unit			
10	998	10.128.111.15	OS_Radio_15	0	OpenSky	Enabled Unit			
10	998	10.128.111.16	OS_Radio_16	0	OpenSky	Enabled Unit			
10	998	10.128.111.1	OS_Radio_1	0	OpenSky	Enabled Unit			
10	998	10.128.111.17	OS_Radio_17	0	OpenSky	Enabled Unit			
10	998	10.128.111.18	OS_Radio_18	0	OpenSky	Enabled Unit			
10	998	10.128.79.9	Radio9	109980009	P25	Enabled Unit	Harris XG-75 Portable	010:998:0009	AES
10	998	10.128.79.10	Radio10	109980010	P25	Enabled Unit	Harris XG-75 Portable	010:998:0010	AES
10	998	10.128.79.8	Radio8	109980008	P25	Enabled Unit	Harris XG-75 Portable	010:998:0008	AES
10	998	10.128.53.1	Console9101	109989101	P25	Enabled Unit	Maestro Console	010:998:9101	AES
10	998	10.128.53.2	Console 9102	109989102	P25	Enabled Unit	Maestro Console	010:998:9102	Both
10	998	10.128.79.1	Radio1	109980001	P25	Enabled Unit	Harris P5400	010:998:0001	AES
10	998	10.128.79.2	Radio2	109980002	P25	Enabled Unit	Harris P5400	010:998:0002	AES
10	998	10.128.79.3	Radio3	109980003	P25	Enabled Unit	Harris XG-75 Portable	010:998:0003	AES
10	998	10.128.79.4	Radio4	109980004	P25	Enabled Unit	Harris XG-75 Portable	010:998:0004	AES

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10	998	10.128.79.5	Radio5	109980005	P25	Enabled Unit	Harris XG-75 Portable	010:998:0005	AES
10	998	10.128.79.6	Radio6	109980006	P25	Enabled Unit	Harris XG-75 Portable	010:998:0006	AES
10	998	10.128.79.7	Radio7	109980007	P25	Enabled Unit	Harris XG-75 Portable	010:998:0007	AES
10	998	10.128.79.11	Radio11	109980011	P25	Enabled Unit	Harris UNITY XG-100P	010:998:0011	AES
10	998	10.128.79.12	Radio12	109980012	P25	Enabled Unit	Harris UNITY XG-100P	010:998:0012	AES
10	998	10.128.1.161	s0u1xcda	0	P25	Enabled Unit		010:998:9001	AES
10	998	10.128.1.162	s0u1xcdb	0	P25	Enabled Unit		010:998:9005	AES

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23.2 Voice End Users

Region Id	Agency Id	User Id	Name	Description	Personality	User Privilege	Message Trunked ICall	Enable P25 AES OTAR	Manually-Keyed	Preferred Vocoder	Transcoding Allowed Flag
10	998	010:998:9921	VAQ-SS22	SiteSim VAQ User22	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:0210	BeOn_210	BeOn_210	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:9012	XCD_9012	XCD_9012	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:9014	XCD_9014	XCD_9014	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:7005	VTI_7005	VTI_7005	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:9909	VAQ-SS10	SiteSim VAQ User10	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:9926	VAQ-SS27	SiteSim VAQ User27	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:9905	VAQ-SS06	SiteSim VAQ User06	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:0202	BeOn_202	BeOn_202	BeOn_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:9925	VAQ-SS26	SiteSim VAQ User26	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:0015	U9980015	U9980015	OS_Pers	998_10_default	TRUE	FALSE	FALSE	OpenSky 2400 AMBE+2	TRUE

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10	998	010:998:00 16	U9980016	U9980016	OS_Pers	998_10_default	TRUE	FALSE	FALSE	OpenSky 2400 AMBE+2	TRUE
10	998	010:998:99 15	VAQ-SS16	SiteSim VAQ User16	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 03	VAQ-SS04	SiteSim VAQ User04	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 18	VAQ-SS19	SiteSim VAQ User19	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 04	VAQ-SS05	SiteSim VAQ User05	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 20	VAQ-SS21	SiteSim VAQ User21	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 07	VAQ-SS08	SiteSim VAQ User08	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 03	U9980003	U9980003	Pers1	998_10_default	TRUE	TRUE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 19	VAQ-SS20	SiteSim VAQ User20	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 11	VAQ-SS12	SiteSim VAQ User12	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 17	U9980017	U9980017	OS_Pers	998_10_default	TRUE	FALSE	FALSE	OpenSky 2400 AMBE+2	TRUE
10	998	010:998:00 08	U9980008	U9980008	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 01	VAQ-SS02	SiteSim VAQ User02	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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10	998	010:998:02 08	BeOn_208	BeOn_208	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 27	VAQ-SS28	SiteSim VAQ User28	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 09	VTI_7009	VTI_7009	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 04	XCD_9004	XCD_9004	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 06	XCD_9006	XCD_9006	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 07	XCD_9007	XCD_9007	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 05	U9980005	U9980005	Pers1	998_10_default	TRUE	TRUE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 02	XCD_9002	XCD_9002	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 02	VTI_7002	VTI_7002	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 06	VAQ-SS07	SiteSim VAQ User07	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 22	VAQ-SS23	SiteSim VAQ User23	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 01	VTI_7001	VTI_7001	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:02 07	BeOn_207	BeOn_207	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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10	998	010:998:90 10	XCD_9010	XCD_9010	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 29	VAQ-SS30	SiteSim VAQ User30	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 04	VTI_7004	VTI_7004	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 18	XCD_9018	XCD_9018	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 13	U9980013	U9980013	OS_Pers	998_10_default	TRUE	FALSE	FALSE	OpenSky 2400 AMBE+2	TRUE
10	998	010:998:70 06	VTI_7006	VTI_7006	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 16	XCD_9016	XCD_9016	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 09	XCD_9009	XCD_9009	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:60 05	Site5VirtualUser	Site5VirtualUser	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 06	U9980006	U9980006	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 11	XCD_9011	XCD_9011	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 13	XCD_9013	XCD_9013	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 07	U9980007	U9980007	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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10	998	010:998:02 06	BeOn_206	BeOn_206	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 19	XCD_9019	XCD_9019	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 17	VAQ-SS18	SiteSim VAQ User18	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 08	VAQ-SS09	SiteSim VAQ User09	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 04	U9980004	U9980004	Pers1	998_10_default	TRUE	TRUE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 05	XCD_9005	XCD_9005	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 00	VAQ-SS01	SiteSim VAQ User01	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 03	XCD_9003	XCD_9003	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 28	VAQ-SS29	SiteSim VAQ User29	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 23	VAQ-SS24	SiteSim VAQ User24	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 11	U9980011	U9980011	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 10	U9980010	U9980010	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 16	VAQ-SS17	SiteSim VAQ User17	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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10	998	010:998:90 08	XCD_9008	XCD_9008	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 17	XCD_9017	XCD_9017	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:02 05	BeOn_205	BeOn_205	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:02 01	BeOn_201	BeOn_201	BeOn_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 01	XCD_9001	XCD_9001	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:02 09	BeOn_209	BeOn_209	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:02 04	BeOn_204	BeOn_204	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 14	VAQ-SS15	SiteSim VAQ User15	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:91 03	U9980003	U9980003	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 07	VTI_7007	VTI_7007	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 10	VTI_7010	VTI_7010	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 09	U9980009	U9980009	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 24	VAQ-SS25	SiteSim VAQ User25	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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10	998	010:998:70 08	VTI_7008	VTI_7008	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 02	U9980002	U9980002	Pers1	998_10_default	TRUE	TRUE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 12	U9980012	U9980012	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 14	U9980014	U9980014	OS_Pers	998_10_default	TRUE	FALSE	FALSE	OpenSky 2400 AMBE+2	TRUE
10	998	010:998:99 12	VAQ-SS13	SiteSim VAQ User13	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:60 03	Site3VirtualUser	Site3VirtualUser	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 02	VAQ-SS03	SiteSim VAQ User03	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:02 03	BeOn_203	BeOn_203	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 15	XCD_9015	XCD_9015	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 13	VAQ-SS14	SiteSim VAQ User14	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 03	VTI_7003	VTI_7003	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 10	VAQ-SS11	SiteSim VAQ User11	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:60 04	Site4VirtualUser	Site4VirtualUser	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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10	998	010:998:91 01	Cons9101	Console 9101	Pers1	998_10_supervi sor	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 01	U9980001	U9980001	Pers1	998_10_supervi sor	TRUE	TRUE	FALSE	P25 Full Rate	TRUE
10	998	010:998:91 02	Cons9102	Console 9102	Pers1	998_10_supervi sor	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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23.3 Talk Groups

TG Id	Region Id	Agency Id	Name	Description	SPNI	Property Id	Priority Id	Coverage	Valid Coverage	Announcement Group	Test Partition Only	Type	Preferred Vocoder	ISSI Site	Transcoding Allowed
9900	10	998	PS-28-AN	VAQ SitSim01	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:All Sites:AllP SAPs	None	FALSE	General	Analog/ADPCM		TRUE
9901	10	998	Tone-25	VAQ SitSim02	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:All Sites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE
9902	10	998	AmpFreq	VAQ SitSim03	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:All Sites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE
9903	10	998	Pseudosp	VAQ SitSim04	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:All Sites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE
9904	10	998	Phrases	VAQ SitSim05	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:All Sites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE
9905	10	998	SiteSm1	VAQ SitSim06	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:All Sites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE
9906	10	998	SiteSm2	VAQ SitSim07	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:All Sites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE
9907	10	998	SiteSm3	VAQ SitSim08	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:All Sites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE

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9908	10	998	SiteSm 4	VAQ SitSim09	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Full Rate		TRUE
9909	10	998	SiteSm 5	VAQ SitSim10	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Full Rate		TRUE
9910	10	998	SiteSm 6	VAQ SitSim11	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Full Rate		TRUE
9911	10	998	T-25- HR	VAQ SitSim12	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Half Rate		TRUE
9912	10	998	AF-HR	VAQ SitSim13	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Half Rate		TRUE
9913	10	998	PSp- HR	VAQ SitSim14	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Half Rate		TRUE
9914	10	998	Phrs- HR	VAQ SitSim15	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Half Rate		TRUE
9915	10	998	T-25- AN	VAQ SitSim16	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE
9916	10	998	AF-AN	VAQ SitSim17	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE
9917	10	998	P-Sp- AN	VAQ SitSim18	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE

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9918	10	998	Phrs-AN	VAQ SitSim19	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE
9919	10	998	VAQ20	VAQ SitSim20	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Full Rate		TRUE
9920	10	998	DVSITV	VAQ SitSim21	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Half Rate		TRUE
9921	10	998	T-25OS	VAQ SitSim22	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9922	10	998	AF-OS	VAQ SitSim23	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9923	10	998	P-SpOS	VAQ SitSim24	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9924	10	998	PhrsOS	VAQ SitSim25	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9925	10	998	T-25OS2	VAQ SitSim26	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
9926	10	998	AF-OS2	VAQ SitSim27	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9927	10	998	P-SpOS2	VAQ SitSim28	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE

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9928	10	998	PhrsOS 2	VAQ SitSim29	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
9929	10	998	VAQ30	VAQ SitSim30	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Full Rate		TRUE
6400 0	10	998	64000 ALL	TG64000 P25 Full Rate All Call	1	3	7	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	All-Call	P25 Full Rate		FALSE
6400 1	10	998	64001 TUL	TG64001 P25 Full Rate TX Unconf Low Priority	1	3	3	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera I	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 2	10	998	64002 TUM	TG64002 P25 Full Rate TX Unconf Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera I	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 3	10	998	64003 TUM	TG64003 P25 Full Rate TX Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera I	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 4	10	998	64004 TUM	TG64004 P25 Full Rate TX Unconf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera I	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE

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64005	10	998	64005 TUM	TG64005 P25 Full Rate Msg Unconf Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	General	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
64006	10	998	64006 TUH	TG64006 P25 Full Rate Msg Unconf High Priority	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	General	P25 Full Rate		TRUE
64007	10	998	64007 ANN	TG64007 P25 Full Rate Announcem ent	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Full Rate		TRUE
64051	10	998	64051 TUL	TG64051 P25 Half Rate Low Priority	1	3	3	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	General	P25 Half Rate		TRUE
64052	10	998	64052 TUM	TG64052 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	General	P25 Half Rate		TRUE
64053	10	998	64053 TUM	TG64053 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	General	P25 Half Rate		TRUE
64054	10	998	64054 TUM	TG64054 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	General	P25 Half Rate		TRUE

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64055	10	998	64055 TUM	TG64055 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64056	10	998	64056 TUH	TG64056 P25 Half Rate High Priority	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64057	10	998	64057 ANN	TG64057 P25 Half Rate Announcem ent	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Half Rate		FALSE
64100	10	998	64100 ALL	TG64100 P25 Full Rate All Call	1	3	7	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	All-Call	P25 Full Rate		FALSE
64101	10	998	64101 TCL	TG64101 P25 Full Rate Conf Low Priority	1	4	3	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
64102	10	998	64102 TCM	TG64102 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
64103	10	998	64103 TCM	TG64103 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
64104	10	998	64104 TCM	TG64104 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE

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64105	10	998	64105 TCM	TG64105 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
64106	10	998	64106 TCH	TG64106 P25 Full Rate Conf High Priority	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
64107	10	998	64107 ANN	TG64107 P25 Full Rate Announcem ent	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Full Rate		TRUE
64151	10	998	64151 TCL	TG64151 P25 Half Rate Low Priority	1	4	3	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate		TRUE
64152	10	998	64152 TCM	TG64152 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate		TRUE
64153	10	998	64153 TCM	TG64153 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate		TRUE
64154	10	998	64154 TCM	TG64154 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate		TRUE
64155	10	998	64155 TCM	TG64155 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate		TRUE

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6415 6	10	998	64156 TCH	TG64156 P25 Half Rate High Priority	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate		TRUE
6415 7	10	998	64157 ANN	TG64157 P25 Half Rate Announcem ent	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Half Rate		FALSE
6420 1	10	998	64201 TUE	TG64201 P25 Full Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6420 2	10	998	64202 TUE	TG64202 P25 Full Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6420 3	10	998	64203 TCE	TG64203 P25 Full Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6420 4	10	998	64204 TCE	TG64204 P25 Full Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6425 1	10	998	64251 TUE	TG64251 P25 Half Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6425 2	10	998	64252 TUE	TG64252 P25 Half Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE

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6425 3	10	998	64253 TCE	TG64253 P25 Half Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6425 4	10	998	64254 TCE	TG64254 P25 Half Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6430 1	10	998	64301 MUM	TG64301 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 2	10	998	64302 MUM	TG64302 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 3	10	998	64303 MUM	TG64303 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 4	10	998	64304 MUM	TG64304 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 5	10	998	64305 MCM	TG64305 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE

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6430 6	10	998	64306 MCM	TG64306 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 7	10	998	64307 MCM	TG64307 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 8	10	998	64308 MCM	TG64308 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6435 1	10	998	64351 MUM	TG64351 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 2	10	998	64352 MUM	TG64352 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 3	10	998	64353 MUM	TG64353 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 4	10	998	64354 MUM	TG64354 P25 Half Rate MT	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE

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				Unconf Med Priority											
6435 5	10	998	64355 MCM	TG64355 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 6	10	998	64356 MCM	TG64356 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 7	10	998	64357 MCM	TG64357 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 8	10	998	64358 MCM	TG64358 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6440 0	10	998	64400 OSTUH	TG64400 OS AMBE TX Unconf High Priority	1	3	6	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE
6440 1	10	998	64401 OSTU M	TG64401 OS AMBE TX Unconf Med Priority	1	3	5	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE
6440 2	10	998	64402 OSTU M	TG64402 OS AMBE TX	1	3	5	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE

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				Unconf Med Priority											
6440 3	10	998	64403 OSTU M	TG64403 OS AMBE MT Unconf Med Priority	1	5	5	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
6440 4	10	998	64404 OSTUL	TG64404 OS AMBE TX Unconf Low Priority	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
6445 0	10	998	64450 ANA	TG64450 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	IP Consol e Interco m	Analog/ADP CM		TRUE
6445 1	10	998	64451 ANA	TG64451 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE
6445 2	10	998	64452 ANA	TG64452 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE
6445 3	10	998	64453 ANA	TG64453 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE
9900	10	998	PS-28- AN	VAQ SitSim01	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE

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9901	10	998	Tone-25	VAQ SitSim02	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
9902	10	998	AmpFr eq	VAQ SitSim03	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
9903	10	998	PseudS p	VAQ SitSim04	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
9904	10	998	Phrase s	VAQ SitSim05	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
9905	10	998	SiteSm 1	VAQ SitSim06	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
9906	10	998	SiteSm 2	VAQ SitSim07	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
9907	10	998	SiteSm 3	VAQ SitSim08	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
9908	10	998	SiteSm 4	VAQ SitSim09	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
9909	10	998	SiteSm 5	VAQ SitSim10	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
9910	10	998	SiteSm 6	VAQ SitSim11	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Full Rate		TRUE

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9911	10	998	T-25-HR	VAQ SitSim12	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
9912	10	998	AF-HR	VAQ SitSim13	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
9913	10	998	PSp-HR	VAQ SitSim14	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
9914	10	998	Phrs-HR	VAQ SitSim15	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
9915	10	998	T-25-AN	VAQ SitSim16	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	Analog/ADP CM		TRUE
9916	10	998	AF-AN	VAQ SitSim17	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	Analog/ADP CM		TRUE
9917	10	998	P-Sp-AN	VAQ SitSim18	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	Analog/ADP CM		TRUE
9918	10	998	Phrs-AN	VAQ SitSim19	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	Analog/ADP CM		TRUE
9919	10	998	VAQ20	VAQ SitSim20	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
9920	10	998	DVSITV	VAQ SitSim21	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Half Rate		TRUE

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9921	10	998	T-25OS	VAQ SitSim22	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9922	10	998	AF-OS	VAQ SitSim23	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9923	10	998	P-SpOS	VAQ SitSim24	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9924	10	998	PhrsOS	VAQ SitSim25	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9925	10	998	T- 25OS2	VAQ SitSim26	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
9926	10	998	AF- OS2	VAQ SitSim27	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9927	10	998	P- SpOS2	VAQ SitSim28	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
9928	10	998	PhrsOS 2	VAQ SitSim29	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
9929	10	998	VAQ30	VAQ SitSim30	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Full Rate		TRUE
6400 0	10	998	64000 ALL	TG64000 P25 Full Rate All Call	1	3	7	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	All-Call	P25 Full Rate		FALSE

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6400 1	10	998	64001 TUL	TG64001 P25 Full Rate TX Unconf Low Priority	1	3	3	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera l	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 2	10	998	64002 TUM	TG64002 P25 Full Rate TX Unconf Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera l	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 3	10	998	64003 TUM	TG64003 P25 Full Rate TX Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera l	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 4	10	998	64004 TUM	TG64004 P25 Full Rate TX Unconf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera l	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 5	10	998	64005 TUM	TG64005 P25 Full Rate Msg Unconf Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera l	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 6	10	998	64006 TUH	TG64006 P25 Full Rate Msg Unconf High Priority	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera l	P25 Full Rate		TRUE

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64007	10	998	64007 ANN	TG64007 P25 Full Rate Announcem ent	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Full Rate		TRUE
64051	10	998	64051 TUL	TG64051 P25 Half Rate Low Priority	1	3	3	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64052	10	998	64052 TUM	TG64052 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64053	10	998	64053 TUM	TG64053 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64054	10	998	64054 TUM	TG64054 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64055	10	998	64055 TUM	TG64055 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64056	10	998	64056 TUH	TG64056 P25 Half Rate High Priority	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64057	10	998	64057 ANN	TG64057 P25 Half Rate	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Half Rate		FALSE

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				Announcem ent											
6410 0	10	998	64100 ALL	TG64100 P25 Full Rate All Call	1	3	7	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	All-Call	P25 Full Rate		FALSE
6410 1	10	998	64101 TCL	TG64101 P25 Full Rate Conf Low Priority	1	4	3	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
6410 2	10	998	64102 TCM	TG64102 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
6410 3	10	998	64103 TCM	TG64103 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
6410 4	10	998	64104 TCM	TG64104 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
6410 5	10	998	64105 TCM	TG64105 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
6410 6	10	998	64106 TCH	TG64106 P25 Full Rate Conf High Priority	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
6410 7	10	998	64107 ANN	TG64107 P25 Full Rate	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Full Rate		TRUE

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				Announcem ent												
6415 1	10	998	64151 TCL	TG64151 P25 Half Rate Low Priority	1	4	3	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate			TRUE
6415 2	10	998	64152 TCM	TG64152 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate			TRUE
6415 3	10	998	64153 TCM	TG64153 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate			TRUE
6415 4	10	998	64154 TCM	TG64154 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate			TRUE
6415 5	10	998	64155 TCM	TG64155 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate			TRUE
6415 6	10	998	64156 TCH	TG64156 P25 Half Rate High Priority	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate			TRUE
6415 7	10	998	64157 ANN	TG64157 P25 Half Rate Announcem ent	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Half Rate			FALSE

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6420 1	10	998	64201 TUE	TG64201 P25 Full Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6420 2	10	998	64202 TUE	TG64202 P25 Full Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6420 3	10	998	64203 TCE	TG64203 P25 Full Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6420 4	10	998	64204 TCE	TG64204 P25 Full Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6425 1	10	998	64251 TUE	TG64251 P25 Half Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6425 2	10	998	64252 TUE	TG64252 P25 Half Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6425 3	10	998	64253 TCE	TG64253 P25 Half Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6425 4	10	998	64254 TCE	TG64254 P25 Half Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE

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6430 1	10	998	64301 MUM	TG64301 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 2	10	998	64302 MUM	TG64302 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 3	10	998	64303 MUM	TG64303 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 4	10	998	64304 MUM	TG64304 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 5	10	998	64305 MCM	TG64305 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 6	10	998	64306 MCM	TG64306 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 7	10	998	64307 MCM	TG64307 P25 Full Rate MT	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE

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				Conf Med Priority												
6430 8	10	998	64308 MCM	TG64308 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate			TRUE
6435 1	10	998	64351 MUM	TG64351 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate			TRUE
6435 2	10	998	64352 MUM	TG64352 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate			TRUE
6435 3	10	998	64353 MUM	TG64353 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate			TRUE
6435 4	10	998	64354 MUM	TG64354 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate			TRUE
6435 5	10	998	64355 MCM	TG64355 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate			TRUE

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6435 6	10	998	64356 MCM	TG64356 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 7	10	998	64357 MCM	TG64357 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 8	10	998	64358 MCM	TG64358 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6440 0	10	998	64400 OSTUH	TG64400 OS AMBE TX Unconf High Priority	1	3	6	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE
6440 1	10	998	64401 OSTU M	TG64401 OS AMBE TX Unconf Med Priority	1	3	5	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE
6440 2	10	998	64402 OSTU M	TG64402 OS AMBE TX Unconf Med Priority	1	3	5	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE
6440 3	10	998	64403 OSTU M	TG64403 OS AMBE MT Unconf Med Priority	1	5	5	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE

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6440 4	10	998	64404 OSTUL	TG64404 OS AMBE TX Unconf Low Priority	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
6445 0	10	998	64450 ANA	TG64450 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	IP Consol e Interco m	Analog/ADP CM		TRUE
6445 1	10	998	64451 ANA	TG64451 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE
6445 2	10	998	64452 ANA	TG64452 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE
6445 3	10	998	64453 ANA	TG64453 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE

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23.4 PSAPs

Region Id	Agency Id	PSAP Id	Device Id	Name	Description	Max Talk Paths	Service Type
10	998	9101	1	Console9101	Console9101	7	IP Console
10	998	9102	1	Console9102	Console9102	7	IP Console
10	998	7001	1	VTI7001	VTI7001	16	VTI
10	998	7002	1	VTI7002	VTI7002	16	VTI
10	998	9103	1	Console9103	Console9103	7	IP Console
10	998	9104	1	Console9104	Console9104	7	IP Console
10	998	9105	1	Console9105	Console9105	7	IP Console
10	998	9106	1	Console9106	Console9106	7	IP Console
10	998	9107	1	Console9107	Console9107	7	IP Console
10	998	9108	1	Console9108	Console9108	7	IP Console
10	998	9109	1	Console9109	Console9109	7	IP Console
10	998	9110	1	Console9110	Console9110	7	IP Console

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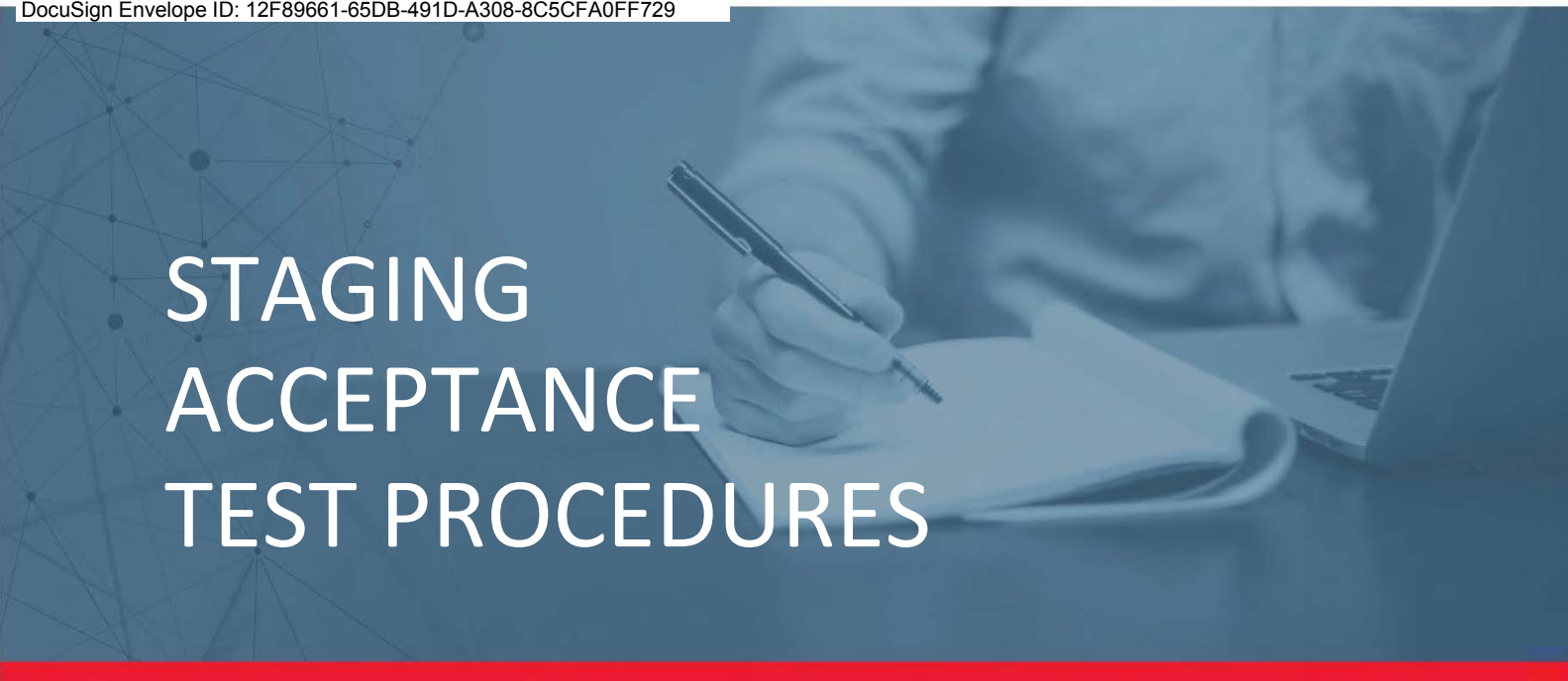
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Region Id	Agency Id	P25 IP Address	OpenSky IP Address	Description	Electronic Serial Number	Protocol Mask	Status	Sub Type	Assigned End User	Algorithm Support
10	998		10.128.111.19	OS_Radio_19	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.20	OS_Radio_20	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.2	OS_Radio_02	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.3	OS_Radio_03	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.4	OS_Radio_04	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.5	OS_Radio_05	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.6	OS_Radio_06	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.7	OS_Radio_07	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.8	OS_Radio_08	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.9	OS_Radio_09	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.10	OS_Radio_10	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.11	OS_Radio_11	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.12	OS_Radio_12	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.13	OS_Radio_13	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.14	OS_Radio_14	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.15	OS_Radio_15	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.16	OS_Radio_16	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.1	OS_Radio_1	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.17	OS_Radio_17	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.18	OS_Radio_18	0000000000000000	OpenSky	Enabled Unit			
10	998	10.128.79.9		Radio9	0000000109980009	P25	Enabled Unit	Harris XG-75 Portable	010:998:0009	AES
10	998	10.128.79.10		Radio10	0000000109980010	P25	Enabled Unit	Harris XG-75 Portable	010:998:0010	AES
10	998	10.128.79.8		Radio8	0000000109980008	P25	Enabled Unit	Harris XG-75 Portable	010:998:0008	AES
10	998	10.128.53.1		Console9101	0000000109989101	P25	Enabled Unit	Maestro Console	010:998:9101	AES
10	998	10.128.53.2		Console 9102	0000000109989102	P25	Enabled Unit	Maestro Console	010:998:9102	Both
10	998	10.128.79.1		Radio1	0000000109980001	P25	Enabled Unit	Harris P5400	010:998:0001	AES

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10	998	10.128.79.2	Radio2	0000000109980002	P25	Enabled Unit	Harris P5400	010:998:0002	AES
10	998	10.128.79.3	Radio3	0000000109980003	P25	Enabled Unit	Harris XG-75 Portable	010:998:0003	AES
10	998	10.128.79.4	Radio4	0000000109980004	P25	Enabled Unit	Harris XG-75 Portable	010:998:0004	AES
10	998	10.128.79.5	Radio5	0000000109980005	P25	Enabled Unit	Harris XG-75 Portable	010:998:0005	AES
10	998	10.128.79.6	Radio6	0000000109980006	P25	Enabled Unit	Harris XG-75 Portable	010:998:0006	AES
10	998	10.128.79.7	Radio7	0000000109980007	P25	Enabled Unit	Harris XG-75 Portable	010:998:0007	AES
10	998	10.128.79.11	Radio11	0000000109980011	P25	Enabled Unit	Harris UNITY XG-100P	010:998:0011	AES
10	998	10.128.79.12	Radio12	0000000109980012	P25	Enabled Unit	Harris UNITY XG-100P	010:998:0012	AES
10	998	10.128.1.161	s0u1xcda	0000000000000000	P25	Enabled Unit		010:998:9001	AES
10	998	10.128.1.162	s0u1xcdb	0000000000000000	P25	Enabled Unit		010:998:9005	AES



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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.

Customer: Nevada Department of Transportation

Prepared By: Smitha Paramashivan

DOCUMENT USAGE

Many of the tests in this document will need to be run on multiple pieces of equipment. 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 production and/or 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)
- Combiner Loss (if applicable)
- Audio line out
- Audio line in

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.

1. CUSTOMER APPROVAL

These Test Procedures have been read and approved for use as the Staging Acceptance Test.

Customer Representative

Harris Corporation Representative

Signature and Date

Signature and Date

Printed name and title

Printed name and title

2. SYSTEM ACCEPTANCE

This Acceptance Test Procedure has been fully and successfully completed with all action items resolved.

Customer Representative

Harris Corporation Representative

Signature

Signature

Printed name and title

Printed name and title

Date

Date

FUNCTIONAL TESTING CLARIFICATION

Equipment inspection and testing in addition to staging acceptance testing is performed at the Harris staging facility. Staging tests as detailed in this matrix verify basic equipment functionality in addition to its functionality as part of an overall system. Equipment as received from Harris and third party manufacturing suppliers is supplied with manufacturer test results, as applicable. Test results documentation will be that from the staging acceptance tests. Equipment tests will be performed in the field after installation both as part of equipment commissioning and overall final functional acceptance testing. Test results documentation will be from the final functional acceptance tests.

3. VIDA UNIVERSAL ADMINISTRATION SERVER (UAS)**3.1 Create an Agency Level Administrator Account in the UAS**

Purpose: Demonstrate the capability to create Agency Admin Accounts in the UAS.

Expected Results: This test will create a new Agency Level Administrator account.

Setup: Need system level access to an UAS or UAS Client. Predefined Agency and Region in the UAS.

Execution:

1. Browse to the UAS at the address of 'https://s0u1uas.vida.local:8443/nas'
2. Log in with UAS administrator level account.
Y Verify that default accounts are created (see list below) and verify a default Agency administrative class, by selecting System/Administration/Admin User.
3. Select "Add" to display the Administration User Detail screen.
4. Enter a name (e.g., TestAgency), description, and password. Select save to download, and click 'OK'.
5. Log out of the default account.
6. Log in with the newTestAgencyAdmin. Verify access to account.
Y Verify access to account.
7. Log out of the Test AgencyAdmin.
8. Log in with the default account and delete the TestAgencyAdmin.

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Admin User	Admin Class	Description
agency998	Agency998	Agency 998 Access
Vida	RSA	RSA
ProvTool	RSA	Provtool
vida2	RSA	vida2
Hp	RSA	Hao for Testing
Provtool2	RSA	Provtool
Provtool3	RSA	Provtool
Provtool4	RSA	Provtool
Kc	RSA	Kc

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

3.2 Provision Agency with Talk Groups and Subscriber Units in the UAS

Purpose: Demonstrate the capability to add talk-groups and users to the Agency accounts in the UAS.

Expected Results: This test will show that a user can add a new talk group and users to the system.

Setup: System/Region/Agency level access to the UAS or a UAS client.

Talk Groups				
Name	Description	SPNI	Property Id	Priority Id
64000ALL	TG64000 P25	Full Rate All Call	1	3
64100ALL	TG64100 P25	Full Rate All Call	1	3
64101TCL	TG64101 P25	Full Rate Conf Med Priority	1	4
64102TCM	TG64102 P25	Full Rate Conf Med Priority	1	4
64103TCM	TG64103 P25	Full Rate Conf Med Priority	1	4
64104TCM	TG64104 P25	Full Rate Conf Med Priority	1	4
64105TCM	TG64105 P25	Full Rate Conf Med Priority	1	4
64106TCH	TG64106 P25	P25 Full Rate Conf High Priority	1	4

Radios						
Description	RSI	Protocol Mask	Status	Sub Type	Assigned End User	Algorithm Support
Radio1	9980001	P25	Enabled Unit	Harris P5400	010:998:0001	AES
Radio2	9980002	P25	Enabled Unit	Harris P5400	010:998:0002	AES
Radio3	9980003	P25	Enabled Unit	Harris XG-75 Portable	010:998:0003	AES
Radio4	9980004	P25	Enabled Unit	Harris XG-75 Portable	010:998:0004	AES
Console9101	9989101	P25	Enabled Unit	Maestro Console	010:998:9101	AES

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Radio5	9980005	P25	Enabled Unit	Harris XG-75 Portable	010:998:0005	AES
Radio6	9980006	P25	Enabled Unit	Harris XG-75 Portable	010:998:0006	AES
Radio7	9980007	P25	Enabled Unit	Harris XG-75 Portable	010:998:0007	AES
Radio8	9980008	P25	Enabled Unit	Harris XG-75 Portable	010:998:0008	AES
Radio9	9980009	P25	Enabled Unit	Harris XG-75 Portable	010:998:0009	AES
Radio10	9980010	P25	Enabled Unit	Harris XG-75 Portable	010:998:0010	AES

Execution:

1. Log into the UAS with one of the default accounts.
2. Under Agency 998, create a talk group by select 'R/W Talk Group', select Agency/ "agency name"/ R/W Talk Group.
3. Click 'Add' and then on the Talkgroup Detail screen input the TG ID in the table below. All setting not listed use auto setting for setting not listed. Click OK and download.

Y Verify the talk group has been added to the list of Talkgroups

4. Using Putty on an SMT, log into a traffic controller at each control point for simulcast and each site for multisite and issue the command 'show gdb'

Y Verify that group 64454 exists in the traffic controller user data base.

5. Once the group has been verified, delete it from the UAS.

TG Id	Name	Description	SPNI	Property Id
64454	64454ANA	Half Rate Low Priority	1	3

Priority Id	Coverage	Valid Coverage
5	P25Sites_PSAPs	P25Sites_PSAPs

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

3.3 Dynamic Regroup from the UAS

Purpose: Demonstrate the ability to dynamically regroup Subscriber units from the UAS.

Expected Results: This test will combine selected talk groups into a single interop group.

Setup: Radios must have “Allow P25T Unsolicited Dynamic Regroup” checked in the radio personality under General Options.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9980001	TG64051 P25	64001
Radio 2	9980002	TG64052 P25	64002
Radio 3	9980003	TG64053 P25	64003

Execution:

1. At the UAS, select 'Regroup' tab and 'Regroup Profile'.
2. Click 'Add' to add profile detail; name Group 'Regroup1', and Description 'Regroup1 Test'.
 - Y Define regroup profile; select Agency 998 and 'Talk Group 3'.
 - Y Select 'OK', and save changes to the UAS.
3. Click 'End User Group' and click 'Add'. Name Group 'Regroup1' and Description 'Regroup1 test'.
 - Y Select Agency 998 from 'Select a Scope' drop down box.
 - Y Add 'Radio 1' and 'Radio 2' to the 'Selected' windows.
 - Y Select 'OK' to close 'End User Group Detail'.
 - Y Click 'Save' button to Download the new regroup.
4. Click 'Define Regroup' and click 'Add' to name the Regroup 'Regroup1' and Description 'Regroup1 test'.
 - Y Change 'Profile Name' to 'Regroup1' and change 'End User Group Id' to 'Regroup1'.
 - Y Click 'OK' and save to click 'Save' the changes to the UAS.
5. Click 'Manage Regroup' check the box for 'Regroup1' and select the button for 'Regroup'.
 - Y Click 'Save' to start Regroup.
 - Y Verify that Radio 1 and Radio 2 are forced to 'Talk Group 3'.
6. At 'Radio 1' and 'Radio 2', attempt to change talk groups away from 'Talk Group 3'.
 - Y Verify that both radios are forced to remain on 'Talk Group 3'.
7. PTT 'Radio 1' on 'Talk Group 3'.
 - Y Verify that 'Radio 3' hears audio on 'Talk Group 3' and can respond.

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8. Clear the dynamic regroup from the UAS client.
- Y Verify 'Radio 1' and 'Radio 2' are no longer forced to 'Talk Group 3' (i.e., they can select other predefined Talk-Groups).

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

3.4 Unit Deregistration

Purpose: Demonstrate that radio will automatically deregister when the radio is turned off.

Expected Results: This test will show that radio that is off will not create traffic load demand.

Setup: Radio 1 is only radio on 'Talk Group A' for this test.
All other radios should be on different talk groups.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9980001	TG64001 P25	64001
Console	9989101	TG64001 P25	64001

Execution:

- On a client computer, open the windows internet explorer and browse to <https://s0u1rnm.vida.local/nmc>. Choose System Map and select 'Launch Application' button. Open Realtime tab and Click Mobiles.
Y Verify 'Radio 1' LID is shown registered on the site.
- PTT 'Console' on TG 64001 and verify it communicates on the system to 'Radio 1'.
Y Return call from 'Radio 1' to 'Console' on TG 64001.
- Turn off 'Radio 1' and wait for expiration of the radio timeout period.
- Refresh RNM Mobiles screen periodically and verify Radio 1 deregistered after VNIC Remove Demand Timer has passed.
- PTT 'Console' on TG 64001, after the expiration of the timeout.
Y Verify no channel is assigned to site, since no demand exists at the sites.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

3.5 UAS Site Adjacency Configuration

Purpose: Demonstrate the capability to configure site adjacencies in the UAS.

Expected Results: Site adjacencies will be successfully configured and modified.

Setup: UAS installed and functioning on System network.

Execution: Basic test is to follow the manual and SRN instructions to configure site adjacencies using the new graphical interface.

1. In the UAS go to System > System Properties > Site adjacency.
2. Select a site on the left side to configure for adjacency information.
3. Use the left hand side to add adjacencies for the site.
 - Y Confirm the adjacent sites are removed from the non-adjacent site list and display correctly on the right side.
4. Use the right hand side to remove a site adjacency.
 - Y Confirm the removed adjacency disappears on the right side and is displayed as a non-adjacent site on the left side.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

3.6 Unit Enable/Disable from the UAS

Purpose: Demonstrate the ability to disable a lost/stolen radio from the UAS.

Expected Results: This test will disable & re-enable a designated radio.

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 connected to the NSC, and that all sites are online.

[Note: If a radio is encrypted, Unit Disable will automatically delete the encryption key from the radio, as it is disabled. To restore unit functionality for an encrypted radio, the radio must have the encryption key re-installed.]

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 4	998005	TG64001 P25	64001

Execution:

1. In the UAS Select TG 64001 on Radios 1, 2, and 4.
 - Y Verify that the radios can communicate.
2. From the UAS:
 - Y Click Radio 4 ENABLE/DISABLE.
 - Y Under the UNIT Enable/Disable tab, enter the ID of radio 4 to be modified.
 - Y Select the DISABLE button and check the status.
 - Y Attempt to PTT Radio 4 and verify that it will not communicate with the other encrypted radios
 - Y PTT Radio 1 and verify that Radio 4 cannot receive the call.
3. Enable the ID of Radio 4.
 - Y Verify that the Enable/Disable screen indicates that the Current State of the radio is Enabled.
 - Y Confirm that the radios can communicate in unencrypted mode.
4. Switch off Radio 4 and disable it from the Enable/Disable screen.
 - Y Switch on the radio and verify that, on logging into the site, it becomes disabled.
 - Y Verify that the State settings change to Disabled and that the radios cannot communicate.
5. Enable Radio 4.
 - Y Verify that radios can communicate in unencrypted mode.

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Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

4. OVER THE AIR REKEYING (OTAR)**4.1 Generating a system UKEK**

Purpose: This test is setup to verify the KMFs ability to create a UKEK.

Expected Results: The KMF will create a UKEK.

Setup: This test requires a computer that is on the IP network and has 'Harris Key Manager' installed and running.

1. Log into the KMF with the administrator level Active Directory Account
2. Open the 'Network KMF Management'
3. Select the UKEK tab
4. Change the 'Save As' text field to '\\fileshare\\fileshare\\kmf_files\\ProvisionFile.ukek'
5. Generate the UKEK file by selecting the 'Export UKEK' button
6. Select the 'SLN Bindings' tab
7. Change the 'Save As' text field to '\\fileshare\\fileshare\\kmf_files\\SlnBindingsReport.xml'
8. Generate the bindings by selecting 'Generate SLN Bindings Report'. This file will be used in a later test.

(Pass/Fail)	_____	Tester:	_____
Date:	_____	_Comments:	_____
_____		_____	
_____		_____	
_____		_____	

4.2 UKEK a Radio

Purpose: This test is setup to verify the KMFs ability to load UKEKs into a radio.

Expected Results: The radio should accept the UKEK file developed by the KMF.

Setup: This test requires a computer that is on the IP network and has 'Harris Key Manager' installed and running. This test also requires three radios programmed with a talk group utilizing an AES encryption key. All radios should be feature encrypted and enabled for OTAR operation. Two radios should have keys and one radio should not have keys. In test "Unit Enable/Disable from the UAS" they keys were removed from radio 9980005.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 5	998005	TG64001 P25	64001

Execution:

1. On a computer with 'Harris Key Manager' installed, save the file at '\\fileshare\fileshare\kmf_files\ProvisionFile.ukerk' to the local computer.
2. Start 'Harris Key Manager' and connect the radio to the local computer.
3. Select 'Tools' -> 'Key Load Wizard' to open key load wizard
4. Select 'Next' -> Load a UKEK file into one or more devices" and open the UKEK file in step 1 and select 'Next'
5. Once the UKEKs are loaded select 'Next'
6. Choose the com port
7. Power on the radio and put the radio into Key Load Mode
8. Select 'Load' to load UKEK into the radio

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Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

4.3 Warm starting a radio from the UAS Key Management Application

Purpose: This will test the system's ability to push encryption keys to a radio and the radio to hear other radios on the encrypted talk group.

Expected Results: The radio will accept the keys from the system and be able to communicate with other encrypted radios on an encrypted talk group.

Setup: This test requires three radios programmed with a talkgroup utilizing an AES encryption key. The radios and talkgroup need to be in a test crypto net in the UAS Key Management Application. The radios should be both feature encrypted and enabled for OTAR operation. Two radios should have working encryption, and Radio 4 should have the ukek load but no keys.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 5	998005	TG64001 P25	64001

Execution

1. PTT all three radios
 - Y Radios 1 and 2 should communicate normally
 - Y Radio 1 and 2 should hear calls from radio 5 but radio 5 should not be able to hear calls from the encrypted radios
2. From the UAS, warm start radios 5.
 - Y The UAS will report "Warm Starting".
3. After the operation is complete, refresh the UAS screen.
 - Y Verify the UAS reports "Warm Started Success" for radios 5
4. Again PTT radio 1 on the encrypted talk group and talk.
 - Y Radio 1's transmit (TX) indicator should turn on and be amber.
 - Y Verify that radio 1 and 2 now decrypt the call's audio.

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

4.4 Rekeying and Changing Over a Crypto Net from the UAS

Purpose: This test will show that the system can change the encryption keys to a new set of keys.

Expected Results: After this test is complete the radio will be able to communicate with the new set of keys sent by the system

Setup: This test requires three radios programmed with a talk group utilizing an AES encryption key. The radios and talk group need to be in a test crypto net in the UAS Key Management Application. All radios should be feature encrypted and enabled for OTAR operation. The radios should have been warm started previously. If a console and/or GWB are present in the system, then these devices should be included in this test also. They need to be in the same test crypto net as the radios and be programmed with the test talk group. They should have been warm started previously.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 5	998005	TG64001 P25	64001

Execution:

- Put radios 1, 2 and 5 on the encrypted talk group.
 - Y Verify that all 3 radios can transmit and receive on the encrypted talk group.
- Leave radios 1 and 2 powered on and power off Radio 5.
- From the UAS, rekey the crypto net. The UAS will report “Rekeying” for the crypto net.
- Select the report icon for the crypto net.
 - Y Radios 1 and 2 should be shown as “Rekeyed.”
 - Y Any consoles and/or GWB’s should also be shown as “Rekeyed.”
 - Y Radio 5 should be shown as “Rekey Failed.”
- From the UAS, change over the crypto net. It should report “Changing Over” for the crypto net.

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6. After the operation is complete, refresh the UAS screen. It should report “Changing Over Complete” for the crypto net
 - Y Verify that radio 2 but not 3 decrypt the call’s audio.
 - Y Verify that any consoles and/or GWB’s decrypt the call’s audio also.
8. PTT Radio 3 on the encrypted talk group and talk.
 - Y The transmit (TX) indicator should turn on and be amber at Radio 3.
 - Y Verify that radios 1 and 2 decrypt the call’s audio.
 - Y Verify that any consoles and/or GWB’s decrypt the call’s audio.
9. From the UAS, do an end user level rekey on Radio 3 for that crypto net.
 - Y The UAS will report “Rekeying” for Radio 3.
10. After the operation is complete, refresh the UAS screen. It should now show “Rekeyed” for Radio 3.
 - Y Select the report icon for the crypto net. Radios 1, 2, and 3 will be shown as “Rekeyed.”
 - Y From the UAS, do an end user change over on Radio 3 for the test crypto net. The UAS will report “Changing Over” for Radio 3.
11. Again PTT radio 1 on the encrypted talk group and talk.
 - Y Verify that Radio 1’s transmit (TX) indicator turns amber.
 - Y Verify that radio 2 and 3 decrypt the call’s audio.
 - Y Verify that any consoles and/or GWB’s decrypt the call’s audio also.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

4.5 Zeroizing a Radio from the UAS Key Management Application

Purpose: This test will verify the system's ability to delete the keys out of a radio that was encrypted.

Expected Results: The test will take a radio that has keys and can communicate with other encrypted radios, and remove the keys so the radio cannot communicate with other encrypted radios.

Setup: This test requires three radios programmed with a talk group utilizing an AES encryption key. The radios and talk group need to be in a test crypto net in the UAS Key Management Application. All radios should be feature encrypted and enabled for OTAR operation. The radios should have been warm started previously.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 5	998005	TG64001 P25	64001

Execution:

- Put radios 1, 2 and 3 on the encrypted talk group.
 - Y Verify that all 3 radios can transmit and receive on the encrypted talk group.
- From the UAS, zeroize Radio 3.
 - Y The UAS will report "Zeroizing" for Radio 3 with the date and time updating to reflect the date and time the operation was initiated.
 - Y After the operation is complete, refresh the UAS screen. Verify the UAS reports "Zeroized" for Radio 3.
- PTT radio 1 on the encrypted talk group and talk.
 - Y The transmit (TX) indicator should turn on and be amber at radio 1.
 - Y Verify that radio 2 decrypts the call's audio.
 - Y Radio 3 should hear garbled audio or muted audio.
 - Y Verify the receive indicator is amber on both radios and the ID of radio 1 should be seen at both radios 2 and 3.

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γ Verify Radio 3 shows “No Key 0” when it is PTT’ed on the encrypted talk group.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

4.6 Rekey A Radio from the Radio

- Purpose:** This test will test the system's ability to send keys to a radio when the radio requests the keys.
- Expected Results:** The test will take a radio that has keys and can't communicate with other encrypted radios, and add keys to the radio so it can communicate with the system.
- Setup:** This test requires three radios programmed with a talk group utilizing an AES encryption key. The radios and talk group need to be in a test crypto net in the UAS Key Management Application. All radios should be feature encrypted and enabled for OTAR operation. One of the radios should be the radio that was zeroized in the previous test.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 5	998005	TG64001 P25	64001

Execution:

- Key Radio 1 on an encrypted talk group.
Y Radio 1 should display 'No key' Radio 2, and 3 should not hear the call.
- From the menu on Radio 1 select 'Rekey' to request new key for Radio 1.
Y Once the radio receives the encryption keys, key Radio 1 and verify Radio 2, and 3 hear the call.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

4.7 UKEK and Symphony

Purpose: This test is setup to test the KMFs ability to make UKEK files the Symphony can use.

Expected Results: The Symphony should accept the UKEK file developed by the KMF.

Setup: This test requires three radios programmed with a talk group utilizing an AES encryption key. All radios should be feature encrypted and enabled for OTAR operation.

Execution:

1. Start the Symphony Application
2. With an encrypted radio make a call on an encrypted talkgroup,
 - Y the radio with encryption should play the call,
 - Y the console will not because it does not have keys.
3. Start the 'Manual Key Loader' application.
4. Select 'Load UKEK'
5. Select the 'Browse' button
6. Browse to '\\fileshare/fileshare/KMF_Files/ProvisionFile.ukek'
7. Select the 'Load' button
8. Close the application by hitting the 'Done' button.
9. Select 'Maestro Conductor Application' from the lower right hand side to the console desktop.
10. Select 'Load Encryption' this will bring up a window were the binding and UKEK can be loaded into the console
11. Select the button next to the 'UKEK' text field and select the UKEK saved in step 9.
12. Select the button next to the 'binding' text field and select the binding saved in step 9.
13. Close the 'Load Encryption' pop up.

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14. With an encrypted radio make a call on an encrypted talkgroup
- Y the radio with encryption should play the call,
- Y the console will now play the call.
15. Choose the talkgroup that the radios are on and select the 'Private' button, this will make the console switch the talkgroup to encrypted mode, the console will display 'PVT' on the talkgroup button.
16. PTT the console the call should be heard on the encrypted radios.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

4.8 Warm Starting a Symphony from the UAS Key Management Application

Purpose: This will test the system's ability to push encryption keys to a console.

Expected Results: The UAS will push keys to the console to allow for communicate on an encrypted talk group.

Setup: This test requires three radios programmed with a talkgroup utilizing an AES encryption key. The radios and talkgroup need to be in a test crypto net in the UAS Key Management Application. All radios should be feature encrypted and enabled for OTAR operation. The radios should have their UKEK's loaded but not have any traffic encryption keys. (Delete Keys if required)

Execution:

1. Attempt to switch a talk group to encrypted mode by selecting the talk group and selecting the private button.

Y Verify that console will not allow you to encrypt the talkgroup because the console does not have the encryption keys.
2. From the UAS, warm start the console. After the operation is complete, refresh the UAS screen.

Y The UAS will report warm started success the console.
3. Attempt to switch a talk group to encrypted mode by selecting the talk group and selecting the private button.

Y The console will now allow you to encrypt the talkgroup because the console has the encryption keys.
4. PTT the console and the encrypted radios should hear the call.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

5. ENCRYPTED VOICE

5.1 Single Site Encrypted Group Test Call

- Purpose:** The Group Test Call will show that the site will allow a radio to communicate using a group call
- Expected Results:** The test will demonstrate that all radios assigned to a common group will hear a call and all radios assigned to an uncommon group will not hear the call
- Setup:** Set Radios 1, 2, and 3 to (Group A) per test group structure. Make sure Scan is turned OFF. All radios should not be in encrypted mode but have encryption keys.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 3	998003	TG64001 P25	64001

Execution:

1. PTT Radio 1 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 1.
 - Y Audio should be heard in Radios 2 and 3.
 - Y The ID of Radio 1 should be seen on Radios 2 and 3.
2. Set Radio 3 to (TG64002 P25). PTT on Radio 1 and talk.
3. The transmit (TX) indicators should turn on at Radio 1.
 - Y Audio should be heard in Radio 2 only.
 - Y The ID of Radio 1 should be seen at Radio 2 only.
4. Repeat sets 1-3 for encrypted mode

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

5.2 Single Site Encrypted Individual (Private) Call

Purpose: The Individual Call test will verify that the site will allow two radios to communicate on a private call

Expected Results: This test will demonstrate that two radios can communicate on an individual call and other radios will not hear the private conversation.

Setup: Set Radios 1, 2, and 3 to (TG64001) per test group structure. All radios should not be in encrypted mode but have encryption keys.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 3	998003	TG64001 P25	64001

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.

Y Verify that Radio 2 receives the call and displays the ID of Radio 1. Verify that Radio 3 remains idle.

2. Release the PTT on Radio 1 and immediately PTT on Radio 2.

Y Verify that Radio 1 receives the call and displays the ID of Radio 2.

Y Verify Radio 3 remains idle.

3. 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.

Y Verify that Radio 3 receives the call and displays the ID of Radio 1.

Y Verify that Radio 2 remains idle.

4. Release the PTT on Radio 1 but do not immediately PTT Radio 3.

Y Verify that Radio 3 gives a Call Back Alert (WHC- "Who Has Called") Indication.

5. Make a return call from Radio 3 back to Radio 1.

Y Verify that Radio 1 receives the call and displays the ID of Radio 3.

Y Verify Radio 2 remains idle.

6. Repeat steps 1-5 for encrypted mode.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

5.3 Multi-Site Encrypted Group Test Call

Purpose: The Group Test Call will show that the site will allow a radio to communicate using a group call

Expected Results: The test will demonstrate that all radios assigned to a common group will hear a call and all radios assigned to an uncommon group will not hear the call

Setup: Set Radios 1, 2, and 3 to (Group A) per test group structure. Make sure Scan is turned OFF. All radios should not be in encrypted mode but have encryption keys.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 3	998003	TG64001 P25	64001

Execution:

1. PTT Radio 1 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 1.
 - Y Audio should be heard in Radios 2 and 3.
 - Y The ID of Radio 1 should be seen on Radios 2 and 3.
2. Set Radio 3 to (TG64002 P25), PTT on Radio 1 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 1.
 - Y Audio should be heard in Radio 2 only.
 - Y The ID of Radio 1 should be seen at Radio 2 only.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

5.4 Multi-site Encrypted Individual (Private) Call

Purpose: The Individual Call test will verify that the site will allow two radios to communicate on a private call

Expected Results: This test will demonstrate that two radios can communicate on an individual call and other radios will not hear the private conversation.

Setup: Set Radios 1, 2, and 3 to (TG64001) per test group structure. All radios should not be in encrypted mode but have encryption keys.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 3	998003	TG64001 P25	64001

Execution:

- 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.
 - Y Verify that Radio 2 receives the call and displays the ID of Radio 1.
 - Y Verify that Radio 3 remains idle.
- Release the PTT on Radio 1 and immediately PTT on Radio 2.
 - Y Verify that Radio 1 receives the call and displays the ID of Radio 2.
 - Y Verify Radio 3 remains idle.
- 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.
 - Y Verify that Radio 3 receives the call and displays the ID of Radio 1.
 - Y Verify that Radio 6 remains idle.
- Release the PTT on Radio 1 but do not immediately PTT Radio 3.

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- Y Verify that Radio 3 gives a Call Back Alert (WHC- "Who Has Called") Indication.
- Y Then make the return call from Radio 3 back to Radio 1.
- Y Verify that Radio 1 receives the call and displays the ID of Radio 3.
- Y Verify Radio 2 remains idle.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

5.5 Phase 2 AES

Purpose: Confirms the operation of AES encryption for phase 2 voice calls.

Expected Results: The encrypted talk groups can communicate.

Setup Console 1 programmed with a AES encrypted phase 2 talk group and two radios programmed with the same AES Talk group and key, one radio with the group but no key and one radio with the AES group with a different key.

Execution:

1. Place a call from one of the radios with the correct key on the AES group
 - Y Confirm that the call is heard on the other radio and the console
 - Y Confirm the call is not heard on the two radios that do not have the correct key.
2. Place a call on the AES group from the console
 - Y Confirm that the call is heard on the two radios with the correct key
 - Y Confirm the call is not heard on the two radios that do not have the correct key.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

6. DATA**6.1 P25 Over-the-Air Data Test**

Purpose: Confirm remote radio terminals can be accessed from a Profile Manager host over the VIDA network and personalities can be read/programmed using Over-the-Air-Programming (OTAP).

Expected Results: The radio can be pinged and radio personality can be read/programmed using the Profile Manager host.

Setup: Test requires a radio on the system and a host computer that is logged on to the system. Profile Manager and RPM2 are both installed and running on Host Computer.

Execution:

1. Log the radio into the site to be tested.
Y Verify that a host can ping the radio.
2. Over the air, read the radio personality.
3. Change the name of one of the talk groups, and write the change to the radio.
Y Verify that the name of the talk group has changed on the radio.
4. Reprogram the radio with the initial personality.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

7. ENCRYPTED DATA**7.1 Encrypted data on an unencrypted radio**

Purpose: Confirm that when the system is setup for encrypted data, the data communication leaves the system encrypted and cannot be read by a radio that does not have the encryption key.

Expected Results: The radio can't be pinged and the radio personality can't be read/programmed.

Setup: This test requires: section 'Unit Enable/Disable from the UAS' has been performed, radio 9880005 is enabled but not encrypted, needs to run from edata terminal, edata setup not set to best effort.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9980001	TG64001 P25	64001
Radio 2	9980002	TG64001 P25	64001
Radio 5	9980005	TG64001 P25	64001

Execution:

1. From the edata terminal.
 - Y Verify that a host can't ping the radio.
 - Y Verify the radio personality can't be read.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

7.2 Unencrypted data With Encrypted Radio

Purpose: Confirm when a radio does have the encryption key it can communicate with the Encrypted Data Terminal.

Expected Results: The radio can be pinged and the radio personality can be read/programmed.

Setup: This test requires: Radio 9880004 is enabled and encrypted, needs to run from edata terminal, edata setup not set to best effort.

Radio 4 needs to be part of the “eData CryptoNet”, and also have “keys” loaded.

Description	Radio LID	TG Description	TG ID
Radio 4	9980004	TG 64001 P25	64001

Execution:

- From the edata terminal.
 - Y Verify that a host can ping the Radio 4.
 - Y Verify the radio personality can be read.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

8. IN-CALL STATUS REPORTING**8.1 In-Call Location Reporting Radio**

Purpose: This test will demonstrate system ability to send location status from a radio.

Expected Results: The system will display the radio location, and the location will change when the radio moves.

Setup: The system needs to be setup using the 'In-Call Status Reporting Manual' and the CLTsim need to be set up using Appendix A. This test will not work unless the radio has GPS lock so this test may not work indoors.

Execution:

1. Log into CLTsim and open two terminal windows
 - a. In terminal windows 1 type './cltsim -ccltsim.cfg' do not close the window
 - b. In terminal windows 2 type
'cltcmd -1 10.128.1.209 -u 21225 -s -j ipv4.10.128.79.1@vida.local -n location -n userStatus'
2. PTT radio 1 for at least 3 seconds
3. Terminal widow 1 will show the output of the GPS data.

Y Check to make sure GPS data is displayed.
4. Move radio 1 about 50 feet and PTT again for 3 seconds

Y Verify GPS Data changes.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

8.2 In-Call Status Reporting Radio

Purpose: This test will demonstrate system ability to send status from a radio.

Expected Results: The system will display the status from a radio.

Setup: The system needs to be setup using the 'In-Call Status Reporting Manual' and the CLTsim need to be set up using Appendix A.

Execution:

1. Use terminal windows from pervious test
 - a. In terminal windows 2 type
'cltcmd -1 10.128.1.209 -u 21225 -s -j vuid.99999.10.998.6401@harris.com -n groupAlert -n userStatus
2. PTT radio 1 for at least 3 seconds
3. Terminal widow 1 will show the status of radio 1.
 - Y Check to make sure radio 1 status is 'Open'.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

8.3 In-Call Emergency Reporting Radio

Purpose: This test will demonstrate system ability to send location status from a radio.

Expected Results: The system will display the radio emergencies.

Setup: The system needs to be setup using the 'In-Call Status Reporting Manual' and the CLTsim need to be set up using Appendix A.

Execution:

1. Use terminal windows from pervious test
 - a. In terminal windows 2 type
`'cltcmd -1 10.128.1.209 -u 21225 -s -j vuid.99999.10.998.6401@harris.com -n groupAlert -n userStatus`
2. Create emergency on Radio1.

Y Check to make sure Emergency is displayed as '1'.
3. Clear emergency on Radio 1
Y Check to make sure Emergency is changed to '0'

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

8.4 In-Call Location Reporting Be-On

Purpose: This test will demonstrate system ability to send location status from a BeOn terminal.

Expected Results: The system will display the radio location, and the location will change when the radio moves.

Setup: The system needs to be setup using the 'In-Call Status Reporting Manual' and the CLTsim need to be set up using Appendix A. This test will not work unless the radio has GPS lock so this test may not work indoors.

Execution:

1. Log into CLTsim and open two terminal windows
 - a. In terminal windows 1 type './cltsim -ccltsim.cfg' do not close the window
 - b. In terminal windows 2 type
'cltcmd -1 10.128.1.209 -u 21225 -s -j ipv4.10.128.79.1@vida.local -n location -n userStatus'
2. PTT radio 1 for at least 3 seconds
3. Terminal widow 1 will show the output of the GPS data.

Y Check to make sure GPS data is displayed.
4. Move radio 1 about 50 feet and PTT again for 3 seconds

Y Verify GPS Data changes.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

8.5 In-Call Status Reporting Be-On

Purpose: This test will demonstrate system ability to send status from a radio.

Expected Results: The system will display the status from a radio.

Setup: The system needs to be setup using the 'In-Call Status Reporting Manual' and the CLTsim need to be set up using Appendix A.

Execution:

1. Use terminal windows from pervious test
 - a. In terminal windows 2 type
'cltcmd -1 10.128.1.209 -u 21225 -s -j vuid.99999.10.998.6401@harris.com -n groupAlert -n userStatus
 2. PTT radio 1 for at least 3 seconds
 3. Terminal widow 1 will show the status of radio 1.
- Y Check to make sure radio 1 status is 'Open'.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

8.6 In-Call Emergency Reporting Be-On

Purpose: This test will demonstrate system ability to send location status from a radio.

Expected Results: The system will display the radio emergencies.

Setup: The system needs to be setup using the 'In-Call Status Reporting Manual' and the CLTsim need to be set up using Appendix A.

Execution:

1. Use terminal windows from pervious test
 - a. In terminal windows 2 type
`'cltcmd -1 10.128.1.209 -u 21225 -s -j vuid.99999.10.998.6401@harris.com -n groupAlert -n userStatus'`
2. Create emergency on Radio1.

Y Check to make sure Emergency is displayed as '1'.
3. Clear emergency on Radio 1

Y Check to make sure Emergency is changed to '0'

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

9. HIGH AVAILABILITY**9.1 Wide Area Router Failure**

Purpose: Demonstrate the capabilities of the system to work after a WAR failure

Expected Results: System components that are set-up with High Availability will continue to work after a WAR failure.

Setup: These tests are setup to be run twice, once on each router. So after completing step 4 restart the WAR router if not already running wait 20 minutes, and rerun the tests for the second router. These tests will simulate a WAR failure by disconnecting it from the Wide Area Network, so the WAR to WAN connection will need to be known.

1. Use Radio 1 to initiate a call

Y Verify that the call is heard on the Radio 2. Keep the call active during fail-over.
2. Use Radio 3 to initiate a call

Y Verify that the call is heard on Radio 4. Keep the call active during fail-over.
3. Log in to s0u1nss and s0u2nss, and change your user to the root user by typing 'su –' and entering the password.
4. Type 'HARunning' into both NSSs, one will report that it is the 'Stand By' and one will report that it is the 'Primary' log the information in the chart below.

	Name of Primary NSS	Name of Primary WAR	Name of Primary RNM	Name of Primary RSM	Shutdown Time
Test 1					
Test 2					

5. Log into the 'Primary' WAR that is associated with the 'Primary' NSS. Shut off the connection to the WAN by performing a shut on the necessary ports.

Y The call from Radio 3 to Radio 4 will be dropped.

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- Y The call from radio 1 to 2 will continue and the console will lose connectivity to the VNIC.
- Y Verify that after a short delay, the Backup server NSS2 automatically takes over as the primary server.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

9.2 UAS Site Access Control for Invalid User ID

Purpose: This test will demonstrate access control for Subscriber units with invalid radio IDs and High Availability of the RSM.

Expected Results: This test will deny a radio with an invalid Subscriber ID access to the system. Once the radio is added to the system the primary RSM will download it to the sites and allow the radio access. When the primary RSM is turned off and the radio is deleted from the UAS the secondary RSM will delete the radio from the system. Once the radio is deleted from the system the radio will again be denied access.

Setup: Use the table below to set up the new radio in the UAS

Voice End User								
User Id	Name	Description	Personality	User Privilege	Enable P25 AES OTAR	Manually-Keyed	P25 Voice Auth	Preferred Vocoder
010:998:9150	Rad9150	Radio9150	Pers1	998_10_supervisor	FALSE	FALSE	FALSE	P25 Full Rate
OS Voice Auth	Transc Allowed Flag							
FALSE	TRUE							
Subscriber Unit								
Description	RSI	Electronic Serial Number	Protocol Mask	Status	Sub Type	Assigned End User	Algorithm Support	
Radio9150	99899150	109989150	P25	Enabled Unit	Harris P5400	010:998:9105	AES	

Execution:

- Log into a site traffic controller and type 'show udb 109989150'
 Y Verify the radio is not present in the traffic controller database
- Program Radio 9801 with an ID 9989150.

3. Attempt to PTT Radio 9150.

Y Verify access to the site is denied and audio is not heard on Radio 2.

Y Verify the system is still functional by PTT Radio 2 and verify the audio is heard on Radio 3.

4. Use the supplied table to enter radio 109989150 in to the UAS database.

a. Select Agency/"agency name"/Voice End User. Click Add Entry and then on the End User Detail screen input the User ID, password ("p25user"), Name, Description, etc. of the user. Click OK and download.

Y Verify the user ID has been added to the list of users\

b. 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.

5. Log into a site traffic controller issue a "show udb 109989150

Y Verify the radio is now present in the traffic controller database

6. Key radio 9150

Y Verify access to the site is permitted and audio is heard on radio.

7. Restart radio 9150 and PTT the radio

Y Verify access to the site is permitted and audio is heard on radio 9012.

8. Delete 10998999150 from the UAS database

9. Key radio 9150 from UAS

Y Verify access to the site is not permitted and audio is not heard.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

9.3 Site Activity using the Activity Warehouse

Purpose: Demonstrate the capability to create various Agency level system usage reports.

Expected Results: This test will create an Agency level user reports.

Setup: Ensure radio traffic has occurred across the network recently. If necessary or desired, place some calls with a known radio ID on multisite talk groups prior to running the test for reference during the test.

Execution:

1. Log into the SMT PC as a System level administrator.
2. Open Internet Explorer and browse to 'https://s0u1pro.vida.local/reports' and log in with active directory credentials.
3. Select Activity Reports → Call Activity
 - a. enter the time period for the report (example: 2-hour window before this test).
4. Enter additional report information required.
5. Click on "View Report"
 - Y Check to make sure that there is call activity. These reports can be up to 2 hours behind.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

10. VIDA REGIONAL NETWORK MANAGER (RNM)

10.1 RNM Real Time Call Activity

Purpose: Demonstrate the capability to monitor real-time call activity from the RNM.

Expected Results: This test will show active call traffic on specific talk groups and SIDs.

Setup: Administrator access to the RNM.

Execution:

1. On a client computer, open the windows Internet Explorer and browse to <https://s0u1rnm.vida.local/nmc> and log in with an Active Directory account.
2. Choose the system map and select the 'Launch Application' button.
3. Open the Realtime tab and Click Site Calls.
4. Select the site and expand.
5. Check the box next to the channels and select to add the channels to the target list. Select the 'ok' button to launch the application.
6. Place a group call from Radio 1 to Radio 2 on the site.
 - Y Verify that the event viewer displays the talkgroup ID and calling party ID.
 - Y Verify the state changes from Free to Talk.
 - Y Verify the TG Alias displays the Group Number.
7. Use Internet Explorer to browse to <https://s0u2rnm.vida.local/nmc> and repeat test steps 1-6 for the second RNM.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

10.2 Regional Network Manger Test

Purpose: Demonstrate the capability to monitor system alerts from the RNM.

Expected Results: This test will show system level equipment icons.

Setup: Administrator access to the RNM.

Execution:

1. On a client computer, open the windows Internet Explorer and browse to <https://s0u1rnm.vida.local/nmc> and log in with the active directory account.
2. Choose the system map and select the 'Launch Application' button. Select the 'Network' tab and expand the tree in the left hand panel until you can see a site in the right hand panel.
 - Y Verify the Infrastructure is presented.
 - Y Select an object and right click to select properties to view information related to the object.
3. Substitute <https://s0u2rnm.vida.local/nmc> and repeat test steps 1-3 for the second RNM.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

10.3 RF System Alarms Indications are reported to the RNM

Purpose: Demonstrate the capability to monitor system faults & alarms at the RNM.

Expected Results: System level equipment will indicate faults & alarms at the RNM.

Setup: Access to the site under test and the regional RNM. The alarm will need to be generated by equipment being physically powered-down. Note the time of the alarm condition for later tests. Call up the RNM Domain screen and verify that all map icons are either green or blue. On the Fault Browser screen delete any prior alarms.

Execution:

1. On a client computer, open the windows Internet Explorer and browse to <https://s0u1rnm.vida.local/nmc> and log in with an Active Directory account.
2. Choose the system map and select the 'Launch Application' button.
3. Select the 'Network' tab and expand the tree in the left hand panel until you can see a site in the right hand panel.
4. Generate an alarm on a device (see chart) by powering down or otherwise disabling the device.

Y Verify that the RNM indicates a site alarm for the affected device.
5. Turn the device back ON.

Y Verify that the device alarm clears and displays green.
6. Review alarm details by performing a Right Mouse Click on an Object. Select the desired menu option.
7. Repeat steps 1-4 for all equipment listed in the below chart.
8. Substitute <https://s0u2rnm.vida.local/nmc> and repeat test steps 1-5 for the second RNM.

Record the results below for each site. (Note: This form can be modified to reflect actual as-built alarms

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Tester:		Results:	Date:	
Alarm #	Name	Pass/Fail	Remarks	
1	Traffic Controller			
2	Router			
3	Switch			
4	Network Sentry			
5	MME			

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

10.4 Network Sentry Site Alarm Indications are reported to the RNM

Purpose: Demonstrate the capability to monitor site faults & alarms at the RNM.

Expected Results: Site level equipment will indicate faults & alarms at the RNM.

Setup: This test verifies that the Site & Shelter Alarms are connected to the new system and alarm names are programmed to show the alarm types and locations. Site specific digital alarm inputs connected to the alarm management system (NetGuardian or Network Sentry) alarm unit.

Execution:

1. On a client computer, open the windows Internet Explorer and browse to <https://s0u1rnm.vida.local/nmc> and log in with the Active Directory account.
2. Choose the system map and select the 'Launch Application' button.
3. Select the 'Network' tab and expand the tree in the left hand panel until you can see a site in the right hand panel.
4. Select a physical site to test alarm inputs.
5. Create a condition that will either simulate an alarm (jumper alarm contacts) or the actual event to trigger each alarm
 - Y Verify that the alarm is detected and displayed in the RNM Network Viewer and is listed in the Fault Browser
6. Clear the alarm condition
 - Y Observe that the alarm indication has cleared in both the Network Viewer and the Fault Browser
7. Repeat for each alarm and for each site in the system
8. Record the results below for each site. (Note; This form can be modified to reflect actual as-built alarms).

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Site #:			Site Name	
Tester:		Results:	Date:	
Alarm #	Name	Pass/Fail	Remarks	
1	Door			
2	Smoke Detector			
3	Heat Detector			
4	Building Low Temp			
5	Building High Temp			
6	Main Power Fail			
7	ATS Normal			
8	ATS Emergency			
9	Generator Low Oil			
10	Generator Over Temp			
11	Generator Over Crank			
12	ACH1 L.O.			
13	ACH2 L.O.			
14	Surge Arrestor 1			
15	Surge Arrestor 2			
16	Multicoupler Top			
17	Multicoupler Bottom			

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

11. SIMULCAST CONTROL POINT MOVEMENT**11.1 DCP Forced Control Point Movement**

Purpose: This test will demonstrate the DCP system can move the control point in response to user command.

Expected Results: This test will verify that the Control Point can be moved from the active site to an alternate Control Point Site. After the control point is switched to the alternate Control Point the system should operate normally.

Setup: The DCP system is operating with an active control point and at least two sites are enabled to be the control point.

Execution:

1. Log into the RNM
2. In Network view identify the site which is the active control point.
3. Right click on the control point site icon and select 'Change Control Point to Best Site Available'.
4. Verify system is still functioning (i.e. voice calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged').
5. Verify that the RNM indicates a different site as control point and the previous control point is now a TX site. (note – a CP only site displays “zzzz” when it is not the active control point.)
6. On the RNM right click on the previous control point site and select “Change to be Control Point”.
7. Verify system is still functioning (i.e. calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged').
8. Verify that the RNM indicates the control point has moved to the site selected in step 6 and the previous control point is now a TX site. (note – a CP only site displays “zzzz” when it is not the active control point.)

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

11.2 DCP Control Point Movement in response to Faults at the Active Control Point

Purpose: This test will demonstrate that the Control Point will move in response to failures at the active Control Point.

Expected Results: This test will verify that the DCP system will move the active Control Point to an alternate control point site when the active control point experiences failures. After the Control Point moves the old control point should drop into bypass and the rest of the system should operate normally as a Simulcast cluster.

Setup: The DCP system is operating with an active control point and is properly configured with at least two sites enabled to be the control point.

Execution:

1. Verify system is functioning (i.e. calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged')).
2. At the control point site disconnect the 1pps cable from GPS B.
3. Verify the system is still functioning (i.e. calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged')) and control point has not moved. The traffic controllers at the control point display 'CC xx' and 'TC xx' when idle; at a satellite site the traffic controllers display "TR xx" where xx is the channel number. (>
4. At the control point site disconnect the 1pps cable from GPS A.
5. Verify that the control point moved to next ranked site and the old control point is now in bypass. The traffic controllers at the control point display 'CC xx' and 'TC xx' when idle: Any channels that are configured to be active at the old control point site when it is in bypass will have all their status LED red. In bypass all the traffic controllers display 'CC xx' and 'TC xx' when idle and the status LED will be red.
6. Verify the RNM indicates the new control point and shows the old control point site is now in bypass.
7. Verify the simulcast system is still functioning (i.e. calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged')).
8. If the old control point has channels active in bypass verify radios switched to this bypass site acquire the control channel and can communicate. (note – this step could be skipped; the bypass tests in sections 20.x will do this) >
9. Restore the connections to the GPS receivers at the site in bypass (the old control point site).
10. Verify that the site exits bypass and joins the simulcast cluster.

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Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

12. P25 TRUNKED CALLS AND SITE FEATURES

Purpose: These tests will verify that the site can provide radio communications at the site level.

Expected Results: These tests will demonstrate that the site can provide communications for radios.

Setup: All tests in this section assume that the UAS setup matches the configuration in this test. All testing in this section is to be done with phase 1 radios.

12.1 Transmit Grant Tone

Purpose: Demonstrate the system channel grant tone is heard on the radio.

Expected Results: This test will show that the radio will play a grant tone when the radio is assigned a working channel.

Setup: One radio with valid ID and a 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:	_____ _____ _____	

12.2 Group Test Call

Purpose: The Group Test Call will show that the site will allow a radio to communicate using a group call.

Expected Results: The test will demonstrate that all radios assigned to a common group will hear a call and all radios assigned to an uncommon group will not hear the call.

Setup: Set Radios 1, 2, and 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Description	Radio LID	TG Description	TG ID
Radio 1	9980001	TG 64001 P25	64001
Radio 2	9980002	TG 64001 P25	64001
Radio 3	9980003	TG 64001 P25	64001

Execution:

- PTT Radio 1 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 1.
 - Y Audio should be heard in Radios 2 and 3.
 - Y The ID of Radio 1 should be seen on Radios 2 and 3.
- Set Radio 3 to (TG64002 P25). PTT on Radio 1 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 1.
 - Y Audio should be heard in Radio 2 only.
 - Y The ID of Radio 1 should be seen at Radio 2 only.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

12.3 Individual (Private) Call

Purpose: The Individual Call test will verify that the site will allow two radios to communicate on a private call

Expected Results: This test will demonstrate that two radios can communicate on an individual call and other radios will not hear the private conversation.

Setup: Set Radios 1, 2, and 3 to (TG64001) per test group structure.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001
Radio 3	998003	TG64001 P25	64001

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.

Y Verify that Radio 2 receives the call and displays the ID of Radio 1.

Y Verify that Radio 3 remains idle.
2. Release the PTT on Radio 1 and immediately PTT on Radio 2.

Y Verify that Radio 1 receives the call and displays the ID of Radio 2.

Y Verify Radio 3 remains idle.
3. 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.

Y Verify that Radio 3 receives the call and displays the ID of Radio 1.

Y Verify that Radio 2 remains idle.
4. Release the PTT on Radio 1 but do not immediately PTT Radio 3.

Y Verify that Radio 3 gives a Call Back Alert (WHC- "Who Has Called") Indication.

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5. Make the return call from Radio 3 back to Radio 1.

Y Verify that Radio 1 receives the call and displays the ID of Radio 3.

Y Verify Radio 2 remains idle.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	_____
	_____	_____

12.4 Transmission Trunking

Purpose: This test will demonstrate that the System is working as a Transmission Trunking system.

Expected Results: The tests verify that the Control Channel will assign a working channel to the radio and that the radio and site will work as a trunking set.

Setup: Radios 1, 2, and 3 should be the only radios on the system.

Monitor System channel assignment in RSM Site Activity Real-Time Viewer.

All Radios are registered on Site 1.

Description	Radio LID	TG Description	TG ID
Radio 1	9980001	TG 64001 P25	64001
Radio 2	9980002	TG 64001 P25	64001
Radio 3	9980003	TG 64001 P25	64001

Execution:

1. Log into RNM and start RSM Site Activity application in the real time viewer. Observe all channels on Site 1.
2. PTT Radio 1 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 1.
 - Y Verify the number of the channel assigned.
3. PTT Radio 2 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 2.
 - Y Verify the next channel is assigned.
4. PTT Radio 3 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 3.
 - Y Verify the next channel is assigned.

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Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

12.5 Message Trunking on Phase 1

Purpose: This test will demonstrate that the system, for FMDA Phase 1 group calls, operates as Enhanced Message Trunking for Group Calls.

Expected Results: Verify that the system will assign the same working channel to a Message Trunking call if the next call happens within the Message Trunking hang time. During the hang time, the transmitting radio will return to the Control Channel for Phase 1 Group Calls.

Setup: Radios 1, 2, and 3 should be the only radios on the system. Each call needs to happen within 3 seconds of each other for this test to work.
TG 64301 is a FDMA (Phase 1) MT Group.

Monitor System channel assignment in RSM Site Activity Real-time viewer.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	9980001	TG 64301 P25	64301	1
Radio 2	9980002	TG 64301 P25	64301	1
Radio 3	9980003	TG 64301 P25	64301	1

Execution:

- Log into RNM and start RSM Site Activity application in the real time viewer. Observe all channels on Site 1 for each of the steps below.
- PTT Radio 1 and talk.
 - Y The transmit (TX) indicators (red light) should turn on at Radio 1.
 - Y On the RNM, observe the number of the channel assigned.
 - Y Verify audio from Radio 1 is heard at Radio 2 and Radio 3.
- Un-PTT Radio 1.
 - Y Verify Radio 1's LED light turns off, no color, to indicate Radio 1 is on the Control Channel (CC), during the Hang Time. (This is Enhanced Message Trunking for FDMA).
- PTT Radio 2, within the 3 second hang time, and talk.
 - Y The transmit (TX) indicators (red light) should turn on at Radio 2.
 - Y Verify the same channel is assigned, as in step 2.
 - Y Verify audio from Radio 2 is heard at Radio 1 and Radio 3.
- Un-PTT Radio 2.
 - Y Verify Radio 2's LED light turns off, no color, to indicate Radio 2 is on the Control Channel (CC), during the Hang Time.
- PTT Radio 3, within the 3 second hang time, and talk.
 - Y The transmit (TX) indicators (red light) should turn on at Radio 3.
 - Y Verify the same channel is assigned as in steps 2, & 4.
 - Y Verify audio from Radio 3 is heard at Radio 1 and Radio 2.
- Un-PTT Radio 3
 - Y Verify Radio 3's LED light turns off, no color, to indicate Radio 3 is on the Control Channel (CC), during the Hang Time.

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

12.6 Message Trunking on Phase 2

Purpose: Demonstrate the system, for TDMA Phase 2 group calls, operates as Standard Message Trunking for Group Calls.

Expected Results: System will assign the same working channel to a Message Trunked call, if the next call happens within the Message Trunked hang time. During the hang time, the transmitting radio will remain on the Traffic (Working) Channel for Phase 2 Group Calls.

Setup: TDMA Enabled Radios 1, 2, and 3 should be the only radios on the system. Each call needs to happen within 3 seconds of each other for this test to work. TG 64353 is a TDMA (Phase 2) MT Group

Monitor System channel assignment in RSM Site Activity Real-time Viewer.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	9980001	TG 64353 P25	64353	1
Radio 2	9980002	TG 64353 P25	64353	1
Radio 3	9980003	TG 64353 P25	64353	1

Execution:

1. Log into RNM and start RSM Site Activity application in the real time viewer. Observe all channels on Site 1 for each of the steps below.
2. PTT Radio 1 and talk.
 - Y The transmit (TX) indicators (red light) should turn on at Radio 1.
 - Y On the RNM, observe the number of the channel assigned and the channel slot assigned.
 - Y Verify audio from Radio 1 is heard at Radios 2 and 3.
3. Un-PTT Radio 1
 - Y Verify Radio 1's LED Receive (RX) indicator turns green, to indicate Radio 1 remains on the Traffic (Working) channel, during the Hang Time.
4. PTT Radio 2, within the 3 second hang time, and talk.
 - Y The transmit (TX) indicators (red light) should turn on at Radio 2.
 - Y Verify the same channel / slot is assigned, as in step 2.
 - Y Verify audio from Radio 2 is heard at Radios 1 and 3.
5. Un-PTT Radio 2
 - Y Verify Radio 2's LED light turns green, to indicate Receive (Rx). Indicates Radio 2 remains on the Traffic (Working) channel, during the Hang Time.
6. PTT Radio 3, within the 3 second hang time, and talk.
 - Y The transmit (TX) indicators (red light) should turn on at Radio 3.
 - Y Verify the same channel / slot is assigned in steps 2 & 4.
 - Y Verify audio from Radio 3 is heard at Radios 1 and 2.
7. Un-PTT Radio 3
 - Y Verify Radio 3's LED light turns green, to indicate Receive (Rx). Indicates Radio 3 remains on the Traffic (Working) channel, during the Hang Time.

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Y After the hang time expires, verify Radio 3's LED light turns off.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

12.7 Unit to Unit Call Alert Paging

Purpose: To demonstrate that a radio can send a page to a different radio on the system.

Expected Results: This test will verify that radio 1 can send a page to radio 2

Setup: Radio 1 with Call Alert programmed into a button ("PAGE") and Radio 2's ID programmed into its Individual Call list. Radio 1 and 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.
 - Y Verify Radio 1 displays "**TX PAGE" on the second line.
 - Y Verify Radio 2 displays the ID of Radio 1 on its first line and "**RX PAGE" on the second line.
 - Y Verify Radio 2 beeps multiple times to indicate a received page.
 - Y Verify Radio 1 beeps multiple times to indicate the page was successfully sent.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

12.8 Multi-site Announcement Group Call

Purpose: This test will demonstrate that the system will allow a group call to function in a multi-site environment

Expected Results: The test will demonstrate that all radios assigned to a common group will hear a call, even though some of the radios are at distant sites and all radios assigned to an uncommon group will not hear the call

Setup: Groups 64101 and 64102 are in Announcement Group 64107 per test group structure. Ensure Scan is turned OFF.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64002 P25	64002
Radio 3	998002	TG64003 P25	64003

Execution:

1. PTT Radio 1 and talk.
 2. The transmit (TX) indicators should turn on at Radio 1.
- Y Audio should be heard on Radios 2 and 3.
- Y ANNOUNCE should be displayed on Radios 2 and 3.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

12.9 Multisite Emergency Group Call

- Purpose:** Demonstrate the capability of the system to process an emergency group call.
- Expected Results:** This test will verify that when a radio indicates an emergency group call. All other radios in the group indicate an emergency and the emergency can be cleared by an administrator radio.
- Setup:** Program 3 Radios with the same emergency home group. Set the supervisor (Radio 1) & Radio 2 to the home group. Set Radio 3 to a different group (not home group). A console will be used to clear the emergency.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	9980001	TG 64001 P25	64001	1
Radio 2	9980002	TG 64001 P25	64001	2
Radio 3	9980003	TG 64003 P25	64003	1

Execution:

- Press the Emergency call button on Radio 1 and talk within the pre-defined EmergencyAuto-key time, and/or PTT Radio 1 during or just after that time.
 - Y Verify that Radio 1 indicates the "TX EMER" declaration and that it reverts to the home group.
 - Y 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.
 - Y Verify Radio 3 does not display the emergency.
- Clear the emergency with the Console.
 - Y Verify the emergency clears in the radios.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

12.10 System All Call

Purpose: Demonstrate the capability of the system to route a call to all radios on the system.

Expected Results: This test will demonstrate the system's ability to route a single call to all available radios on the system.

Setup: Note: If want to create demand for a Full Rate All Call, then one radio must be on the Full Rate All Call.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9980001	TG64000 P25	64000
Radio 2	9980002	TG64001 P25	64001
Radio 3	9980003	TG64002 P25	64002

Execution:

1. With Radio 1 place an Individual call to talk group 64000 (All Call Talk Group)

Y Audio should be heard at Radios 2 and 3.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

12.11 Transmit Denied (for Invalid radio ID)

Purpose: This test is set up to demonstrate that a radio can be denied transmission on a site

Expected Results: This test will verify the systems ability to deny a radio to transmit on one site and allow the radio to work on a different site.

Setup: Program system so that radio ID is not valid on the site under test.
Download database to site.

Execution:

1. Program Radio 1 with an invalid ID
2. PTT Radio 1

Y Verify the radio is prohibited access to system.
3. Reprogram the radio to the original personality.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

12.12 Single Site Call Queue Declaration Alert

Purpose: This test will demonstrate the system queuing.

Expected Results: This test will verify that the system will assign users in a queue when the system has no available channels and assign users a working channel when the system has an available channel.

Setup: This test requires four radios and two working channels. Disable channels (if necessary) until there are two working channels at the site. This test is to be run with no other users on the system.

Description	Radio LID	TG Description	TG ID
Radio 1	9980001	TG 64001 P25	64001
Radio 2	9980002	TG 64002 P25	64002
Radio 3	9980003	TG 64003 P25	64003
Radio 4	9980004	TG 64003 P25	64003

Execution:

1. Busy up all talk paths on the system with radio 1, and 2 by pressing and holding the PTT button.
2. With all talk paths busied, momentarily press and release the PTT button on test Radio 3
Y Verify that a Call Queued tone is heard at the radio.
3. Unkey (release PTT button) radio 2.
Y Verify that Radio 3 is assigned to the free talk path.
4. The grant tone is heard at the radio, without having to rekey the radio (repressing the PTT button).
5. Press the PTT button on Radio 3 within the auto key time applicable to the radiotype (approx. 2 seconds) to keep the assigned channel.
Y Verify that audio from Radio 3 is heard at Radio 4.
6. Unkey all radios.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

12.13 Recent User Priority

Purpose: Demonstrate system's ability to prioritize recent users in queueing situations.

Expected Results: When radios of the same priority level enter the queue, one that has been recently active will exit the queue first.

Setup: This test requires four radios and two working channels.

Disable channels (if necessary) until there are two working channels at the site. Set the radio according to the table below. 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 Traffic Controller module). This will only work if preformed quickly.

Description	Radio LID	TG Description	TG ID
Radio 1	9980001	TG 64001 P25	64001
Radio 2	9980002	TG 64002 P25	64002
Radio 3	9980003	TG 64003 P25	64003
Radio 4	9980004	TG 64004 P25	64004

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
Y Verify that Radio 1 un-queues and transmits.
6. Unkey all radios.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

12.14 Call Priority for Group IDs

Purpose: This test is set up to demonstrate the system's ability to allow a user with a higher priority to get assigned a channel before a user with a lower priority despite who enter the queue first.

Expected Results: This test will verify that a user that has a higher priority will get assigned a channel before users with a lower priority regardless of who entered the queue first. In this test radio 4 should get the first available channel, because it has a higher priority, and radio 3 will get assigned a channel next because it has a lower priority.

Setup: This test requires two working channels on the site. Disable channels (if necessary) until there are two working channels on the site. Setup the radio according to the table below. This test is to be run with no other users on the system.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9980001	TG64001 P25	64001
Radio 2	9980002	TG64002 P25	64002
Radio 3	9980003	TG64004 P25	64003
Radio 4	9980004	TG64003 P25	64004

Execution:

1. PTT Radios 2 and 4 and hold on transmit to busy both working channels.
2. PTT and release Radio 1 (medium priority entry into the queue).
3. PTT and release Radio 3 (high priority entry into the queue).
4. Un-key Radio 4

Y Verify that Radio 3 un-queues and keys.
5. Un-key Radio 2

Y Verify that Radio 1 un-queues and keys.
6. Un-key all radios.

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Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

12.15 Emergency Call Priority for Group IDs in Phase 1

Purpose: Demonstrate the system's ability to allow a user with a higher priority to get assigned a channel before a user with a lower priority, despite who enters the queue first.

Expected Results: This test will verify that a user who has a higher priority will get assigned a channel before users with a lower priority regardless of who entered the queue first. In this test radio 4 should get the first available channel, because it has a higher priority, and radio 3 will get assigned a channel next because it has a lower priority.

Setup: This test requires two working channels on the site. Disable channels (if necessary) until there are two working channels on the site. Setup the radio according to the table below. This test is to be run with no other users on the system.

Description	Radio LID	TG Description	TG ID
Radio 1	9980001	TG 64001 P25	64001
Radio 2	9980002	TG 64002 P25	64002
Radio 3	9980003	TG 64003 P25	64003
Radio 4	9980004	TG 64004 P25	64004

Execution:

1. PTT Radios 4 and 3 and hold on transmit to busy both working channels.
2. PTT and release Radio 2 (high priority entry into the queue).
3. Declare an emergency on Radio 1 (medium priority entry into the queue but now at Emergency Priority).
4. Un-key Radio 4
Y Verify that Radio 1 un-queues and is assigned a channel without having to PTT. (Key the radio within the specified auto key time in order to keep the channel.)
5. Un-key all radios and clear the emergency with the Radio 1.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

12.16 Group Scan

Purpose: Verify when scan is enabled, calls from groups in the radio's scan list are received.

Expected Results: In this test the radio will play calls from multiple talk groups while scan is enabled

Setup: All radios for this test need to have scan ability.

Radio 1 set up with TG64001 P25 and TG64002 P25 in the scan list, TG64001 P25 selected, and Group scan initially disabled.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64002 P25	64001

Execution:

- Place a call from Radio 2 on talk TG64001 P25.
Y Verify the call is received and audio is heard on Radio 1.
- Place a call from Radio 2 on talk TG64002 P25.
Y Verify the call is not received by Radio 1.
- Enable group scan on Radio 1.
- Place another call from Radio 2 on talk TG64002 P25.
Y Verify that the call is now received and audio is heard on Radio 1.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

12.17 Priority Scan

Purpose: Demonstrate groups assigned a higher priority in the scan list override groups of a lower priority.

Expected Results: Radio will play calls with a higher level of priority.

Setup: Set Radio 1 to priority scan TG64001 P25, and scan (at lower priority – 3 bars) TG64002 P25. Set Radio 1 to TG64003. Have scan enabled on Radio 1.

Description	Radio LID	TG Description	TG ID
Radio 1 (SCAN)	9980001	TG 64003 P25	64003
Radio 2	9980002	TG 64002 P25	64002
Radio 3	9980003	TG 64001 P25	64001

Execution:

1. Have Radio 1 selected to TG64003 P25. Place a call from Radio 2 on TG64002 P25.
Y Verify Radio 1 scans to TG64002 P25 and hears audio from Radio 2. Continue transmitting from Radio 2.
2. Place a call from Radio 3 on TG64001 P25. [Radio 2 is still transmitting on TG64002 P25.]
Y Verify Radio 1 priority scans to TG64001 P25 and hears audio from Radio 3.
3. Unkey all radios, and turn off scan.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

12.18 Transmit Busy Lockout

Purpose: Demonstrate a radio cannot key on a group, on which a group call is already active.

Expected Results: A radio will not be allowed to transmit on a talk group while a different radio is transmitting on the same talk group.

Setup: Talk group used for test must be set up as Transmission Trunked. This feature does not apply to Message Trunked calls.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001

Execution:

- Place a call from Radio 1 on selected talk group by pressing and holding the PTT button.
 - Y Verify the call is received and audio is heard on Radio 2.
- While the call is in progress, press the PTT button on Radio 2.
 - Y Verify that Radio 2 does not transmit over (step on) the call in progress. (A double bump busy sound will be heard).

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

12.19 Continuous Control Channel Update

Purpose: This test will demonstrate that a radio will join a call that is already in progress

Expected Results: This test will verify that a radio will join a call that is already in progress.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001

Execution:

1. Set both radios to the test group.
2. Turn radio 2 OFF.
3. Key radio 1 and hold. Turn ON the radio 2 (and set it to the test group if necessary).

Y Verify that the second radio joins the call in progress and hears audio from the call in progress.
4. Unkey radio 1.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

12.20 Convert to Callee

Purpose: Demonstrate when radios are simultaneously keyed, only one radio is given talk privilege.

Expected Results: When two radios on the same talkgroup are keyed simultaneously, only one radio will receive access to the working channel. The other radio will play the audio from the first.

Setup: Test of single site simultaneous call arbitration.
Radio 1 and Radio 2 are registered on the same site and TG.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64001 P25	64001

Execution:

1. Set two radios to the same site and group.
2. Key both radios at the same time.
 - Y Verify that one radio ends up transmitting and the other ends up receiving.
 - Y Verify that the call audio is routed and received by one of the units even though the PTT is pressed.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

12.21 Multi-site Routing (for Multi-site Logout)

Purpose: Demonstrate the system will not route a call to a site if all the radios logged into the site have moved to a different site.

Expected Results: When the radio moves away from a site, the system will not route calls to the site that it has roamed away from.

Setup: 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. Radio 1 logged in to Site 1 and Radio 2 logged into Site 2.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG641001 P25	64001
Radio 2	998002	TG641001 P25	64001

Execution:

1. Key Radio 1 on Site 1.
Y Verify channel assignments occur on Site 2. Un-key radio.
2. Switch Radio 2 to site 1.
3. Key Radio 1 on site 1.
Y Verify no channel assignment on site 2

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

12.22 Site Trunking (Failsoft) Indication

Purpose: Demonstrate that radio displays a Failsoft Icon, when the site is unable to communicate with the system/network.

Expected Results: This test will verify that the radio will display an 'F' when the site it is logged into is not connected to the system.

Setup: Radios must be programmed to display Failsoft.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	998001	TG641001 P25	64001	1
Radio 2	998002	TG641001 P25	64001	1
Radio 3	998003	TG641001 P25	64001	2

Execution:

- PTT Radio 1
 - Y Verify that the Radio 1, Radio 2, and Radio 3 can communicate on the system.
- Disconnect the network connection from the Network Switching Center to the Site Router, causing loss of communication from the site back to the Network Switching Center.
 - Y Verify that Radio 1 and Radio 2 indicate a Failsoft alarm ("F") on their displays this may take several minutes.
- PTT Radio 1 on Talkgroup A. Verify audio is heard at Radio 2. Verify audio is not heard on Radio 3.
- Re-connect the network from the Network Switching Center to the Site Router.
 - Y Verify the Failsoft alarm disappears on the radios and that communications with Radio 3 is reestablished.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

12.23 Unconfirmed Call (Multisite Late-Enter)

Purpose: Verify a radio will late enter an ongoing group call made from another site.

Expected Results: A radio creates demand for talkgroups even when no channels are available at a site. Ongoing calls on a talkgroup will be joined as channel resources become available.

Setup: Site 1 should only have one working channel, disable all other working channels at site 1.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	998001	TG64001 P25	64001	1
Radio 2	998002	TG64002 P25	64002	1
Radio 3	998003	TG64001 P25	64001	2
Radio 4	998004	TG64001 P25	64001	2

Execution:

1. Key up radio 2 on site 1, and hold the call up.
2. Key up Radio 3 on TG64001 on Site 2, and hold the call up.
 - a. Verify that Radio 3 should get the grant tone and the call should go through to Radio 4 on Site 2.
 - Y 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 by unkeying radio 2.
 - Y 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: _____	

12.24 Confirmed Call

Purpose: This test will demonstrate that the system will allow confirmed calls.

Expected Results: When a radio attempts PTT it will get a wait tone until there are available channels at all site that have demand for the call, or the confirmed call timer expires.

Setup: Additional radios maybe required for this test, this test requires two more radios than the number of channels available at the site to be tested.

Site 1 should only have one working channel, disable all other working channels at site 1.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	998001	TG64001 P25	64101	1
Radio 2	998002	TG64002 P25	64002	1
Radio 3	998003	TG64001 P25	64101	2
Radio 4	998004	TG64001 P25	64101	2

Execution:

- Key up Radio 2 on site 1, and hold the call up.
- Key up Radio 3 on TG64001 on Site 2, and hold the call up.
Y The call will not be granted because there are no available channels on site 1.
- Hold the call up until the confirmed call timer expires.
Y Once the timer expires the call will go through but only to site 2 only
- While Radio 2 is still keyed up, free up a channel on Site 1 by unkeying radio 2.
Y Verify that the call gets routed to Site 1 and that Radio 1 late-enters into the call.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

13. LOCAL EMERGENCY CHANNEL ASSIGNMENT**13.1 Local Emergency Multisite Phase 1 System (FDMA) [Non Single Cell Simulcast/Multisite Only]**

Purpose: This test is set up to demonstrate the multisite FDMA emergency channel assignment.

Expected Results: This test will verify that the system will not drop a channel to assign a channel an emergency in FDMA mode.

Setup: This test requires six radios and two working talk paths on the site. Disable channels (if necessary) until there is only two working talk paths on the site.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	9980001	TG64101 P25	64101	1
Radio 2	9980002	TG64102 P25	64102	1
Radio 3	9980003	TG64103 P25	64103	1
Radio 4	9980004	TG64101 P25	64101	2
Radio 5	9980005	TG64102 P25	64102	2
Radio 6	9980006	TG64103 P25	64103	2

Execution:

1. Disable channels at site 1 and 2 so that only the site only has two working FDMA talk paths.
2. PTT Radio 1 & 2 to busy up the sites.
3. Declare an emergency on Radio 3.
Y Radio 3 Should enter the Queue.
4. Un-key Radio 4
Y Verify Radio is assigned the call
5. Un-key all radios and clear the emergency with the Radio 1.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

13.2 Local Emergency Multisite Phase 2 (TDMA)

- Purpose:** This test is set up to demonstrate the multisite TDMA local emergency channel assignment.
- Expected Results:** This test will verify that the system will drop a local channel to assign a channel an emergency in TDMA mode.
- Setup:** This test requires six radios and two working talk paths on the site. Disable channels (if necessary) until there is only two working talk paths on the site.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	9980001	TG64151 P25	64151	1
Radio 2	9980002	TG64152 P25	64152	1
Radio 3	9980003	TG64153 P25	64153	1
Radio 4	9980004	TG64151 P25	64151	2
Radio 5	9980005	TG64152 P25	64152	2
Radio 6	9980006	TG64153 P25	64153	2

Execution:

1. Disable channels at site 1 and 2 so that only the site only has two working TDMA talk paths.
2. PTT Radio 1 & 2 to busy up the sites.
3. Declare an emergency on Radio 3.
 - Y Verify call is dropped to Radio 1 and tone is heard
 - Y Verify Radio 3 is assigned a channel / one TDMA slot.
 - Y Verify a console hears calls from Radio 2 and 3
4. Un-key all radios and clear the emergency with the Radio 1.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

13.3 Remote Emergency Multisite System Phase 2 (TDMA)

Purpose: This test is set up to demonstrate the multisite TDMA emergency channel assignment.

Expected Results: This test will verify that the system will not drop a remote channel to assign a channel an emergency in TDMA mode.

Setup: This test requires six radios and two working talk paths on the site. Disable channels (if necessary) until there is only two working talk paths on the site.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	9980001	TG 64151 P25	64151	1
Radio 2	9980002	TG 64152 P25	64152	1
Radio 3	9980003	TG 64153 P25	64153	1
Radio 4	9980004	TG 64151 P25	64151	2
Radio 5	9980005	TG 64152 P25	64152	2
Radio 6	9980006	TG 64153 P25	64153	2

Execution:

1. Disable channels at site 1 and 2 so that only the site only has two working TDMA talk paths.
2. PTT Radio 4 & 5 to busy up the sites.
3. Declare an emergency on Radio 3.
 - Y Verify audio is dropped to Radio 1
 - Y Verify calls from radio 4 and 5 continue
 - Y Verify Radio 3 is assigned a channel
 - Y Verify a console hears calls from Radio 3, 4 and 5
4. Un-key all radios and clear the emergency with the Radio 1.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

14. TRANSCODER TEST

Purpose: This test will demonstrate the transcoder ability to transcode calls made with different vocoders

Expected Results: This test will verify that the transcoder is needed to transcode a call, and each transcoder will transcode calls.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9980001	TG 64400OS	64400
Console 9110	9989110	TG 64400OS	64400

Execution:

1. Shutdown s0u1xcda.vida.local, s0u2xcda.vida.local and s0u1xcdb.vida.local.

Transcoder	State
s0u1xcda.vida.local	Off
s0u2xcda.vida.local	Off
s0u1xcdb.vida.local	Off

2. From the console place a call on talk group 64400OS
Y Verify that the call is not heard on a P25 radio on talk group 6400OS, this called failed because there is no working transcoder.
3. Restart s0u1xcda.vida.local.

Transcoder	State
s0u1xcda.vida.local	On
s0u2xcda.vida.local	Off
s0u1xcdb.vida.local	Off

4. From the console place a call on talk group 64400OS
Y Verify that the call is heard on a P25 radio
5. Restart s0u2xcda.vida.local wait for 15 minutes for services to start
6. Shutdown s0u1xcda.vida.local.
- 7.

Transcoder	State
s0u1xcda.vida.local	Off
s0u2xcda.vida.local	On
s0u1xcdb.vida.local	Off

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8. From the console place a call on talk group 64400OS
Y Verify that the call is heard on a P25 radio on talk group 6400OS this call is using s0u2xcda.vida.local.
9. Restart s0u1xcdb.vida.local
10. Shutdown s0u1xcda.vida.local

Transcoder	State
s0u1xcda.vida.local	Off
s0u2xcda.vida.local	Off
s0u1xcdb.vida.local	On

11. From the console place a call on talk group 64400OS
Y Verify that the call is heard on a P25 radio on talk group 6400OS this call is using s0u3xcda.vida.local.
12. Restart s0u2xcda.vida.local and s0u1xcda.vida.local
13. From the console place a call on talk group 64400OS verify that the call is heard on a P25 radio on talk group 6400OS

Transcoder	State
s0u1xcda.vida.local	On
s0u2xcda.vida.local	On
s0u1xcdb.vida.local	On

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

15. P25 PHASE 2 FUNCTIONALITY (Single Site/Simulcast Single Site)

Purpose: The tests below verify that the P25 Phase 2 implementation provides the additional traffic channel capacity and features of P25 Phase 2 while allowing backwards compatibility with Phase 1 radios and talkgroups.

Expected Results: This will verify that a P25 Phase 1 call will work on a Phase 2 system

Setup: In the following tests, portables 1 and 2 will be set up as Phase 1 only. Portables 3 and 4 will be set up as Phase 2 and Phase 1 capable, depending upon talk-group. FDMA refers to Phase 1 and TDMA refers to Phase 2. Start a session on the RNM and setup to watch channel assignments using the real time viewer function.

On a client computer, open the windows internet explorer and browse to <https://s0u1rnm.vida.local/nmc> and log in with an Active Directory account. Choose the system map and select the 'Launch Application' button. Open the Realtime tab and Click Site Calls. Select the site and expand. Check the box next to the channels and select the to add the channels to the target list. Select the 'ok' button to launch the application. 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 #.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	System
Radio 1	998001	TG64051 P25	64051	MAC PH 1
Radio 2	998002	TG64051 P25	64051	MAC PH 1
Radio 3	998003	TG64051 P25	64051	MAC PH 2
Radio 4	998004	TG64051 P25	64051	MAC PH 2

15.1 Mixed Mode site to Mixed Mode site Call Phase 1- Phase 1

Purpose: Demonstrates that a Phase 1 call will work on a Phase 2 system

Expected Results: This will verify that a P25 Phase 1 call will work on a Phase 2 system

Setup: Turn off radios 3 and 4.

Execution:

1. PTT Radio 1 and talk. The transmit (TX) indicators should turn on at Radio 1
 - Y Verify that the call is assigned as an FDMA by viewing the Real Time Viewer Site Activity on the RNM.
 - Y Verify Radios 2 can hear Radio 1.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

15.2 Mixed Mode site to Mixed Mode site Call - Phase 1 and Phase 2

Purpose: Demonstrates that a mixed mode call can function on a Phase 2 system

Expected Results: This test will verify that a Phase 2 radio will hear a call from a Phase 1 radio.

Setup: Turn on Radios 1, 2, 3, 4

Execution:

1. PTT Radio 1 and talk. The transmit (TX) indicators should turn on at Radio 1
 - Y Verify that the call is assigned as an FDMA by viewing the Real Time Viewer Site Activity on the RNM.
 - Y Verify Radios 2, 3 and 4 can hear Radio 1.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

15.3 Mixed Mode site to Mixed Mode site Call - Phase 1

Purpose: Demonstrates that a mixed mode call can function on a Phase 2 system

Expected Results: This test will verify that a Phase 1 radio will hear a call from a Phase 2 radio.

Setup: Turn on Radios 1, 2, 3, 4

Execution:

1. PTT Radio 3 and talk. The transmit (TX) indicators should turn on at Radio 3
 - Y Verify that the call is assigned as an FDMA by viewing the Real Time Viewer Site Activity on the RNM.
 - Y Verify Radios 1, 2 and 4 can hear Radio 3.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

15.4 Phase 2 site Call

Purpose: Demonstrates that a Phase 2 call work on a Phase 2 system

Expected Results: This will verify that a P25 Phase 2 call will work on a Phase 2 system

Setup: Turn off Radios 1, and 2

Execution:

1. PTT Radio 3 and talk. The transmit (TX) indicators should turn on at Radio 3
 - Y Verify that the call is assigned as an TDMA by viewing the Real Time Viewer Site Activity on the RNM.
 - Y Verify Radios 4 can hear Radio 1.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

16. P25 PHASE 2 FUNCTIONALITY

Purpose: The tests will show that the system will allow radios that are on different sites to communicate while the radios are on different phases on P25.

Expected Results: This test will verify that the system will allow Phase 1 and Phase 2 radio to inter communicate.

Setup: In the following tests, portables 1 and 2 will be set up as Phase 1 only. Portables 3 and 4 will be set up as Phase 2 and Phase 1 capable, depending upon talk-group. FDMA refers to Phase 1 and TDMA refers to Phase 2. Start a session on the RNM and setup to watch channel assignments using the real time viewer function.

On a client computer, open the windows internet explorer and browse to <https://s0u1rnm.vida.local/nmc> and log in with an Active Directory account. Choose the system map and select the 'Launch Application' button. Open the Realtime tab and Click Site Calls. Select the site and expand. Check the box next to the channels and select the to add the channels to the target list. Select the 'ok' button to launch the application.

Place a group call from Radio 1 to Radio 2 on the site, and verify that the event viewer displays the talk-group ID and calling party ID. Verify the state changes from Free to Talk. Verify the TG Alias displays the Group #.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	System	Site	On/Off
Radio 1	998001	TG64051 P25	64051	MAC PH 1	1	On
Radio 2	998002	TG64051 P25	64051	MAC PH 1	1	On
Radio 3	998003	TG64051 P25	64051	MAC PH 2	2	On
Radio 4	998004	TG64051 P25	64051	MAC PH 2	2	On

16.1 Mixed Mode site to Mixed Mode site Call Phase 1- Phase 1**Purpose:** Demonstrates that a Phase 1 call work on a Phase 2 system**Expected Results:** This will verify that a P25 Phase 1 call will work on a Phase 2 system**Setup:** Turn off radios 2 and 4.

Description	Radio LID	TG Description	TG ID	System	Site	On/Off
Radio 1	9980001	TG 64051 P25	64051	MAC PH 1	1	On
Radio 2	9980002	TG 64051 P25	64052	MAC PH 2	1	Off
Radio 3	9980003	TG 64051 P25	64051	MAC PH 1	2	On
Radio 4	9980004	TG 64051 P25	64052	MAC PH 2	2	Off

Execution:

1. PTT Radio 1 and talk.

Y The transmit (TX) indicators should turn on at Radio 1

Y Verify that the call is assigned as FDMA at Site 2 by viewing the Real Time Viewer Site Activity on the RNM.

Y Verify Radio 3 can hear Radio 1.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

16.2 Mixed Mode site to Mixed Mode site Call - Phase 1 and Phase 2**Purpose:** Demonstrates that a mixed mode call can function on a Phase 2 system**Expected Results:** This test will verify that Phase 2 radios will hear a call from a Phase 1 radio.**Setup:** Turn on Radios 1, 2, 3, 4

Description	Radio LID	TG Description	TG ID	System	Site	On/Off
Radio 1	9980001	TG 64051 P25	64051	MAC PH 1	1	On
Radio 2	9980002	TG 64051 P25	64051	MAC PH 1	1	On
Radio 3	9980003	TG 64051 P25	64051	MAC PH 2	2	On
Radio 4	9980004	TG 64051 P25	64051	MAC PH 2	2	On

Execution:

1. PTT Radio 1 and talk.

Y The transmit (TX) indicators should turn on at Radio 1

Y Verify that the call is assigned as an FDMA at site 2 by viewing the Real Time Viewer Site Activity on the RNM.

Y Verify Radios 2, 3 and 4 can hear Radio 1.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

16.3 Mixed Mode site to Mixed Mode site Call - Phase 1**Purpose:** Demonstrates that a mixed mode call can function on a Phase 2 system.**Expected Results:** This test will verify that a Phase 1 radio will hear a call from a Phase 2 radio.**Setup:** Turn on Radios 1, 2, 3, 4

Description	Radio LID	TG Description	TG ID	System	Site	On/Off
Radio 1	9980001	TG 64051 P25	64051	MAC PH 1	1	On
Radio 2	9980002	TG 64051 P25	64051	MAC PH 1	1	On
Radio 3	9980003	TG 64051 P25	64051	MAC PH 2	2	On
Radio 4	9980004	TG 64051 P25	64051	MAC PH 2	2	On

Execution:

1. PTT Radio 3 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 3
 - Y Verify that the call is assigned as an FDMA at site 2 by viewing the Real Time Viewer Site Activity on the RNM.
 - Y Verify Radios 1, 2 and 4 can hear Radio 3.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

16.4 Phase 2 site Call**Purpose:** Demonstrate that a Phase 2 call works on a Phase 2 system.**Expected Results:** Verify that a P25 Phase 2 call will work on a Phase 2 system.**Setup:** Turn off Radios 1 and 2

Description	Radio LID	TG Description	TG ID	System	Site	On/Off
Radio 1	9980001	TG 64051 P25	64051	MAC PH 1	1	Off
Radio 2	9980002	TG 64051 P25	64051	MAC PH 1	1	Off
Radio 3	9980003	TG 64051 P25	64051	MAC PH 2	2	On
Radio 4	9980004	TG 64051 P25	64051	MAC PH 2	1	On

Execution:

1. PTT Radio 3 and talk.
 - Y The transmit (TX) indicators should turn on at Radio 3
 - Y Verify that the call is assigned as a TDMA at Site 1 by viewing the Real Time Viewer Site Activity on the RNM.
 - Y Verify Radios 1, 2, & 4 can hear Radio 3.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

17. SYMPHONY DISPATCH FEATURE SET

All Testing done in this section should be done with a user that is in the 'Console' User Group.

17.1 Transmitting With a Microphone (Group Calls, I Calls)

Purpose: Confirms the console operator can initiate communication with a terminal radio using the console select functions and foot pedal, for both Group and I Calls.

Expected Results: Confirms communication with the terminal radio

Setup: Radio set to TG64001 P25 and console programmed with talk groupTG64001 P25

Execution:

1. Press the INSTANT TX function (for example right mouse button) on the module with the test group. Verify
 - Y that a channel access tone is heard, a
 - Y ripple effect on the 'TX' indicator is displayed
 - Y that the call is heard on the radio.
2. Release the Instant TX key
3. Right click on the gear symbol for TG64002 and select 'Select' to make TG64002 the selected talk group. Verify
 - Y that the module for TG64002 is highlighted indicating that it is the selected talk group
 - Y the module at the top center of the screen changes to 'TG64002'
4. Make call on 64002TG by:
 - a. Press the PTT foot pedal.
 - Y verify that a channel access tone is heard,
 - Y the halo around the 'TX' indicator is displayed
 - Y that the call is heard on the radio
 - Y verify audio is head at a radio on talk group 64002TG
 - i. Release the foot pedal to end the call
 - b. Press the headset button.

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- Y verify that a channel access tone is heard
- Y the halo around the 'TX' indicator is displayed
- Y that the call is heard on the radio
- Y verify audio is heard at a radio on talk group 64002TG
- i. Release the headset button to end the call.
- c. Select the 64002TG button with the mouse.
 - Y verify that a channel access tone is heard
 - Y the halo around the 'TX' indicator is displayed
 - Y that the call is heard on the radio
 - Y verify audio is heard at a radio on talk group 64002TG
 - i. Release the mouse button to end the call.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

17.2 Receiving Calls (Unit ID Display, Talk group ID Display, Aliasing)

Purpose: Confirm the console operator can receive communications from a terminal radio, using both talkgroup and individual calling.

Expected Results: Communications are initiated and received on the appropriate speaker (select or unselect) and the radio's ID is displayed.

Setup: Console should have talk groups 64001TU and 64002TU programmed with 64002TU selected and Radio set to TG64001 P25

17.2.1 Talk Group Call**Execution:**

1. Key the radio and verify
 - Y That the call is heard at the unselect speaker
 - Y That the calling radio ID is displayed on the module for TG64001
 - Y A green light id displayed indicating an incoming call on module TG64001
2. Switch the radios talk group to 64002TU and key the radio.
 - Y That the call is heard at the select speaker
 - Y That the calling radio ID is displayed on the module for TG64002
 - Y A green light id displayed indicating an incoming call on module TG64002

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

17.2.2 Individual Call (Unit – Unit)**Execution:**

1. Right click on the 'Harris' box on the top left hand side of the screen.
2. Select 'Open Directory' this will open a pop up window for the 'Directory'
3. Select the 'Users' tab
4. Select 'Radio 1' under the "ALIAS" column
5. Press the 'Radio 1' button the right side to the screen to place an individual call to radio 1.
 - Y Verify the ripple effect on the 'TX' indicator is displayed
 - Y Verify a ringing tone will be heard at the console and the radio
 - Y Verify radio displays 'INDV' and consoles 'ID'
6. Respond to the console by PTTing the radio
 - Y Verify that the call is heard on the console and that the calling radio's ID and the Call Indicator are displayed.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

17.3 Emergency Call and Emergency Alarm

Purpose: Confirms the console indicates an emergency declared by a terminal radio and can reset and clear the emergency.

Expected Results: The console indicates and can clear the emergency.

Setup: This test requires a test radio capable of generating and clearing an emergency (i.e. Supervisor Radio).

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001

Execution:

1. Select the 64002TG in the console. Using the test radio, declare an emergency on 64001TG.
 - Y Verify the module for '64001TG' turns red,
 - Y Verify the ID/Name of the test radio is displayed
 - Y Verify emergency alert tone is heard on the console.
2. Select the triangle with a '!' to access the emergency menu.
 - Y the acknowledge 'Ack' button is red
 - Y the check box is red
3. Using the radio, transmit on the talk group
 - Y Verify that the call is received by the console.
4. With the console, transmit on the group with the emergency.
 - Y Verify the test radio receives the call, and is still in emergency mode.
5. Acknowledge the emergency by selecting the 'Ack' button
 - Y Verify the button changes from 'Ack' to clear
 - Y verify the radio and the console are still in emergency mode
6. Clear the emergency by selecting the 'Clear X' button

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- Y Verify the console clears the emergency
- Y Verify the radio clears the emergency
7. Transmit on the radio
8. Verify the emergency is cleared and normal group calls have resumed.
9. Select 64001TG group selected on the console, declare an emergency on the test group by pressing the 'Emer Declare'.
- Y Verify the console and radio have the same indications as steps 2 to 4.
10. Acknowledge by hitting 'Ack' in step 4
11. Clear the emergency with the console.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

17.4 System Wide Call (All Call & Announcements)

Purpose: Confirm the console can initiate system wide calls.

Expected Results: The console can initiate both All Calls and Announcement Calls.

Setup: Program console modules with the 'TG64000 P25' talk group

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64051 P25	64051
Radio 2	998002	TG64052 P25	64052
Radio 3	998003	TG64001 P25	64001
Radio 4	998004	TG64001 P25	64002

Execution:

1. Press INSTANT TX on the module with 'TG64000 P25'.
 - Y Verify that a channel access tone is heard,
 - Y Verify the ripple effect on the 'TX' indicator is displayed
 - Y Verify that the call is heard at all radios
2. Release the Instant TX key.
3. Press INSTANT TX on the module with 'TG64051 P25'.
 - Y Verify that a channel access tone is heard,
 - Y Verify the ripple effect is displayed
 - Y Verify the call is heard at Radios 1.
 - Y Verify radios 2, 3 and 4 did not hear the audio.
4. Release the Instant TX key.
5. Press INSTANT TX on the module with 'TG64001 P25'.
 - Y Verify that a channel access tone is heard,

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- Y The ripple effect is displayed,
 - Y The call is heard at Radios 3.
 - Y Verify that Radios 1, 2 and 4 did not hear the audio.
6. Release the Instant TX key.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

17.5 Alert Tones

Purpose: Confirm the console can initiate alert tones which can be heard at the terminal radio.

Expected Results: The tones can be initiated and heard.

Setup: Console 1 programmed with TG64002 and TG64001 selected.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64001 P25	64001
Radio 2	998002	TG64002 P25	64002

Execution:

1. Make TG64001 P25 the selected talk group.
2. Select the tones tab on the talk group module.
3. Select one of the three ALERT TONE keys by selecting the drop down list next to the orange button the console with a method other than the mouse.
4. Radio 1 will receive the call.
5. Test that all three alert tones can be heard on the radio.
 - Y Verify the ALERT TONE is received by Radio 1 and also heard on the console (to hear the tones on the console, press and hold the foot pedal and listen for the tone on the SELECT speaker).
6. When the ALERT TONE key is released
 - Y Verify the call on Radio 1 drops

Results	(Pass/Fail)	_____
Tester: _____	Date: _____	
Comments: _____		

17.6 Console Pre-Empt**Purpose:** Confirm the console can pre-empt an ongoing call between terminal radios.**Expected Results:** The call started by the radio will be interrupted by the console.**Setup:** Console 1 programmed with talk-group TG64001 P25

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9981001	TG64001 P25	64001
Radio 2	9981002	TG64001 P25	64001

Execution:

1. Key Radio 1 on the TG64001 and hold the call up. Verify that audio is heard at Radio 2 and the console.
2. Key the console on TG64001 and hold the while continuing to hold the call up on Radio 1
 - Y Verify the console pre-empts
 - Y Verify that the transmit indicator is displayed along with the pre-empted caller LID and CALL indicator
 - Y Verify that the second radio begins to hear the console audio and not the first radio call.
 - Y Verify that the pre-empted radio audio is still heard on the pre-empting console.
3. Un-key the first Radio.
 - Y 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. Un-key the console.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

17.7 Simulselect

Purpose: Confirms operation of the console Simulselect feature, which allows multiple talk groups to be selected for communication simultaneously.

Expected Results: The console can select multiple talk groups and communication is allowed.

Setup Console 1 programmed with talk groups TG64051 P25, TG64052 P25, TG64053 P25, and TG64054 P25.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64051 P25	64051
Radio 2	998002	TG64052 P25	64052
Radio 3	998003	TG64001 P25	64001
Radio 4	998004	TG64001 P25	64002

Execution:

1. Create simulselect group on the 4 test group modules
2. Place a call from the console on the simulselect group
 - Y Verify that the call is heard all four radios
3. Place a call from each radio
 - Y Verify that only the console hears the calls
 - Y Verify only the radios on similar talk groups here the call
4. Deactivate the simulselect group.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

17.8 Patch

Purpose: Confirms the console patch feature creates shared communication between multiple selected talk groups.

Expected Results: The patched talk groups can communicate.

Setup Console 1 programmed with talk groups TG64051 P25, TG64052 P25, TG64053 P25, and TG64054 P25.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64051 P25	64051
Radio 2	998002	TG64052 P25	64052
Radio 3	998003	TG64001 P25	64001
Radio 4	998004	TG64001 P25	64002

Execution:

1. Create patch on PATCH 1 with all four groups above.
2. Place a call from the newly created patch
Y Verify that the call is heard on all the radios
3. Place a call from each radio
Y Verify that the call is heard on the console and each radio.
4. Deactivate the patch.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

17.9 Console to Console Cross-mute

Purpose: Confirm creation of a cross-mute of another console to quiet the muted consoles audio on the local console.

Expected Results: The cross-muted console's audio cannot be heard on the local console.

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.

Y Verify that console B can hear console A.
2. Open the Symphony Configuration Utility for console B in the 'General' section add the ID for console A to the 'Cross Mute' list.
3. Select 'Apply' to save the changes.
4. Place a call on console A on the test group

Y Verify the call can't be heard at console B.
5. Restore the desired cross mute setup.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

17.10 Call History

Purpose: Confirms a history of calls processed at the console.

Expected Results: The history is accessible and valid.

Setup: This test 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.
Y Compare these calls with known activity.
2. Press the ‘Scroll Up’ and ‘Scroll Down’ buttons to scroll through the selected call history list.
Y 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.
5. Use the ‘scroll up’ and ‘scroll down’ buttons to scroll through the calls for the picked module.
Y Compare these calls with known activity.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

17.11 Group Call

Purpose: Confirms the scan function which allows a smartphone to hear audio on selected talk-groups other than the current talk-group.

Expected Results: Selected talk-group call audio is heard.

Setup: Set smart-phones 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

1. PTT on BeOn_202 and talk.
 - Y The transmit (TX) indicators should turn on at BeOn_202.
 - Y Audio should be heard in BeOn_203, and BeOn_204.
 - Y The ID of BeOn_202 should be seen at BeOn_203, and BeOn_204.
2. Set BeOn_204 to TG64152 P25. PTT on BeOn_202 and talk.
 - Y The transmit (TX) indicators should turn on at BeOn_202.
 - Y Audio should be heard in BeOn_203 only.
 - Y The ID of BeOn_202 should be seen at BeOn_203 only.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

17.12 Individual (Private) Call

Purpose: Confirms individual calls can be initiated using BeOn enabled smartphones.

Expected Results: Individual calls are confirmed.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

- Using the BeOn_202, select the pre-stored ID of BeOn_203 or enter the BeOn_203 ID directly from the keypad, and PTT smartphone 1.

Y Verify that BeOn_203 receives the call and displays the ID of smartphone 1.

Y Verify that BeOn_204 remains idle.
- Release the PTT on BeOn_202 and immediately PTT on BeOn_203.

Y Verify that BeOn_202 receives the call and displays the ID of BeOn_203.

Y Verify BeOn_204 remains idle.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

17.13 Group Scan

Purpose: Confirms the scan function which allows a smartphone to hear audio on selected talk-groups other than the current talk-group.

Expected Results: Selected talk-group call audio is heard.

Setup: BeOn_202 set up with TG64151 P25 and TG64152 P25 in the scan list, TG64151 P25 selected, and group scan initially disabled.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

- Place a call from BeOn_203 on TG64151 P25.
Y Verify the call is received and audio is heard on BeOn_202.
- Place a call from BeOn_203 on TG64152 P25.
Y Verify the call is not received by BeOn_202.
- Enable group scan on BeOn_202.
- Place another call from BeOn_203 on TG64152 P25.
Y Verify that the call is now received and audio is heard on BeOn_202.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

17.14 Emergency Group Call

Purpose: Confirms an emergency can be declared, recognized and cleared by a smartphone.

Expected Results: The emergency is declared, recognized and cleared.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64152 P25	64152
BeOn_204	998204	TG64153 P25	64153

Execution:

1. Press the Emergency call button on BeOn_204 and then PTT BeOn_204.
 - γ Verify that BeOn_204 indicates the “TX EMER” declaration and that it reverts to the home group.
 - γ Verify that BeOn_202 and BeOn_203 indicate a “RX EMER” and hear audio on the emergency home group.
2. Clear the emergency with the Supervisor smartphone (BeOn_202).
 - γ Verify the emergency clears in the smartphones.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

18. BEON FEATURES**Purpose:** These will test the BeOn features.**Expected Results:** This test will demonstrate that BeOn works as designed.**Setup:** This test will show that the BeOn system allows a smartphone to communicate with the radio system.**18.1 Transmit Grant Tone****Purpose:** This test will demonstrate the grant tone on BeOn.**Expected Results:** When the smartphone PTTs on the BeOn app it will play a grant tone.**Setup:** Grant tone (Ready to Talk tone) enabled in smartphone radio personality.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

1. Press PTT button on smartphone with valid group selected.

γ Verify grant tone is heard at smartphone 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: _____		

18.2 Group Call

Purpose: Confirms the scan function which allows a smartphone to hear audio on selected talk-groups other than the current talk-group.

Expected Results: Selected talk-group call audio is heard.

Setup: Set smart-phones 1, 2, & 3 to (Group A) per test group structure. Make sure Scan is turned OFF.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

3. PTT on BeOn_202 and talk.
 - Y The transmit (TX) indicators should turn on at BeOn_202.
 - Y Audio should be heard in BeOn_203, and BeOn_204.
 - Y The ID of BeOn_202 should be seen at BeOn_203, and BeOn_204.
4. Set BeOn_204 to TG64152 P25. PTT on BeOn_202 and talk.
 - Y The transmit (TX) indicators should turn on at BeOn_202.
 - Y Audio should be heard in BeOn_203 only.
 - Y The ID of BeOn_202 should be seen at BeOn_203 only.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

18.3 Individual (Private) Call

Purpose: Confirms individual calls can be initiated using BeOn enabled smartphones.

Expected Results: Individual calls are confirmed.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

- Using the BeOn_202, select the pre-stored ID of BeOn_203 or enter the BeOn_203 ID directly from the keypad, and PTT smartphone 1.

Y Verify that BeOn_203 receives the call and displays the ID of smartphone 1.

Y Verify that BeOn_204 remains idle.

- Release the PTT on BeOn_202 and immediately PTT on BeOn_203.

Y Verify that BeOn_202 receives the call and displays the ID of BeOn_203.

Y Verify BeOn_204 remains idle.

Results	(Pass/Fail)
Tester: _____	Date: _____
Comments: _____	

18.4 Group Scan

Purpose: Confirms the scan function which allows a smartphone to hear audio on selected talk-groups other than the current talk-group.

Expected Results: Selected talk-group call audio is heard.

Setup: BeOn_202 set up with TG64151 P25 and TG64152 P25 in the scan list, TG64151 P25 selected, and group scan initially disabled.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64151 P25	64151
BeOn_204	998204	TG64151 P25	64151

Execution:

5. Place a call from BeOn_203 on TG64151 P25.
Y Verify the call is received and audio is heard on BeOn_202.
6. Place a call from BeOn_203 on TG64152 P25.
Y Verify the call is not received by BeOn_202.
7. Enable group scan on BeOn_202.
8. Place another call from BeOn_203 on TG64152 P25.
Y Verify that the call is now received and audio is heard on BeOn_202.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

18.5 Emergency Group Call

Purpose: Confirms an emergency can be declared, recognized and cleared by a smartphone.

Expected Results: The emergency is declared, recognized and cleared.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
BeOn_202	998202	TG64151 P25	64151
BeOn_203	998203	TG64152 P25	64152
BeOn_204	998204	TG64153 P25	64153

Execution:

3. Press the Emergency call button on BeOn_204 and then PTT BeOn_204.
 - Y Verify that BeOn_204 indicates the “TX EMER” declaration and that it reverts to the home group.
 - Y Verify that BeOn_202 and BeOn_203 indicate a “RX EMER” and hear audio on the emergency home group.
4. Clear the emergency with the Supervisor smartphone (BeOn_202).
 - Y Verify the emergency clears in the smartphones.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

19. TRUNKED LOGGING RECORDER**19.1 Group Call**

Purpose: Confirms group call audio is captured, recorded and accessible on the logging recorder

Expected Results: Calls are captured, recorded and accessible.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64051 P25	64051
Radio 2	998002	TG64051 P25	64051
Radio 3	998003	TG64051 P25	64051

1. PTT radio 1 and talk.

Y Audio should be heard on radio 2. Note the Start time of the call and the approximate duration.

2. Retrieve the call from the Logging Recorder.

Y Verify the Caller, Callee, Start Time, and duration.

Y The Caller should be the LID for Radio 1 and the Callee should be the GID for 64051. Verification should include the LID/GID and its Alias as defined by the UAS.

Y Verify that the call is identified as a Group Call.

3. Playback the audio

Y Confirm that the playback audio is all recorded and intelligible.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

19.2 Emergency Group Call

Purpose: Confirms emergency group call audio is captured, recorded and accessible on the logging recorder

Expected Results: Calls are captured, recorded and accessible.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	998001	TG64051 P25	64051
Radio 2	998002	TG64051 P25	64051
Radio 3	998003	TG64051 P25	64051

Execution:

1. Press the Emergency call button on radio 2. Talk during the Hot Mic transmit time.
2. Clear the emergency with the radio 1.
3. Retrieve the call from the Logging Recorder.
 - Y Verify the Caller
 - Y Verify the Callee
 - Y Verify the start time
 - Y Verify the duration
 - Y The Caller should be the LID for Radio 2 and the Callee should be the GID for the Home Group.
 - Y Verification should include the LID/GID and its Alias as defined by the UAS.
 - Y Verify that the call is identified as an Emergency.
 - Y Playback the audio and confirm that it is all recorded and intelligible.

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

20. P25 SIMULCAST BYPASS OPERATION

Program the MASTR V modules (both Control Points and Transmit Sites) to the Final Configuration. Refer to the installation manual for the guide to setting TX Traffic Controllers / CP Traffic Controllers 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 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.

20.1 Site OFF - Final Configuration

Purpose: Confirm sites configured to be in the “OFF” condition during BYPASS are in the expected BYPASS mode.

Expected Results: The “OFF” site traffic controllers have no control channel.

Setup: Sites intended to be “OFF” in event of BYPASS must have all channels set to disabled (unchecked in Device Manager, TC personality).

Execution:

1. At one of the sites designated as an “off” site, create a condition to force BYPASS by disconnecting the router to MPLS connection. All other sites will have the HPAs disabled locally.
 - Y Verify transmit site is in BYPASS mode.
 - Y The Traffic Controller module display indicates “TC” instead of “TR”. Note: TC= Working Traffic Channel, standalone mode, TR=Working Channel, simulcast mode, and Control Channel, simulcast mode is indicated by the transmit LED indicator.
2. Observe the repeater (station) Traffic Controller modules.
 - Y Verify there is no active control channel.
 - Y Verify no stations are keyed or producing RF power.

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3. Restore the site to normal by returning the site to simulcast mode by reconnecting the router to MPLS connection.

Y Verify transmit site is in normal simulcast mode. The Traffic Controller modules will indicate "TR(n)", where n is the channel number.
4. Repeat steps 1-3 for the remaining "OFF" bypass sites in the simulcast system under test.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____ _____ _____	

20.2 Site ON (trunking) - Final Configuration

Purpose: Confirm sites configured to be in the “ON” condition during BYPASS are in the expected BYPASS mode.

Expected Results: The “ON” site traffic controllers have a control channel and calls to terminal radios can be initiated.

Setup:

Execution:

1. Create a condition to force BYPASS by disconnecting the router to MPLS connection.
 - Y Verify transmit site is in BYPASS mode. BYPS LED on Baseband module and the Traffic Controller module display indicates either “TC” or “CC” instead of “TR.”
 - Y Observe the stations/repeater Traffic Controller modules. Verify there is an active control channel on one of the Traffic Controller modules. The remaining repeater/stations Traffic Controller modules will indicate “TC”.
 - Y Verify the station appearing as control channel is keyed, producing RF power and modulated with control channel data.
 - Y 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.
2. Key the terminal radio on a group call.
 - Y Verify a working channel assignment is made within the channel group allowed in the personality.
 - Y Verify the call is heard on a second terminal radio set to the active BYPASS system.
3. Restore the site to simulcast mode by reconnecting the router to MPLS connection.
 - Y Verify transmit site is in normal simulcast mode. Traffic Controller modules indicate “TR(n).”
4. Repeat steps 1-3 for the remaining “ON” bypass sites in the simulcast system under test.

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Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

20.3 Control Point Trunking Reset Control

Purpose: A properly set up Simulcast BYPASS system will disable CP Traffic Controller 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 Traffic Controller modules to be held OFF.

Expected Results: This test will verify that the Control Point Traffic Controller modules will be held OFF corresponding to the active channels at a site as a result of the TX site being in BYPASS.

Setup:**Execution:**

1. Force a TX site that will become active into BYPASS by disconnecting the router to MPLS connection.
 - Y Verify TX site is in BYPASS mode.
 - Y Verify transmit site is in BYPASS mode. Traffic Controller module display indicates either "TC" or "CC" instead of "TR".
 - Y Verify the CP Traffic Controller modules on the channels intended to be OFF are held OFF.
2. Observe the RNM screen for the simulcast system.
 - Y Verify the channels intended to be OFF at the Control Point are reported as OFF (RED).
3. Restore the site to simulcast mode by reconnecting the router to MPLS connection.
 - Y Verify the TX site Traffic Controller modules revert to normal Simulcast.
 - Y Verify the CP Traffic Controller modules associated with the site in BYPASS are returned to normal.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

20.4 Bypass – Site Minimum Channels

Purpose:	Confirm a site enters bypass when active channels fall below site minimum channels setting.
Expected Results:	The site enters bypass mode.
Setup:	Sites are configured with cluster minimum channels set to 6 and site minimum channels to 7. Bypass Plan: TR Site 1 Ch 3,4,5; TR Site 2 Ch 6,7,8; TR site 3 Ch 9,10,11 TR Sites 4 and 5 dark
Note	Settings and bypass plan can be customer final settings; execution will have to adjust to accommodate those settings.

Execution:

1. At TR site 1 disable channels 8 - 11 using the TX disable switch on the PA (only channels 1-7 are still functioning).
 - Y Verify system and site still functioning in simulcast; the disabled channels 8-11 are in alarm state at the control point site.
 - Y At TR site 1 the Traffic Controller modules displays still indicates “TR” not “TC” or “CC”. Note: TC= Working Traffic Channel, standalone mode, TR=Working Channel, simulcast mode, and Control Channel, simulcast mode is indicated by the transmit LED indicator.
2. At the same site disable channel 7 using the TX disable switch on the PA.
 - Y Verify system is still functioning in simulcast. Control Point ch 3,4 and 5 in alarm state.
 - Y Verify TR site 1 is in bypass. The Traffic Controller module display indicates “TC” instead of “TR”. All channels status indicates alarm. Note: TC= Working Traffic Channel, standalone mode, TR=Working Channel, simulcast mode, and Control Channel, simulcast mode is indicated by the transmit LED indicator always on.
3. At the same site restore all channels back to service (enable the PA using the TX disable switch on the PA).
 - Y Verify transmit site 1 is in normal simulcast mode. The Traffic Controller modules will indicate “TR(n)”, where n is the channel number.
 - Y Verify all channels are in service at the control point.

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Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	

20.5 Bypass – Cluster Minimum Channels – TR site failures

Purpose: Confirm all sites enter bypass when available channels fall below the cluster minimum channels setting. Depending upon the system size, bypass plan and which channels have been failed a subset of sites may subsequently come out of bypass and operate as a cluster before any channels are restored to service.

Expected Results: All site in the system enter bypass mode.

Setup: Sites are configured with cluster minimum channels set to 6 and site minimum channels set to 7 (these settings are normally lower; they are set high to simplify testing).

Execution:

1. At TR site 1 disable channels 9, 10 and 11 using the TX disable switch on the PA (8 channels are still functioning).
 - Y Verify system and site still functioning in simulcast.
 - Y The Traffic Controller module displays still indicates “TR” not “TC” or “CC”. Note: TC= Working Traffic Channel, standalone mode, TR=Working Channel, simulcast mode, and Control Channel, simulcast mode is indicated by the transmit LED indicator.
2. At TR site 3 disable channels 6, 7 and 8 using the TX disable switch on the PA (5 channels are still functioning).
 - Y Verify All sites have entered bypass (the TCs display “TC” and “CC”, not “TR” and every channel status indicates failed at every site.
3. Enable the PAs at the sites using the TX disable switches.
 - Y Verify the system recovers to simulcast mode with all transmit sites in normal simulcast mode. The Traffic Controller modules will indicate “TR(n)”, where n is the channel number.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

20.6 Site ON (trunking) - Enhanced bypass Final Configuration

Purpose: Confirm sites configured to be in the “ON” condition during BYPASS are in the expected BYPASS mode and can connect to VNIC.

Expected Results: The “ON” site traffic controllers have a control channel and calls between terminal radios and dispatch can be made.

Setup:

Execution:

1. Create a condition to force BYPASS that does not disrupt network connectivity by logging into both GPS receivers and configuring their notifications to set the major alarm threshold to minimum satellites 12 and duration below threshold 5 seconds. This will cause the GPS receivers to set a major alarm after 5 seconds.
2. Configure Notifications from Spectracom GPS Receivers

Navigate to: **Management → Notifications**



2. In the **Events** window pane, click the **GPS** tab.
3. Set the Major Alarm Threshold as follows:
 - a. Minimum Satellites: **12**
 - b. Duration Below Threshold: **5**
4. Click: **[Submit]**

Event	Mask Alarm	SHAP Trap	Email	Email A
Too Few GPS Sat. Minor Alarm	☐	☒	☐	☐
Too Few GPS Sat. Minor Cleared	☐	☒	☐	☐
Too Few GPS Sat. Major Alarm	☐	☒	☐	☐
Too Few GPS Sat. Major Cleared	☐	☒	☐	☐
GPS Antenna Problem	☐	☒	☐	☐
GPS Antenna Off	☐	☒	☐	☐
GPS Receiver Fault	☐	☐	☐	☐
GPS Receiver Fault Cleared	☐	☐	☐	☐

Minor Alarm Threshold

Minimum Satellites: Duration Below Threshold (s):

Major Alarm Threshold

Minimum Satellites: Duration Below Threshold (s):

3. Verify transmit site is in BYPASS mode. The Traffic Controller module display indicates either "TC" or "CC" instead of "TR".
 - Y Observe the stations/repeater Traffic Controller modules. Verify there is an active control channel on one of the Traffic Controller modules. The remaining repeater/stations Traffic Controller modules will indicate "TC".
 - Y Verify the station appearing as control channel is keyed, producing RF power and modulated with control channel data.
 - Y 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.
4. Key the terminal radio on a group call.
 - Y Verify a working channel assignment is made within the channel group allowed in the personality.

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5. Restore the site to simulcast mode by restoring the GPS major alarm notification threshold to minimum satellites = 1 and duration = 345600 for both GPS receivers.
- Y Verify transmit site is in normal simulcast mode. Traffic Controller modules indicate "TR(n).

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

21. VIDA INTER-OPERABILITY GATEWAY TEST**21.1 Local Interoperability**

Purpose: The purpose of this test is to verify correct functionality of the Interoperability Gateway.

Expected Results: Verify that the

Setup: The Interoperability Gateway connects via 4-wire audio connections in its Universal Access Cards(UAC) cards to interoperability radio units (mobile or desktop). The Gateway also connects to a router and the Network Switching Center (NSC) to provide call functionality across the network.

Execution:

1. Select Inter-op group 1 on the radio.
2. Initiate a call from the radio to group 1

Y Verify that audio is heard on inter-op group 1 radio.
3. Initiate a call from the inter-op group 1 radio to group 1

Y Verify that audio is heard on the radio.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

21.2 NCRN Interoperability

NOTE: This test will be defined during the detailed design phase of the programs execution.

Purpose: The purpose of this test is to verify a radio operating on a conventional analog Land Mobile Radio channel will be able to communicate with a radio operating on the P25 radio system.

Expected Results: To Be Determined.

Setup: To Be Determined.

Execution: To Be Determined.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

22. INFORMATION ASSURANCE TESTING**22.1 Active Directory**

Purpose: The purpose of this test is to view the GPO structure on an Active Directory server.

Expected Results: The GPO structure is valid.

Setup: None

Execution:

1. Log into an Active Directory Server.
2. Open AD Users/Groups
 - Y Validate that the computers have been added to AD.
3. Open Group Policies Management
 - Y Verify VIDA GPO Structure

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

22.2 Cisco Prime

Purpose: This test will test the Cisco Prime.

Expected Results: This test will verify that the Cisco Prime is communicating with the necessary devices.

Setup: The purpose of this test is to verify that Cisco Prime is configured and is capable of accessing the Cisco devices on the network.

Execution:

1. Use Internet Explorer on a client PC to browse to CiscoPrime
2. Select 'RME'
3. Expand 'Devices'
4. Select 'Inventory'
5. Select 'View Inventory Connection Status'
6. Select the number on Inventory Collected
7. Select a device
8. Expand 'All Devices'
9. Select a device
10. Select 'Cisco View'
11. Select a port
12. Select 'Configure'
13. Click on a Device
14. View 'Configuration'
14. Close windows and log out

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Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments:	_____	

22.3 ePolicy Orchestrator

Purpose: The purpose of this test is to verify that ePolicy Orchestrator is communicating with its end devices and that it will report actions that have been taken by McAfee Antivirus on a remote computer.

Expected Results: ePolicy Orchestrator is accessible and displays valid reporting.

Setup: None

Execution:

1. Use Internet Explorer on a client PC to navigate to the McAfee E-Policy Orchestrator server
2. Log in using proper credentials
3. Go to the Main Screen

γ Verify all servers have been added to policies.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

22.4 Backup

Purpose: The purpose of this test is to verify that the Unitrends server has a schedule for performing backups of network computers and that it can display the backup status of those computers

Expected Results: The test will verify that the backup is configured.

Setup: None

Execution:

1. Use Internet Explorer on a client PC to navigate to the Unitrends Backup UAC
2. Log in using proper log in credentials
3. Go to the Main Screen

γ Verify that devices are visible and backups are configured.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

22.5 Intrusion Detection

Purpose: The purpose of this test is to verify that the SourceFire Defense Center is communicating with its IDS sensors at remote sites across the network.

Expected Results: SouceFire Defense Center is communicating with its IDS sensors.

Setup: None

Execution:

1. Use Internet Explorer on a client PC to navigate to the Sourcefire Defense Center
2. Log in using proper credentials
3. Go to Defense Center Dashboard
4. Click Operations. Go to Sensors

γ Verify that all Sensors are visible.

Results	(Pass/Fail)
Tester: _____	Date: _____
Comments: _____	

22.6 SysLog

Purpose: The purpose of this test is to verify that network devices are sending SysLog messages to the LogLogic server.

Expected Results: This test will verify that the clients are reporting to the LogLogic.

Setup: None

Execution:

1. Use Internet Explorer on a client PC to navigate to the LogLogic Syslog web page
2. Log in using proper log in credentials
3. Go to LogLogic System Status Dashboard
4. Click Log Source Status

Y Verify current devices are reporting.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____ _____ _____	

22.7 SUMS

Purpose: To demonstrate that the SUMS server is communicating with the remote client.

Expected Results: This test will verify that the SUMS server is communicating with the remote clients and that the remote clients are updated.

Setup: None

Execution:

1. Log into the SUMS server and launch the 'IBM Endpoint Manager Console' and log into the console with the SUMS administrators user.
2. Expand 'Sites' 'Custom Sites' 'Vida' and select 'Subscribed Computers'
 - Y Verify that each Computer is listed, in the Subscribed Computers window
 - Y Check to make sure that each computer has reported to the SUMS server within the last 30 minutes by checking the 'Last Report Time' column.
 - Y To check to make sure all the Subscriber Computers are updated by selecting the 'Baseline' in the left hand window.
 - Y Make sure the 'Baseline' window is empty or all computer in the window are gray.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

23. ACTION ITEMS

Test #	Page #	Action/Issue
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
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_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

24. ACRONYMS AND DEFINITIONS

AD	Active Directory
AES	Advanced Encryption Standard
Confirmed Call	A confirmed call is a special type of call where the call is queued until all sites have resources available, or until the confirmed call timer expires (configurable, typically one or two seconds)
DM	Device Manager
DNS	Domain Name Server
FDMA	Frequency Division Multiple Access
FIPS 140-2	Federal Information Processing Standard, publication 140-2. The title is "Security Requirements for Cryptographic Modules"
FM	Frequency Modulation
HA	High Availability
IFW	Internet Firewall
Individual Call	An individual call is a private call between one user and another. It can be between two radios, or between one radio and a dispatch console
IP	Internet Protocol
IPS	Intrusion Prevention System
ISSI	Inter Sub System Interface. This is the interface between WACNs, in the Harris architecture an interface between a VNIC and a foreign P25 system
KEK	Key Encryption Key
KID	16 bit Encryption Key ID
KMF	Key Management Facility
LED	Light Emitting Diode
MASTR V	A Harris base station product

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MDIS	Mobile Data Intermediate System, a Harris data switch used in Harris' OpenSky Architecture
MES	Mobile End System, a subscriber radio
MME	Miniature Mobility Exchange, which consists of Harris software running on a SitePro card at the base site. The MME runs the SNDCP layer of the data protocol and is the equivalent of the P25 RFG (RF Gateway)
NSC	Network Switching Center
NSS	Network Switching Server
NWS	Network Sentry
OTAP	Over The Air Programming
OTAR	Over The Air Rekeying
P25	Project 25, a suite of standards for digital radio communications, developed by the Association of Public Safety Communications Officials (APCO) under the TIA TR-8 engineering committee, and published as the TIA-102 set of documents
Priority Talkgroup	The priority talkgroup selected on the subscriber device. Usually this is the talkgroup that the radio will transmit on when the user presses PTT
ProFile	A Harris product used for configuring radios over the P25 radio channel
ProScan	A Harris software algorithm used for radio roaming
PSAP	Public Safety Access Point, usually an agency dispatch center
PSTN	Public Switched Telephone Network
PTT	Push To Talk
RAR	Regional Access Router
RF	Radio Frequency
RFW	Regional Firewall
RMS	Regional Management Server

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RNM	Regional Network Manager
RS	Reed Solomon, a form of error detection and correction coding
RSM	Regional Site Manager, a server which runs the RSM, Activity Warehouse and Device Manager applications
SACCH	Slow Associated Control Channel (Phase 2)
SAN	Storage Area Network
Sourcefire DFC	Defense Center
SS	Status Symbol (a two bit field in the control channel, used for channel access control signaling)
SSL	Secure Socket Layers
SSH	Secure Shell is a program to log into another computer over a network, to execute commands in a remote machine, and to move files from one machine to another. It provides strong authentication and secure communications over insecure channels. It is a replacement for rlogin, rsh, rcp, and rdist.
SUMS	Security Update Management Service (a Harris product)
System ID	The System ID is a 12 bit field of the network address which identifies the VNIC
TAC	Technical Assistance Center, a Harris service
TACACS	Terminal Access Controller Access Control System
TDMA	Time Division Multiple Access
TDU	Terminator Data Unit, used to terminate a voice message
TEK	Traffic Encryption Key
Telnet	A terminal emulation program for TCP/IP networks such as the Internet. The Telnet program runs on your computer and connects your PC to a server on the network.
TGID	Talkgroup ID (16 bit, equivalent to GID). The P25 documents usually use GID but some of the older documents use TGID
Traffic Controller	Software entity which resides in a base station at the site and generates the P25 control channel

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TRC	Tone Remote Control
TSBK	Trunking Signaling Block (a 196 bit field in the control channel)
Tx	Transmit
UAC	Unified Audio Card
UAS	Unified Administration Server
UID	Unified ID. This is a Harris specific acronym referring to an ID composed of the System ID and SID. The UID is a ten digit number in the form 604-415-4003, representing region, agency, and individual
Unitrends	Enterprise backup for VIDA networks
UPS	Uninterrupted Power Supply
VAS	VIDA Application Server
VCE	VIDA Console Exchange
VCH	Voice Channel (Phase 2)
VDOC	Voice and Data on Control (the control channel can assign itself as a traffic channel)
VIDA	Voice, Interoperability, Data, Access (a Harris system product)
VME	Versa Module Eurocard (IEEE 1014)
VNIC	Voice Network Interface Controller, the Harris voice switch
VTI	VIDA Telephone Interconnect
WACN	Wide Area Communication Network (20 bit network ID, part of SUID). This is a customer network which can include many VNICs
Zeroize	A P25 control channel command which causes the mobile radio to erase its encryption keys (but then requires manual loading to restore encryption keys)

25. UAS DATA BASE

25.1 Subscriber Units

Region Id	Agency Id	P25 IP Address	OpenSky IP Address	Description	Electronic Serial Number	Protocol Mask	Status	Sub Type	Assigned End User	Algorithm Support
10	998		10.128.111.19	OS_Radio_19	0	OpenSky	Enabled Unit			
10	998		10.128.111.20	OS_Radio_20	0	OpenSky	Enabled Unit			
10	998		10.128.111.2	OS_Radio_02	0	OpenSky	Enabled Unit			
10	998		10.128.111.3	OS_Radio_03	0	OpenSky	Enabled Unit			
10	998		10.128.111.4	OS_Radio_04	0	OpenSky	Enabled Unit			
10	998		10.128.111.5	OS_Radio_05	0	OpenSky	Enabled Unit			
10	998		10.128.111.6	OS_Radio_06	0	OpenSky	Enabled Unit			
10	998		10.128.111.7	OS_Radio_07	0	OpenSky	Enabled Unit			
10	998		10.128.111.8	OS_Radio_08	0	OpenSky	Enabled Unit			
10	998		10.128.111.9	OS_Radio_09	0	OpenSky	Enabled Unit			
10	998		10.128.111.10	OS_Radio_10	0	OpenSky	Enabled Unit			
10	998		10.128.111.11	OS_Radio_11	0	OpenSky	Enabled Unit			

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10	998	10.128.111.12	OS_Radio_12	0	OpenSky	Enabled Unit			
10	998	10.128.111.13	OS_Radio_13	0	OpenSky	Enabled Unit			
10	998	10.128.111.14	OS_Radio_14	0	OpenSky	Enabled Unit			
10	998	10.128.111.15	OS_Radio_15	0	OpenSky	Enabled Unit			
10	998	10.128.111.16	OS_Radio_16	0	OpenSky	Enabled Unit			
10	998	10.128.111.1	OS_Radio_1	0	OpenSky	Enabled Unit			
10	998	10.128.111.17	OS_Radio_17	0	OpenSky	Enabled Unit			
10	998	10.128.111.18	OS_Radio_18	0	OpenSky	Enabled Unit			
10	998	10.128.79.9	Radio9	109980009	P25	Enabled Unit	Harris XG-75 Portable	010:998:0009	AES
10	998	10.128.79.10	Radio10	109980010	P25	Enabled Unit	Harris XG-75 Portable	010:998:0010	AES
10	998	10.128.79.8	Radio8	109980008	P25	Enabled Unit	Harris XG-75 Portable	010:998:0008	AES
10	998	10.128.53.1	Console9101	109989101	P25	Enabled Unit	Maestro Console	010:998:9101	AES
10	998	10.128.53.2	Console 9102	109989102	P25	Enabled Unit	Maestro Console	010:998:9102	Both
10	998	10.128.79.1	Radio1	109980001	P25	Enabled Unit	Harris P5400	010:998:0001	AES
10	998	10.128.79.2	Radio2	109980002	P25	Enabled Unit	Harris P5400	010:998:0002	AES
10	998	10.128.79.3	Radio3	109980003	P25	Enabled Unit	Harris XG-75 Portable	010:998:0003	AES
10	998	10.128.79.4	Radio4	109980004	P25	Enabled Unit	Harris XG-75 Portable	010:998:0004	AES

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10	998	10.128.79.5	Radio5	109980005	P25	Enabled Unit	Harris XG-75 Portable	010:998:0005	AES
10	998	10.128.79.6	Radio6	109980006	P25	Enabled Unit	Harris XG-75 Portable	010:998:0006	AES
10	998	10.128.79.7	Radio7	109980007	P25	Enabled Unit	Harris XG-75 Portable	010:998:0007	AES
10	998	10.128.79.11	Radio11	109980011	P25	Enabled Unit	Harris UNITY XG-100P	010:998:0011	AES
10	998	10.128.79.12	Radio12	109980012	P25	Enabled Unit	Harris UNITY XG-100P	010:998:0012	AES
10	998	10.128.1.161	s0u1xcda	0	P25	Enabled Unit		010:998:9001	AES
10	998	10.128.1.162	s0u1xcdb	0	P25	Enabled Unit		010:998:9005	AES

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25.2 Voice End Users

Region Id	Agency Id	User Id	Name	Description	Personality	User Privilege	Message Trunked ICall	Enable P25 AES OTAR	Manually-Keyed	Preferred Vocoder	Transcoding Allowed Flag
10	998	010:998:9921	VAQ-SS22	SiteSim VAQ User22	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:0210	BeOn_210	BeOn_210	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:9012	XCD_9012	XCD_9012	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:9014	XCD_9014	XCD_9014	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:7005	VTI_7005	VTI_7005	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:9909	VAQ-SS10	SiteSim VAQ User10	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:9926	VAQ-SS27	SiteSim VAQ User27	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:9905	VAQ-SS06	SiteSim VAQ User06	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:0202	BeOn_202	BeOn_202	BeOn_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:9925	VAQ-SS26	SiteSim VAQ User26	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:0015	U9980015	U9980015	OS_Pers	998_10_default	TRUE	FALSE	FALSE	OpenSky 2400 AMBE+2	TRUE

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10	998	010:998:00 16	U9980016	U9980016	OS_Pers	998_10_default	TRUE	FALSE	FALSE	OpenSky 2400 AMBE+2	TRUE
10	998	010:998:99 15	VAQ-SS16	SiteSim VAQ User16	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 03	VAQ-SS04	SiteSim VAQ User04	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 18	VAQ-SS19	SiteSim VAQ User19	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 04	VAQ-SS05	SiteSim VAQ User05	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 20	VAQ-SS21	SiteSim VAQ User21	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 07	VAQ-SS08	SiteSim VAQ User08	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 03	U9980003	U9980003	Pers1	998_10_default	TRUE	TRUE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 19	VAQ-SS20	SiteSim VAQ User20	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 11	VAQ-SS12	SiteSim VAQ User12	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 17	U9980017	U9980017	OS_Pers	998_10_default	TRUE	FALSE	FALSE	OpenSky 2400 AMBE+2	TRUE
10	998	010:998:00 08	U9980008	U9980008	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 01	VAQ-SS02	SiteSim VAQ User02	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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10	998	010:998:02 08	BeOn_208	BeOn_208	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 27	VAQ-SS28	SiteSim VAQ User28	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 09	VTI_7009	VTI_7009	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 04	XCD_9004	XCD_9004	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 06	XCD_9006	XCD_9006	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 07	XCD_9007	XCD_9007	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 05	U9980005	U9980005	Pers1	998_10_default	TRUE	TRUE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 02	XCD_9002	XCD_9002	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 02	VTI_7002	VTI_7002	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 06	VAQ-SS07	SiteSim VAQ User07	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 22	VAQ-SS23	SiteSim VAQ User23	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 01	VTI_7001	VTI_7001	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:02 07	BeOn_207	BeOn_207	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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10	998	010:998:90 10	XCD_9010	XCD_9010	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 29	VAQ-SS30	SiteSim VAQ User30	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 04	VTI_7004	VTI_7004	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 18	XCD_9018	XCD_9018	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 13	U9980013	U9980013	OS_Pers	998_10_default	TRUE	FALSE	FALSE	OpenSky 2400 AMBE+2	TRUE
10	998	010:998:70 06	VTI_7006	VTI_7006	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 16	XCD_9016	XCD_9016	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 09	XCD_9009	XCD_9009	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:60 05	Site5VirtualUser	Site5VirtualUser	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 06	U9980006	U9980006	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 11	XCD_9011	XCD_9011	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 13	XCD_9013	XCD_9013	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 07	U9980007	U9980007	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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10	998	010:998:02 06	BeOn_206	BeOn_206	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 19	XCD_9019	XCD_9019	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 17	VAQ-SS18	SiteSim VAQ User18	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 08	VAQ-SS09	SiteSim VAQ User09	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 04	U9980004	U9980004	Pers1	998_10_default	TRUE	TRUE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 05	XCD_9005	XCD_9005	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 00	VAQ-SS01	SiteSim VAQ User01	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 03	XCD_9003	XCD_9003	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 28	VAQ-SS29	SiteSim VAQ User29	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 23	VAQ-SS24	SiteSim VAQ User24	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 11	U9980011	U9980011	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 10	U9980010	U9980010	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 16	VAQ-SS17	SiteSim VAQ User17	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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10	998	010:998:90 08	XCD_9008	XCD_9008	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 17	XCD_9017	XCD_9017	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:02 05	BeOn_205	BeOn_205	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:02 01	BeOn_201	BeOn_201	BeOn_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 01	XCD_9001	XCD_9001	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:02 09	BeOn_209	BeOn_209	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:02 04	BeOn_204	BeOn_204	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 14	VAQ-SS15	SiteSim VAQ User15	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:91 03	U9980003	U9980003	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 07	VTI_7007	VTI_7007	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 10	VTI_7010	VTI_7010	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 09	U9980009	U9980009	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 24	VAQ-SS25	SiteSim VAQ User25	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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10	998	010:998:70 08	VTI_7008	VTI_7008	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 02	U9980002	U9980002	Pers1	998_10_default	TRUE	TRUE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 12	U9980012	U9980012	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 14	U9980014	U9980014	OS_Pers	998_10_default	TRUE	FALSE	FALSE	OpenSky 2400 AMBE+2	TRUE
10	998	010:998:99 12	VAQ-SS13	SiteSim VAQ User13	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:60 03	Site3VirtualUser	Site3VirtualUser	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 02	VAQ-SS03	SiteSim VAQ User03	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:02 03	BeOn_203	BeOn_203	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:90 15	XCD_9015	XCD_9015	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 13	VAQ-SS14	SiteSim VAQ User14	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:70 03	VTI_7003	VTI_7003	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:99 10	VAQ-SS11	SiteSim VAQ User11	OS_Pers	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:60 04	Site4VirtualUser	Site4VirtualUser	Pers1	998_10_default	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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10	998	010:998:91 01	Cons9101	Console 9101	Pers1	998_10_supervi sor	TRUE	FALSE	FALSE	P25 Full Rate	TRUE
10	998	010:998:00 01	U9980001	U9980001	Pers1	998_10_supervi sor	TRUE	TRUE	FALSE	P25 Full Rate	TRUE
10	998	010:998:91 02	Cons9102	Console 9102	Pers1	998_10_supervi sor	TRUE	FALSE	FALSE	P25 Full Rate	TRUE

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25.3 Talk Groups

TG Id	Region Id	Agency Id	Name	Description	SPNI	Property Id	Priority Id	Coverage	Valid Coverage	Announcement Group	Test Partition Only	Type	Preferred Vocoder	ISSI Site	Transcoding Allowed
9900	10	998	PS-28-AN	VAQ SitSim01	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	General	Analog/ADPCM		TRUE
9901	10	998	Tone-25	VAQ SitSim02	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE
9902	10	998	AmpFreq	VAQ SitSim03	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE
9903	10	998	Pseudosp	VAQ SitSim04	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE
9904	10	998	Phrases	VAQ SitSim05	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE
9905	10	998	SiteSm1	VAQ SitSim06	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE
9906	10	998	SiteSm2	VAQ SitSim07	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE
9907	10	998	SiteSm3	VAQ SitSim08	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	General	P25 Full Rate		TRUE

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9908	10	998	SiteSm 4	VAQ SitSim09	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Full Rate		TRUE
9909	10	998	SiteSm 5	VAQ SitSim10	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Full Rate		TRUE
9910	10	998	SiteSm 6	VAQ SitSim11	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Full Rate		TRUE
9911	10	998	T-25- HR	VAQ SitSim12	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Half Rate		TRUE
9912	10	998	AF-HR	VAQ SitSim13	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Half Rate		TRUE
9913	10	998	PSp- HR	VAQ SitSim14	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Half Rate		TRUE
9914	10	998	Phrs- HR	VAQ SitSim15	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Half Rate		TRUE
9915	10	998	T-25- AN	VAQ SitSim16	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE
9916	10	998	AF-AN	VAQ SitSim17	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE
9917	10	998	P-Sp- AN	VAQ SitSim18	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE

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9918	10	998	Phrs-AN	VAQ SitSim19	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE
9919	10	998	VAQ20	VAQ SitSim20	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Full Rate		TRUE
9920	10	998	DVSITV	VAQ SitSim21	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Half Rate		TRUE
9921	10	998	T-25OS	VAQ SitSim22	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9922	10	998	AF-OS	VAQ SitSim23	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9923	10	998	P-SpOS	VAQ SitSim24	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9924	10	998	PhrsOS	VAQ SitSim25	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9925	10	998	T-25OS2	VAQ SitSim26	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
9926	10	998	AF-OS2	VAQ SitSim27	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9927	10	998	P-SpOS2	VAQ SitSim28	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE

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9928	10	998	PhrsOS 2	VAQ SitSim29	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
9929	10	998	VAQ30	VAQ SitSim30	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Full Rate		TRUE
6400 0	10	998	64000 ALL	TG64000 P25 Full Rate All Call	1	3	7	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	All-Call	P25 Full Rate		FALSE
6400 1	10	998	64001 TUL	TG64001 TG64001 P25 Full Rate TX Unconf Low Priority	1	3	3	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera I	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 2	10	998	64002 TUM	TG64002 P25 Full Rate TX Unconf Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera I	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 3	10	998	64003 TUM	TG64003 P25 Full Rate TX Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera I	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 4	10	998	64004 TUM	TG64004 P25 Full Rate TX Unconf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera I	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE

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64005	10	998	64005 TUM	TG64005 P25 Full Rate Msg Unconf Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	General	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
64006	10	998	64006 TUH	TG64006 P25 Full Rate Msg Unconf High Priority	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	General	P25 Full Rate		TRUE
64007	10	998	64007 ANN	TG64007 P25 Full Rate Announcem ent	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Full Rate		TRUE
64051	10	998	64051 TUL	TG64051 P25 Half Rate Low Priority	1	3	3	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	General	P25 Half Rate		TRUE
64052	10	998	64052 TUM	TG64052 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	General	P25 Half Rate		TRUE
64053	10	998	64053 TUM	TG64053 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	General	P25 Half Rate		TRUE
64054	10	998	64054 TUM	TG64054 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	General	P25 Half Rate		TRUE

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64055	10	998	64055 TUM	TG64055 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64056	10	998	64056 TUH	TG64056 P25 Half Rate High Priority	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64057	10	998	64057 ANN	TG64057 P25 Half Rate Announcem ent	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Half Rate		FALSE
64100	10	998	64100 ALL	TG64100 P25 Full Rate All Call	1	3	7	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	All-Call	P25 Full Rate		FALSE
64101	10	998	64101 TCL	TG64101 P25 Full Rate Conf Low Priority	1	4	3	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
64102	10	998	64102 TCM	TG64102 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
64103	10	998	64103 TCM	TG64103 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
64104	10	998	64104 TCM	TG64104 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE

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64105	10	998	64105 TCM	TG64105 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
64106	10	998	64106 TCH	TG64106 P25 Full Rate Conf High Priority	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
64107	10	998	64107 ANN	TG64107 P25 Full Rate Announcem ent	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Full Rate		TRUE
64151	10	998	64151 TCL	TG64151 P25 Half Rate Low Priority	1	4	3	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate		TRUE
64152	10	998	64152 TCM	TG64152 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate		TRUE
64153	10	998	64153 TCM	TG64153 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate		TRUE
64154	10	998	64154 TCM	TG64154 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate		TRUE
64155	10	998	64155 TCM	TG64155 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate		TRUE

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6415 6	10	998	64156 TCH	TG64156 P25 Half Rate High Priority	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate		TRUE
6415 7	10	998	64157 ANN	TG64157 P25 Half Rate Announcem ent	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Half Rate		FALSE
6420 1	10	998	64201 TUE	TG64201 P25 Full Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6420 2	10	998	64202 TUE	TG64202 P25 Full Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6420 3	10	998	64203 TCE	TG64203 P25 Full Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6420 4	10	998	64204 TCE	TG64204 P25 Full Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6425 1	10	998	64251 TUE	TG64251 P25 Half Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6425 2	10	998	64252 TUE	TG64252 P25 Half Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE

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6425 3	10	998	64253 TCE	TG64253 P25 Half Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6425 4	10	998	64254 TCE	TG64254 P25 Half Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6430 1	10	998	64301 MUM	TG64301 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 2	10	998	64302 MUM	TG64302 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 3	10	998	64303 MUM	TG64303 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 4	10	998	64304 MUM	TG64304 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 5	10	998	64305 MCM	TG64305 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE

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6430 6	10	998	64306 MCM	TG64306 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 7	10	998	64307 MCM	TG64307 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 8	10	998	64308 MCM	TG64308 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6435 1	10	998	64351 MUM	TG64351 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 2	10	998	64352 MUM	TG64352 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 3	10	998	64353 MUM	TG64353 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 4	10	998	64354 MUM	TG64354 P25 Half Rate MT	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE

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				Unconf Med Priority											
6435 5	10	998	64355 MCM	TG64355 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 6	10	998	64356 MCM	TG64356 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 7	10	998	64357 MCM	TG64357 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 8	10	998	64358 MCM	TG64358 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6440 0	10	998	64400 OSTUH	TG64400 OS AMBE TX Unconf High Priority	1	3	6	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE
6440 1	10	998	64401 OSTU M	TG64401 OS AMBE TX Unconf Med Priority	1	3	5	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE
6440 2	10	998	64402 OSTU M	TG64402 OS AMBE TX	1	3	5	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE

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				Unconf Med Priority											
6440 3	10	998	64403 OSTU M	TG64403 OS AMBE MT Unconf Med Priority	1	5	5	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE
6440 4	10	998	64404 OSTUL	TG64404 OS AMBE TX Unconf Low Priority	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE
6445 0	10	998	64450 ANA	TG64450 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	IP Consol e Interco m	Analog/ADP CM		TRUE
6445 1	10	998	64451 ANA	TG64451 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	Analog/ADP CM		TRUE
6445 2	10	998	64452 ANA	TG64452 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	Analog/ADP CM		TRUE
6445 3	10	998	64453 ANA	TG64453 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	Analog/ADP CM		TRUE
9900	10	998	PS-28- AN	VAQ SitSim01	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	Analog/ADP CM		TRUE

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9901	10	998	Tone-25	VAQ SitSim02	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs: AllSites: AllPSAPs	None	FALSE	General	P25 Full Rate		TRUE
9902	10	998	AmpFreq	VAQ SitSim03	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs: AllSites: AllPSAPs	None	FALSE	General	P25 Full Rate		TRUE
9903	10	998	Pseudop	VAQ SitSim04	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs: AllSites: AllPSAPs	None	FALSE	General	P25 Full Rate		TRUE
9904	10	998	Phrases	VAQ SitSim05	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs: AllSites: AllPSAPs	None	FALSE	General	P25 Full Rate		TRUE
9905	10	998	SiteSm1	VAQ SitSim06	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs: AllSites: AllPSAPs	None	FALSE	General	P25 Full Rate		TRUE
9906	10	998	SiteSm2	VAQ SitSim07	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs: AllSites: AllPSAPs	None	FALSE	General	P25 Full Rate		TRUE
9907	10	998	SiteSm3	VAQ SitSim08	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs: AllSites: AllPSAPs	None	FALSE	General	P25 Full Rate		TRUE
9908	10	998	SiteSm4	VAQ SitSim09	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs: AllSites: AllPSAPs	None	FALSE	General	P25 Full Rate		TRUE
9909	10	998	SiteSm5	VAQ SitSim10	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs: AllSites: AllPSAPs	None	FALSE	General	P25 Full Rate		TRUE
9910	10	998	SiteSm6	VAQ SitSim11	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs: AllSites: AllPSAPs	None	FALSE	General	P25 Full Rate		TRUE

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9911	10	998	T-25-HR	VAQ SitSim12	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
9912	10	998	AF-HR	VAQ SitSim13	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
9913	10	998	PSp-HR	VAQ SitSim14	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
9914	10	998	Phrs-HR	VAQ SitSim15	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
9915	10	998	T-25-AN	VAQ SitSim16	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	Analog/ADP CM		TRUE
9916	10	998	AF-AN	VAQ SitSim17	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	Analog/ADP CM		TRUE
9917	10	998	P-Sp-AN	VAQ SitSim18	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	Analog/ADP CM		TRUE
9918	10	998	Phrs-AN	VAQ SitSim19	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	Analog/ADP CM		TRUE
9919	10	998	VAQ20	VAQ SitSim20	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
9920	10	998	DVSITV	VAQ SitSim21	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	P25 Half Rate		TRUE

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9921	10	998	T-25OS	VAQ SitSim22	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9922	10	998	AF-OS	VAQ SitSim23	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9923	10	998	P-SpOS	VAQ SitSim24	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9924	10	998	PhrsOS	VAQ SitSim25	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9925	10	998	T- 25OS2	VAQ SitSim26	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
9926	10	998	AF- OS2	VAQ SitSim27	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE		TRUE
9927	10	998	P- SpOS2	VAQ SitSim28	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
9928	10	998	PhrsOS 2	VAQ SitSim29	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
9929	10	998	VAQ30	VAQ SitSim30	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	P25 Full Rate		TRUE
6400 0	10	998	64000 ALL	TG64000 P25 Full Rate All Call	1	3	7	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	All-Call	P25 Full Rate		FALSE

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6400 1	10	998	64001 TUL	TG64001 P25 Full Rate TX Unconf Low Priority	1	3	3	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera l	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 2	10	998	64002 TUM	TG64002 P25 Full Rate TX Unconf Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera l	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 3	10	998	64003 TUM	TG64003 P25 Full Rate TX Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera l	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 4	10	998	64004 TUM	TG64004 P25 Full Rate TX Unconf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera l	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 5	10	998	64005 TUM	TG64005 P25 Full Rate Msg Unconf Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera l	P25 Full Rate	010:R egion 10-- 111:IS SI_SIT E	TRUE
6400 6	10	998	64006 TUH	TG64006 P25 Full Rate Msg Unconf High Priority	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	64007:64007A NN	FALSE	Genera l	P25 Full Rate		TRUE

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64007	10	998	64007 ANN	TG64007 P25 Full Rate Announcem ent	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Full Rate		TRUE
64051	10	998	64051 TUL	TG64051 P25 Half Rate Low Priority	1	3	3	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64052	10	998	64052 TUM	TG64052 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64053	10	998	64053 TUM	TG64053 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64054	10	998	64054 TUM	TG64054 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64055	10	998	64055 TUM	TG64055 P25 Half Rate Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64056	10	998	64056 TUH	TG64056 P25 Half Rate High Priority	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	64057:64057A NN	FALSE	Genera l	P25 Half Rate		TRUE
64057	10	998	64057 ANN	TG64057 P25 Half Rate	1	3	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Half Rate		FALSE

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				Announcem ent											
6410 0	10	998	64100 ALL	TG64100 P25 Full Rate All Call	1	3	7	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	All-Call	P25 Full Rate		FALSE
6410 1	10	998	64101 TCL	TG64101 P25 Full Rate Conf Low Priority	1	4	3	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
6410 2	10	998	64102 TCM	TG64102 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
6410 3	10	998	64103 TCM	TG64103 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
6410 4	10	998	64104 TCM	TG64104 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
6410 5	10	998	64105 TCM	TG64105 P25 Full Rate Conf Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
6410 6	10	998	64106 TCH	TG64106 P25 Full Rate Conf High Priority	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	64107:64107A NN	FALSE	Genera l	P25 Full Rate		TRUE
6410 7	10	998	64107 ANN	TG64107 P25 Full Rate	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Full Rate		TRUE

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				Announcem ent												
6415 1	10	998	64151 TCL	TG64151 P25 Half Rate Low Priority	1	4	3	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate			TRUE
6415 2	10	998	64152 TCM	TG64152 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate			TRUE
6415 3	10	998	64153 TCM	TG64153 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate			TRUE
6415 4	10	998	64154 TCM	TG64154 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate			TRUE
6415 5	10	998	64155 TCM	TG64155 P25 Half Rate Med Priority	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate			TRUE
6415 6	10	998	64156 TCH	TG64156 P25 Half Rate High Priority	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	64157:64157A NN	FALSE	Genera l	P25 Half Rate			TRUE
6415 7	10	998	64157 ANN	TG64157 P25 Half Rate Announcem ent	1	4	6	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Annou nceme nt	P25 Half Rate			FALSE

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6420 1	10	998	64201 TUE	TG64201 P25 Full Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6420 2	10	998	64202 TUE	TG64202 P25 Full Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6420 3	10	998	64203 TCE	TG64203 P25 Full Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6420 4	10	998	64204 TCE	TG64204 P25 Full Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6425 1	10	998	64251 TUE	TG64251 P25 Half Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6425 2	10	998	64252 TUE	TG64252 P25 Half Rate Unconf Encrypted	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6425 3	10	998	64253 TCE	TG64253 P25 Half Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6425 4	10	998	64254 TCE	TG64254 P25 Half Rate Conf Encrypted	1	4	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE

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6430 1	10	998	64301 MUM	TG64301 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 2	10	998	64302 MUM	TG64302 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 3	10	998	64303 MUM	TG64303 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 4	10	998	64304 MUM	TG64304 P25 Full Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 5	10	998	64305 MCM	TG64305 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 6	10	998	64306 MCM	TG64306 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE
6430 7	10	998	64307 MCM	TG64307 P25 Full Rate MT	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate		TRUE

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				Conf Med Priority												
6430 8	10	998	64308 MCM	TG64308 P25 Full Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Full Rate			TRUE
6435 1	10	998	64351 MUM	TG64351 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate			TRUE
6435 2	10	998	64352 MUM	TG64352 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate			TRUE
6435 3	10	998	64353 MUM	TG64353 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate			TRUE
6435 4	10	998	64354 MUM	TG64354 P25 Half Rate MT Unconf Med Priority	1	5	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate			TRUE
6435 5	10	998	64355 MCM	TG64355 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate			TRUE

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6435 6	10	998	64356 MCM	TG64356 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 7	10	998	64357 MCM	TG64357 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6435 8	10	998	64358 MCM	TG64358 P25 Half Rate MT Conf Med Priority	1	6	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera l	P25 Half Rate		TRUE
6440 0	10	998	64400 OSTUH	TG64400 OS AMBE TX Unconf High Priority	1	3	6	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE
6440 1	10	998	64401 OSTU M	TG64401 OS AMBE TX Unconf Med Priority	1	3	5	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE
6440 2	10	998	64402 OSTU M	TG64402 OS AMBE TX Unconf Med Priority	1	3	5	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE
6440 3	10	998	64403 OSTU M	TG64403 OS AMBE MT Unconf Med Priority	1	5	5	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera l	OpenSky 2400 AMBE+2		TRUE

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6440 4	10	998	64404 OSTUL	TG64404 OS AMBE TX Unconf Low Priority	1	3	3	AllRegs: AllSites: AllPSAPs	AllRegs:Al ISites:AllP SAPs	None	FALSE	Genera I	OpenSky 2400 AMBE+2		TRUE
6445 0	10	998	64450 ANA	TG64450 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	IP Consol e Interco m	Analog/ADP CM		TRUE
6445 1	10	998	64451 ANA	TG64451 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE
6445 2	10	998	64452 ANA	TG64452 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE
6445 3	10	998	64453 ANA	TG64453 Analog ADPCM Med Priority	1	3	5	P25Sites _PSAPs	P25Sites_ PSAPs	None	FALSE	Genera I	Analog/ADP CM		TRUE

25.4 PSAPs

Region Id	Agency Id	PSAP Id	Device Id	Name	Description	Max Talk Paths	Service Type
10	998	9101	1	Console9101	Console9101	7	IP Console
10	998	9102	1	Console9102	Console9102	7	IP Console
10	998	7001	1	VTI7001	VTI7001	16	VTI
10	998	7002	1	VTI7002	VTI7002	16	VTI
10	998	9103	1	Console9103	Console9103	7	IP Console
10	998	9104	1	Console9104	Console9104	7	IP Console
10	998	9105	1	Console9105	Console9105	7	IP Console
10	998	9106	1	Console9106	Console9106	7	IP Console
10	998	9107	1	Console9107	Console9107	7	IP Console
10	998	9108	1	Console9108	Console9108	7	IP Console
10	998	9109	1	Console9109	Console9109	7	IP Console
10	998	9110	1	Console9110	Console9110	7	IP Console

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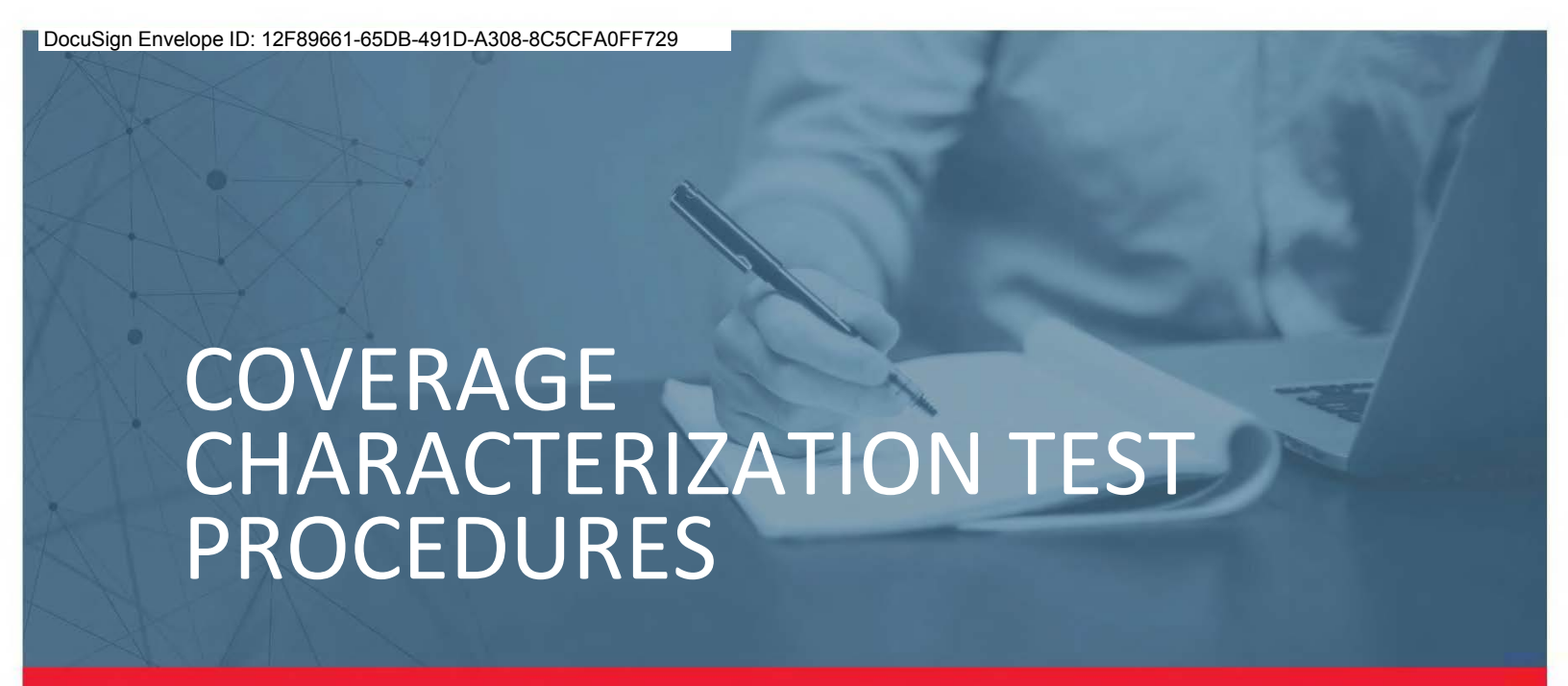
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Region Id	Agency Id	P25 IP Address	OpenSky IP Address	Description	Electronic Serial Number	Protocol Mask	Status	Sub Type	Assigned End User	Algorithm Support
10	998		10.128.111.19	OS_Radio_19	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.20	OS_Radio_20	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.2	OS_Radio_02	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.3	OS_Radio_03	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.4	OS_Radio_04	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.5	OS_Radio_05	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.6	OS_Radio_06	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.7	OS_Radio_07	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.8	OS_Radio_08	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.9	OS_Radio_09	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.10	OS_Radio_10	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.11	OS_Radio_11	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.12	OS_Radio_12	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.13	OS_Radio_13	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.14	OS_Radio_14	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.15	OS_Radio_15	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.16	OS_Radio_16	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.1	OS_Radio_1	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.17	OS_Radio_17	0000000000000000	OpenSky	Enabled Unit			
10	998		10.128.111.18	OS_Radio_18	0000000000000000	OpenSky	Enabled Unit			
10	998	10.128.79.9		Radio9	0000000109980009	P25	Enabled Unit	Harris XG-75 Portable	010:998:0009	AES
10	998	10.128.79.10		Radio10	0000000109980010	P25	Enabled Unit	Harris XG-75 Portable	010:998:0010	AES
10	998	10.128.79.8		Radio8	0000000109980008	P25	Enabled Unit	Harris XG-75 Portable	010:998:0008	AES
10	998	10.128.53.1		Console9101	0000000109989101	P25	Enabled Unit	Maestro Console	010:998:9101	AES
10	998	10.128.53.2		Console 9102	0000000109989102	P25	Enabled Unit	Maestro Console	010:998:9102	Both
10	998	10.128.79.1		Radio1	0000000109980001	P25	Enabled Unit	Harris P5400	010:998:0001	AES

Nevada Shared Radio Replacement Project
Nevada Department of Transportation

Exhibit 8a – Statement of Work
Staging Acceptance Test Procedures

10	998	10.128.79.2	Radio2	0000000109980002	P25	Enabled Unit	Harris P5400	010:998:0002	AES
10	998	10.128.79.3	Radio3	0000000109980003	P25	Enabled Unit	Harris XG-75 Portable	010:998:0003	AES
10	998	10.128.79.4	Radio4	0000000109980004	P25	Enabled Unit	Harris XG-75 Portable	010:998:0004	AES
10	998	10.128.79.5	Radio5	0000000109980005	P25	Enabled Unit	Harris XG-75 Portable	010:998:0005	AES
10	998	10.128.79.6	Radio6	0000000109980006	P25	Enabled Unit	Harris XG-75 Portable	010:998:0006	AES
10	998	10.128.79.7	Radio7	0000000109980007	P25	Enabled Unit	Harris XG-75 Portable	010:998:0007	AES
10	998	10.128.79.11	Radio11	0000000109980011	P25	Enabled Unit	Harris UNITY XG-100P	010:998:0011	AES
10	998	10.128.79.12	Radio12	0000000109980012	P25	Enabled Unit	Harris UNITY XG-100P	010:998:0012	AES
10	998	10.128.1.161	s0u1xcda	0000000000000000	P25	Enabled Unit		010:998:9001	AES
10	998	10.128.1.162	s0u1xcdb	0000000000000000	P25	Enabled Unit		010:998:9005	AES



COVERAGE CHARACTERIZATION TEST PROCEDURES

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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: Nevada Shared Radio System (NSRS) - NDOT

Prepared By: Jerome Daniszewski

Total Test Pages: **24**

DOCUMENT USAGE

Although specific tests are not included relating to electrical measurements or timing parameters of equipment, Harris measures and records these tests and levels as part of our standard installation practices. These parameters include but are not limited to:

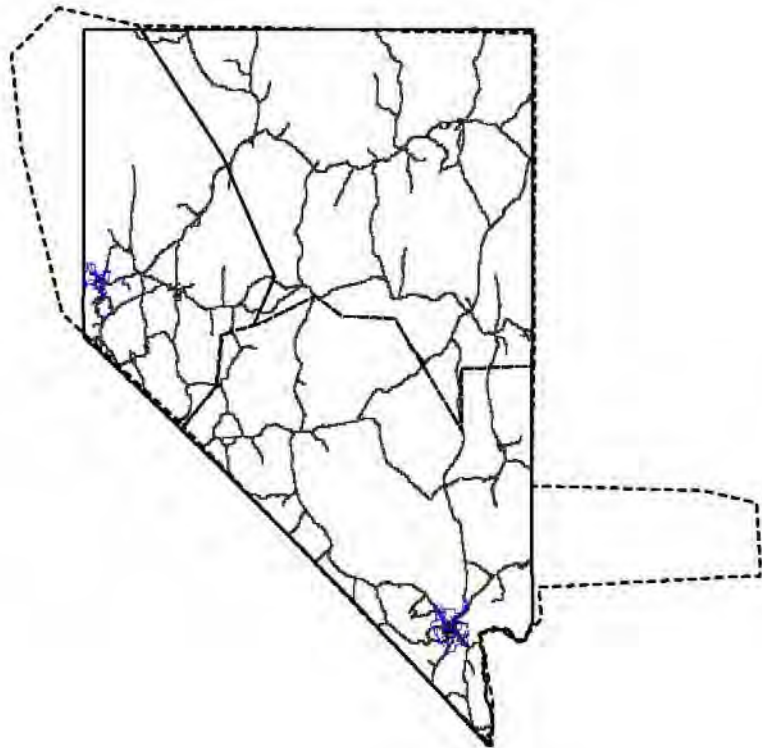
- Transmit Frequency and Deviation
- Output and Reflected Power
- Receiver Sensitivity
- Receiver Multicoupler Gain (if applicable)
- Receiver Preamplifier Gain (if applicable)
- Time Domain Reflectometry of Transmission Line
- Combiner Loss (if applicable)
- Audio line out
- Audio line in

We will provide system parameters and measurements to the NSRS Members as part of the final documentation package.

1. SERVICE AREA DEFINITIONS AND GRID STRUCTURE

TSB-88-D defines a service area as a boundary of the geographic area of concern for a user, and states that Validated CPC Service Area Reliability shall be determined by the percentage of test locations in the bounded service area that meet or exceed the specified CPC. We are proposing a Bounded Area design for NSRS as defined in TSB-88-D wherein coverage predictions are made out to the boundary of the defined service area and coverage is verified throughout the service area out to the boundary through the performance of a Validated CPC Service Area Reliability test. The service area is shown in Figure 1 and consists of the Nevada State Border and the state highways as defined by Attachment 4 of the NSRS Project RFP, the entirety of the three regions planned for the buildout, and the Urban Areas as defined by NSRS.

Figure 1 – Nevada Shared Radio System Service Areas



TSB-88-D recommends coverage verification measurements at a statistically significant number of random test locations, uniformly distributed throughout the service area. We divide the service area by a test grid pattern using TSB-88-D Estimate of Proportions analysis to determine the number and size of the test tiles providing both statistically significant

measurement results and a high confidence that the results are a true indication of the installed radio system coverage.

Table 1 provides our recommended tile sizes to obtain a uniform distribution of tiles throughout the customer defined service areas.

Table 1 - Coverage Service Area, Tile Size, and Tile Count

Service Area Definition	Tile Size (miles)	Accessible Tile Count
NSRS Boundary, consisting of	1 x 1 mile	~ 80,900
Region 1		~ 30,000
Region 2		~ 19,650
Region 3		~ 31,250
State Highways	1 x 1 mile	~ 5600
10% of tiles within cities	$\frac{1}{4} \times \frac{1}{4}$ mile	$\sim 1000 \times 0.1 = 100$

The grid pattern overlays onto street maps and we determine a drive test route that will pass through all accessible tiles (i.e. have roads) within the defined service area boundaries, with an approximately equal distance traveled in each tile. Accessible tiles are based on access to the tile from a road included in the US Census Bureau TIGER roads database. In order to include as many test tiles as possible, the following roads have been deemed accessible:

- Primary Roads
- Secondary Roads
- Local Roads (Streets)
- Ramps
- Service Drives
- Vehicular Trails
- Private Service Roads

The drive route should pass through each tile 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, we disable the TYPHON test unit to prevent collection of data in these areas.

Measurements will be made in all accessible tiles within the defined service area boundaries. We do not use test measurements along the drive route that are outside of each service area boundary. Any areas or accessible tiles within the service area boundary that NSRS decides not to test will have coverage scored as a PASS in the reliability calculations.

We will discard inaccessible tiles (i.e. have no roads) from the reliability calculations with the acceptance criteria adjusted by treating the inaccessible tiles as exclusion zones.

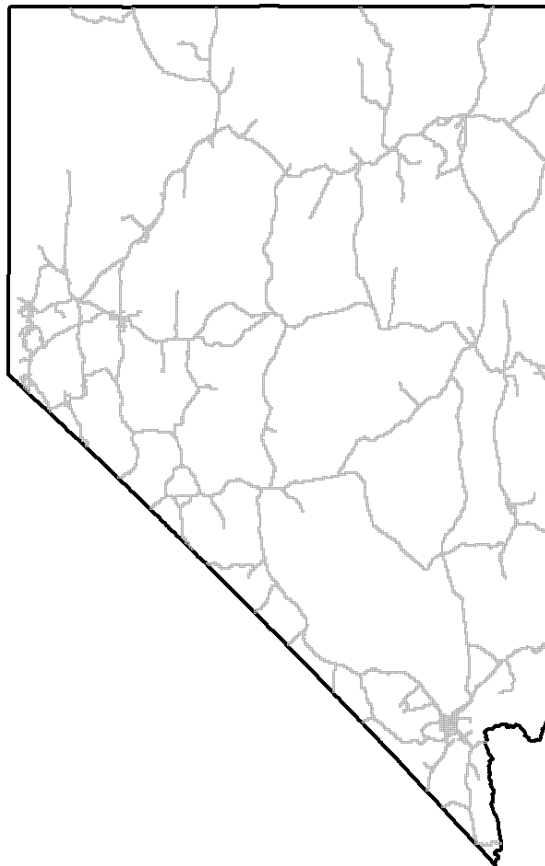
The statewide accessible grid structure is shown in **Figure 2 - Nevada Accessible Grid Structure**. **Figure 2** also includes the 3 regional boundaries used to plan the build-out and test of the system.

Figure 2 - NSRS Accessible Grid Structure



The State highway grid structure is shown in Figure 3 – State Highway Grid Structure.

Figure 3 – State Highway Grid Structure



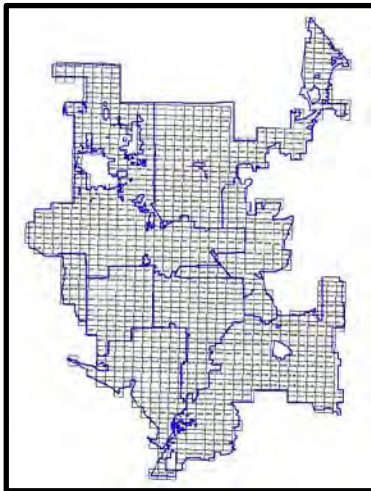
The following are the urban areas as defined in Section 1.4.1, Paragraph F:

- Las Vegas Metropolitan Area
- Reno/Sparks City Limits
- Elko City Limits

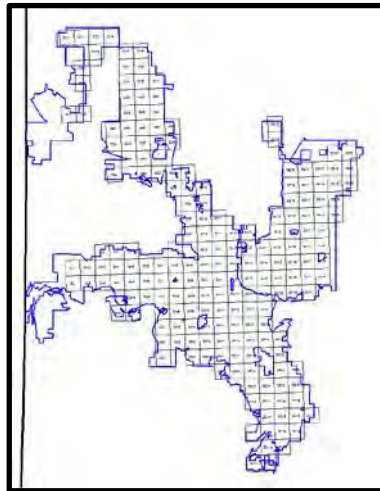
The Urban Areas grid structure is shown in Figure 4 – Urban Areas Grid Structure.

Figure 4 – Urban Areas Grid Structures

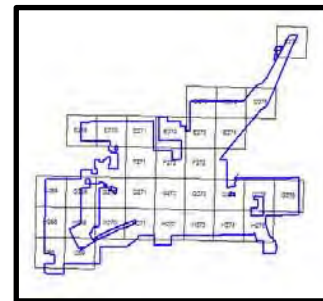
Las Vegas Metropolitan Area



Reno/Sparks City Limits



Elko City Limits



Ten percent of the urban area tiles will be characterized for DAQ Voice Quality per the RFP. Measurements will be made in all accessible grids within NSRS's defined service area boundaries. Test measurements along the drive route that are outside of NSRS's defined service area boundaries will not be counted. Any areas or accessible grids within the service area boundary that the NSRS Members decide not to test will have coverage scored as a PASS in the reliability calculations.

Harris Corporation reserves the right to update the maps and coverage guarantees after system implementation, through the change order process, in the event that radio sites or design parameters changed during the system build-out.

Inaccessible grid (i.e. have no roads) will be discarded from the reliability calculations with the % acceptance criteria adjusted by treating the inaccessible grids as exclusion zones.

2. TALK-OUT BIT ERROR RATE (BER) TEST

This Acceptance Test Procedure (ATP) is used by Harris for RF coverage verification based on Bit Error Rate (BER) measurements. This procedure provides an accurate, statistically valid, repeatable, objective, and cost-effective method to verify all the Members' coverage requirements are met.

This ATP is in conformance with the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88.3-D titled "Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification". TSB-88-D 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. TSB-88-D also defines a service area as a boundary of the geographic area of concern for a user, and states that Validated CPC Service Area Reliability shall be determined by the percentage of test locations in the bounded service area that meet or exceed the specified CPC. Harris has proposed a Bounded Area design for the Nevada Shared Radio System as defined in TSB-88-D wherein coverage predictions are made out to the boundary of the defined service area and coverage is verified throughout the service area out to the boundary through the performance of a Validated CPC Service Area Reliability test.

RF coverage using this ATP is verified by measuring talk-out (base to portable) BER throughout NSRS's defined bounded service areas, and calculating the percentage of measurements that are equal or better than a BER of 2.4% required to support NSRS's specified CPC of DAQ 3.4.

2.1 Setup

Harris' TYPHON wireless testing system is utilized to measure BER. TYPHON consists of Harris portable radios, 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, roof mounted antennas, and variable attenuators for use when portable coverage is being tested.

The TYPHON equipment will be mounted inside the test vehicle (an SUV/van for multiple BER measurements) with an external antenna(s) mounted on the outside and centrally located on the vehicle's roof, with no other equipment installed on the roof. For portable outdoor coverage verification, the variable attenuator will be set to the appropriate level to account for portable body losses. Attenuator values are shown in Table 2.

Table 2 - Coverage Service Area, Body/Building Loss, and Attenuator Values

Service Area Definition	Description	Body Loss (dB)	Attenuator Value (dB)*
All Service Areas	Portable Outdoor	7 dB	7

* The actual attenuator value, including Body Loss, will be determined prior to testing once the actual test vehicle and test set up configurations are finalized

Prior to taking BER measurements, 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 audits.

2.2 Data Measurements

For each of the three regions, each radio system base station site defined as part of that region continuously transmits a P25 test pattern data sequence on a working channel, and measurements of this signal are collected every 3 seconds by the TYPHON equipment mounted inside the test vehicle as it is driven along the defined test drive route. The software in the TYPHON laptop computer will automatically measure and record the test data and determine the BER for each 3-second measurement data record along the test drive route.

2.3 Data Analysis and Acceptance

As defined by Section 5 of TSB88-3, latest revision, we post-process all mean measurement data records collected from the drive test within the defined service area boundary, with data records recorded every 0.1-mile (typically) used in the final analysis.

Measurements that have a BER equal to or less than 2.4% are recorded as PASS; the remainder are recorded as FAIL. This acceptance criteria is for P25 Phase 2 operation. P25 Phase 1 operation will meet or exceed the system's Phase 2 coverage.

Harris will then calculate the ratio of PASS points to total number of points collected for the P25 system. The installed radio system coverage is deemed to meet the coverage requirements if, for each of the three regional bounded service areas in Table 3, the ratio of the number of PASS points to the total number of points in the service area equals or exceeds the minimum % Validated CPC Service Area Reliability acceptance criteria that is shown. If all three of the regions pass, the the NSRS Boundary passes.

Table 3 - Coverage Service Area, Service, and Acceptance Criteria

Service Area Definition	Description	% Validated CPC Service Area Reliability Acceptance Criteria
NSRS boundary, consisting of	Portable Outdoor	69.5%
Region 1	Portable Outdoor	65.0%
Region 2	Portable Outdoor	67.5%
Region 3	Portable Outdoor	66.5%
Nevada State Highways as customer defined	Portable Outdoor	90.1%

2.4 Results Presentation

The data records are plotted on a map showing the test grids, the areas tested and the test results. Different pen colors are used to show ranges of measured BER. A test report is also provided that summarizes the test results.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

3. TALK-IN BIT ERROR RATE (BER) TEST

This Coverage Acceptance Test Procedure (CATP) is used by Harris for RF coverage verification based on signal strength measurements. This procedure provides an accurate, statistically valid, repeatable, objective, and cost-effective method to verify that all of the NSRS coverage requirements are met.

This CATP is in conformance with the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88.3-D titled “Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification”. TSB-88-D 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.

TSB-88.3-D also defines a service area as a boundary of the geographic area of concern for a user, and states that Validated CPC Service Area Reliability shall be determined by the percentage of test locations in the bounded service area that meet or exceed the specified CPC. Harris has proposed a Bounded Area design for the Nevada Shared Radio System as defined in TSB-88.3-D wherein coverage predictions are made out to the boundary of the defined service area and coverage is verified throughout the service area out to the boundary through the performance of a Validated CPC Service Area Reliability test.

RF coverage using this CATP is verified by measuring talk-in (portable to base) BER at all sites from a test unit located throughout NSRS’ defined bounded service area, and calculating the percentage of measurements that equal or exceed a specified BER from a portable radio required to support NSRS’ specified CPC of DAQ 3.4.

3.1 Setup

Harris’ TYPHON wireless testing system is utilized to measure BER. TYPHON connects to a base station at each site in the system and includes a GPS receiver to provide accurate time information for each measured data point and a computer with an internal clock that coordinates and records the test data.

Multiple TYPHON units are required. One TYPHON unit is mounted inside the test vehicle (standard passenger vehicle) with an external antenna mounted on the vehicle's roof. A portable radio is also installed in the test vehicle with its external antenna also mounted on the vehicle's roof. No other equipment is installed on the roof of the test vehicle. One TYPHON unit will be located adjacent to the base station receiver at each site. TYPHON will be connected to the BASE station of the channel under test. For portable outdoor coverage verification, the variable attenuator will be set to the appropriate level to account for portable body losses. Variable attenuator values are shown in Table 2 in Section 2.1.

Prior to taking BER measurements, each site must be audited to verify that the radio system is operating properly. The audits will verify the antenna configuration, the antenna installation, and the frequency of the test transmitter. Harris shall provide all test equipment necessary to perform the site audits.

Table 4 - Coverage Service Area, Body/Building Loss, and Attenuator Values

Service Area Definition	Description	Body Loss (dB)	Attenuator Value (dB)*
All Service Areas	Portable Outdoor	7 dB	7

* The actual Attenuator value, including Body Loss, will be determined prior to testing once the actual test vehicle and test set up configurations are finalized.

3.2 Data Measurements

With the test vehicle in motion¹ along the drive route, the portable in the test vehicle transmits the data sequences on a working channel, and measurements of this signal are collected with the TYPHON equipment at each site. 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.

¹ Vehicle velocity must be between 30-60 miles per hour dependent on the grid size to provide the maximum number of test sequences along the drive route and ensure a minimum of one test sequence per grid area.

The GPS time of the start and stop (ON and OFF) for each transmission, as well as the vehicle position for each transmission, will be recorded in the test vehicle TYPHON.log file. These start and stop times will identify the corresponding portions of the base station receive TYPHON.log file containing the valid data to be used in the analysis.

3.3 Data Analysis and Acceptance

As defined by Section 5 of TSB88-3, latest revision, we post-process all mean measurement data records collected from the drive test within the defined service area boundary, with data records recorded every 0.1-mile (typically) used in the final analysis.

Measurements that have a BER equal to or better than 2.6% are recorded as PASS; the remainder are recorded as FAIL. This acceptance criteria is for P25 Phase 2 operation. P25 Phase 1 operation will meet or exceed the system's Phase 2 coverage.

Harris will then calculate the ratio of PASS points to total number of points collected for the P25 system. The installed radio system coverage is deemed to meet the coverage requirements if, for each bounded service area in Table 5, the ratio of the number of PASS points to the total number of points in the service area equals or exceeds the minimum % Validated CPC Service Area Reliability acceptance criteria that is shown. If all three of the regions pass, the the NSRS Boundary passes.

Table 5 - Coverage Service Area, Service, and Acceptance Criteria

Service Area Definition	Description	% Validated CPC Service Area Reliability Acceptance Criteria
NSRS boundary, consisting of	Portable Outdoor	69.5%
Region 1	Portable Outdoor	65.0%
Region 2	Portable Outdoor	67.5%
Region 3	Portable Outdoor	66.5%
Nevada State Highways as customer defined	Portable Outdoor	90.0%

3.4 Results Presentation

The data records are plotted on a map showing the test grids, the areas tested and the test results. Different pen colors are used to show ranges of measured mean signal levels. A test report is also provided that summarizes the test results.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	

4. VOICE QUALITY SAMPLE TEST, PORTABLE

This Characterization Test Procedure (CTP) is used by Harris for verification of portable coverage based on the evaluation of Digital voice quality.

This CTP is in conformance the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88.3-D, titled “Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification”. TSB-88-D 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 6.

Table 6 - 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-D also defines a service area as a boundary of the geographic area of concern for a user, and states that Validated CPC Service Area Reliability shall be determined by the percentage of test locations in the bounded service area that meet or exceed the specified CPC. Harris has proposed a Bounded Area design for the NSRS as defined in TSB-88-D wherein coverage predictions are made out to the boundary of the defined service area and coverage is

verified throughout the service area out to the boundary through the performance of a Validated CPC Service Area Reliability test.

Portable coverage using this CATP is characterized by evaluating the voice quality of Digital voice test calls to/from a portable radio at test locations in a random sample of 10% of NSRS' defined urban service area. At each test location, a test 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 test call at each location is graded using the DAQ definitions in Table 6.

4.1 Test Equipment and Preparation

Portable radios as proposed and from NSRS' original order will be used for the voice quality test.

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.

4.2 Characterizing of Test Locations

The Digital voice quality test requires two representatives from each entity (Harris and NSRS). One representative from Harris and one from NSRS will be the Field team, which will travel the drive route, perform the inbound calls, and grade the outbound calls. The second representatives from Harris and NSRS will be the Base team, which will remain at the dispatch location, grade the inbound calls, and perform the outbound calls.

To reduce the time required for this coverage test, a single Base team can support multiple Field teams, and multiple Field and Base teams may be used.

The Digital voice test calls within each grid consist of a short message representative of typical public safety call duration and include 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 vehicle speed, the test vehicle 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 6 DAQ definitions and records the test score for each test location using the template in Table 7. 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 NSRS’ 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.

4.3 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.

4.4 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 7 inbound or outbound grading template used by each grader

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

Table 7 –Portable Coverage

Voice Quality Test Grading Template

Coverage Test Data for: Nevada Shared Radio System

Date: _____

Requirement: DAQ 3.4

Building Loss Attenuator Value: N/A dB

Portable Attenuator Value: _____ dB

Check the link used: ☐ Digital Voice☐ Base to Portable (outbound)☐ Portable to Base (inbound)

Harris Evaluator:	NSRS Evaluator:
Organization:	Organization:
Test Radio:	Test Frequency:

Service Area Test Grid Number	Harris Grade	NSRS Grade	Remarks

(One row for each test grid/location)

5. PORTABLE INDOOR VOICE QUALITY TEST

This Acceptance Test Procedure (ATP) verifies portable indoor coverage in mandatory buildings based on the evaluation of Digital voice quality.

This ATP is in conformance the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88-D, titled “Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification”. TSB-88-D 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 11.

Table 8 - 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-D also defines a service area as a boundary of the geographic area of concern for a user, and states that Validated CPC Service Area Reliability shall be determined by the percentage of test locations in the bounded service area that meet or exceed the specified CPC.

RF coverage using this ATP is verified by evaluating the voice quality of digital voice test calls to/from a portable radio in each of the mandatory buildings (bounded service areas) specified by NSRS. In each building, test calls are 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 test calls in each building are graded using the DAQ definitions in Table 11. Scores that equal or exceed NSRS’s specified CPC of DAQ 3.4 are considered acceptable (PASS), and those lower than DAQ 3.4 are not acceptable (FAIL).

5.1 Test Equipment and Preparation

Portable radios as proposed and from NSRS’s original order will be used for the voice quality test. Prior to performing the tests, Harris will bench test and align all portable radios to be used during coverage testing. The portable radio will be worn on the belt and equipped with a shoulder-mounted speaker/microphone.

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.

5.2 Test Planning

TSB-88.3-D recommends coverage verification at a statistically significant number of random test locations, uniformly distributed throughout the service area. To accomplish this, each mandatory building (bounded service area) is divided into a grid pattern as an aid to test planning.

An equal number of points on each floor, excluding basements, of each mandatory building will be tested. Each floor will be divided into 20-ft by 20-ft grids to obtain a uniform distribution of 100-200 grids in each mandatory building. A minimum of 20 test grids is required for small, single floor mandatory buildings. The voice quality test is conducted using portable radios near the center of each building test grid.

Test grids will exclude elevators. Harris and NSRS will mutually agree and identify other areas of each mandatory building that will be excluded from testing such as locations where RF signals are not permitted due to potential interference with sensitive electronics equipment, and areas where access is denied. Test grids that are within excluded areas of a building will not be tested and will be disregarded in the data analysis.

5.3 Grading of Building Test Locations

The digital voice quality test requires two representatives from each entity (Harris and NSRS). One representative from Harris and one from NSRS will be the Field team, which will travel the drive route, perform the inbound calls, and grade the outbound calls. The second representatives from Harris and NSRS will be the Base team, which will remain at the dispatch location, grade the inbound calls, and perform the outbound calls.

To reduce the time required for this coverage test, a single Base team can support multiple Field teams, and multiple Field and Base teams may be used.

At each agreed upon test location within a building, the portable user to dispatcher (inbound) and the dispatcher to portable user (outbound) test calls are performed. Per TSB-88-D, if the message is not understood on the first attempt the portable user is allowed to move 3-feet in any direction and the test can be repeated one time. The voice quality test is then repeated at each test grid within the building.

The digital voice test calls at each location within a building consist of a short message representative of typical public safety call duration and include the identification of the building and location being tested. The suggested inbound test message is "Mobile Team to Dispatcher, Testing Grid Number XXX", followed by [Random Test Language], Grid Number XXX, how do you copy Grid Number XXX?" The dispatcher will then make a similar outbound test call. The suggested outbound test message is "Dispatcher to Mobile Team, Testing Grid Number XXX", followed by [repeated Random Test Language], Grid Number XXX, how do you copy Grid Number XXX?" Within each grid, if the message is not understood on the first attempt, it can be repeated one time. If a repeat (2nd PTT) test call performed within the grid is scored as a PASS, it will be annotated on the Table 13 grading template as a PASS-RETRY. If

the second attempt to communicate fails (no access or audio quality below the required DAQ level), that test grid will be remain scored as a FAIL.

The [Random Test Language] to be used shall be mutually agreed upon between NSRS and Harris prior to testing. NSRS shall provide a list of potential test messages representing commonly used dispatch language, void of acronyms, and not to exceed 10 seconds in length, for evaluation. From the potential list of messages, one hundred shall be selected as the pseudo-random messages to be used for testing purposes. The phrase to be used during each test will be determined by the speaker. The final list will be determined prior to testing.

Each of the four representatives grades each test call using the DAQ definitions and records the test score for each test location using the template. 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 NSRS'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.

NSRS reserves the right to begin testing anywhere within the building, i.e. the four corners (N, S, E, W) and the center of the building. NSRS also reserves the right to decide not to test all planned test grid locations within a building as well as the right to PASS a building in which NSRS has determined sufficient testing has been performed to verify coverage is acceptable within the building even if testing in all grid locations has not been completed. Any such grid locations within a mandatory building that are not tested will be recorded as a PASS in the template and the building will be recorded as a PASS on the template and in the final test report.

5.4 Individual Mandatory Building Test Analysis

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 location within a building is determined to PASS if both the inbound and outbound calls at that location have been scored as a PASS.

The building being tested is deemed to meet the digital voice quality coverage requirement if the percentage of test grid locations that receive a PASS score equals or exceeds NSRS's specified acceptance criteria, shown in Table 9.

All mandatory buildings will be tested. If Harris is denied access to a mandatory building to perform coverage acceptance testing, then that building will be scored as a PASS. NSRS may elect not to test all mandatory buildings, and any buildings thus not tested for convenience will likewise be recorded as a PASS.

Table 9 - Coverage Service Area and Acceptance Criteria

Mandatory or Critical Required Building	Maximum Building Loss (dB)	% Validated CPC Service Area Reliability Acceptance Criteria
FedEx Mustang Rd	18	95%
VA Hospital	18	95%
Red Rock FS	18	95%
Renown Medical Center	18	95%
Nugget Casino	18	95%
Mendive Middle School	18	95%
Sparks PD	18	95%
Ed Van Gorder School	18	95%
Stewart Facility	18	95%
Belrose Office Building	18	95%
Rawson-Neal Hospital	18	95%
Grant Sawyer	18	95%
AG Office	18	95%
Welfare & Support Services	18	95%
Department of Taxation	18	95%
Richard Bryan Building	18	95%
DHHS	18	95%
DMV	18	95%
NDOT HQ	18	95%
NDOT Hot Springs Annex	18	95%
State Capital building	18	95%
Legislature Building	18	95%
Ohm Service Center	18	95%
GOB	18	95%
Beltway Service Center	18	95%
Ryan Service Center	18	95%
Pearson Building	18	95%

5.5 Test Acceptance

Each mandatory building is evaluated separately. If the building's Voice Quality test meets the specified % Validated CPC Service Area Reliability Acceptance Criteria, the building passes.

If a mandatory building does not meet the coverage acceptance requirements, then additional tests will be made to determine if the loss characteristics of the failed test grid locations within the building exceed the maximum building loss specified below. If the measured building loss at a failed test grid is less than or equal to the County's specified maximum building loss, then the test grid will remain recorded as a FAIL. If the measured building loss for the test grid is greater than the County's specified maximum building loss, then that test grid will be discarded. The PASS/FAIL determination for the building is then recomputed discarding all test results that have a measured building loss greater than the specified building loss.

5.6 Building Loss Measurement Procedure

If a building fails the BER test, Harris will measure and compare the signal strength inside the building to an on-street signal strength measurement, using Harris' TYPHON or Storm wireless testing system. Measurements will be taken both immediately around the building as well as inside the building in a small area centered on each failed test location. The building loss at a test location is defined as the difference between the mean of the outside measurements minus the 95th percentile of the inside measurements at the failed test location. The 95th percentile is the signal level that is exceeded by 95% of the measurements.

5.7 Results Presentation

A test report is provided that includes:

- the name and location of each mandatory building
- the number and location of individual test grids within each building
- the identification of excluded areas/grids within each building
- a copy of the **Table 10** inbound or outbound grading template used by each grader for each building
- the % PASS/FAIL score for each building
- a statement of overall test acceptance or failure of coverage for NSRS.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: _____		

Table 10 –Portable Indoor Coverage Voice Quality Test Grading Template

Coverage Test Data for: Nevada Shared Radio System

Date: _____

Requirement: DAQ 3.4

Building Loss Attenuator Value: N/A dB

Portable Attenuator Value: _____ dB

Check the link used: ☐ Digital Voice☐ Base to Portable (outbound)☐ Portable to Base (inbound)

Harris Evaluator:	NSRS Evaluator:
Organization:	Organization:
Test Radio:	Test Frequency:

Service Area Test Grid Number	Harris Grade	NSRS Grade	Remarks

(One row for each test grid/location)

Project Implementation Plan

Harris provides radio communication systems that support critical public safety operations, fulfilling the specific needs of its customers. The flowchart below shows the steps necessary to deliver a radio system that will replace the Nevada Department of Transportation's (NDOT) legacy system.



The implementation of such a large system will be completed in a phased, or regional approach. Each region will be handled as its own system, but with maintained focus on the interdependencies with surrounding regions and/or systems. A design period occurs first for the entire statewide system. Then the equipment for NDOT will be staged, installed, tested and cutover, region by region until the entire state-wide system is complete. The regions overlap to optimize the schedule and are staggered in time to optimize resources.

Design Reviews

Kick-Off Meeting and Preliminary Design Review

The project manager initiates project implementation with a Project Kick-Off Meeting, followed by a Preliminary Design Review. The Harris Team and NDOT will mutually agree on the timing of these meetings. The objectives of the meeting include:

- Introduction of all project participants
- Review of the roles of the project participants
- Review of the overall project scope, objectives, and deliverables
- Review of the current site status
- Review of NDOT owned site documentation
- Review status of NDOT site acquisition efforts, where applicable
- Review of the preliminary schedule

- Schedule detailed site surveys with NDOT, and/or site owner designated representatives
- Following site surveys, the project schedule will be updated to reflect actual site conditions. The updated schedule will also account for site accessibility conditions during the winter months
- The project schedule will also reflect updated billing milestones

Establish the communication methods, main POC's from each party

After the Kick-Off meeting, the Team will conduct detailed site surveys with NDOT. Harris will present the results of the detailed site surveys at the Preliminary Design Review Meeting.

Detailed Design Review (DDR)

The Harris Team uses the information obtained during the Kick-Off Meeting, Preliminary Design Review, site surveys, and regulatory and engineering documentation to deliver the final system design at the DDR. This will be defined on a per region basis.

The Harris Team presents rack elevation drawings, antennas placement drawings, antenna system drawings, documentation and all acceptance test plans during the DDR with NDOT. SOW Exhibit 3 contains the Responsibility Matrix for the DDR phase of the project.

Manufacturing and Staging

Immediately following NDOT's approval of the final design, the Harris Team procures material and schedules System Integration and Test using its Material Requirements Planning (MRP) system for the first region. Harris' Eagle Focus Factory assembles the RF equipment, integrates it with the key supplier items, and then tests each rack of equipment.

After assembly and test, each RF site rack will go through configuration, which consists of loading customer specific parameters and personalities into each applicable piece of equipment. The Network Switching Center (NSC) will undergo an imaging process. After imaging is complete, a Staging technician will perform a build and validation check against the NSC image. Staging technicians position the racks of equipment under factory Staging halos. The Staging technicians make all network connections for each site's equipment including RF, NSC, dispatch, interop, and other site types. Ethernet and/or fiber cable connections are made to

simulate backhaul networks and ensure the equipment connects to the network switches. The Staging Team programs radios to operate on a test user database programmed into the system during the NSC imaging process. The Staging Team verifies system levels and tests all features to confirm the system is ready for Factory Acceptance Test (FAT). Once a dry run FAT is completed by the Staging Team, the system transitions over to the system engineer for a week-long dry run of the FAT. During the following week, NDOT will visit the Eagle Focus Factory for a facility tour, introduction to the staged system, and to formally witness the FAT. The System Integration and Test responsibility matrix shown in SOW Exhibit 3 provides the staging activities that the Harris Team is responsible for and those activities that are the responsibility of NDOT. Each region of the State system repeats the manufacturing, staging, and FAT processes to meet the dates on the project schedule.

Shipping, Warehousing, and Inventory

After a successful Factory Acceptance Test (FAT), the Harris Team packages all system elements using established procedures depending on the mode of transportation. The Team engages appropriate freight carrier services to deliver NDOT's regional equipment to the Harris warehouse location in the State of Nevada or other mutually agreed to location.

Subscriber equipment may ship with mutual agreement of NDOT and Harris in coordination with Customer Care.

SOW Exhibit 3 contains the Responsibility Matrix for the shipping and inventory activities that the Harris Team is responsible for and those activities that are the responsibilities of NDOT.

System Installation

The Harris Team develops the installation plan during the detailed design phases of the project, and presents it to NDOT for review and approval. The installation plan includes equipment rack-up drawings, antenna location details, and installation procedures based on site surveys conducted by the Team, or designated subcontractors. The installation plan coordinates all activities of the project team, minimizing installation conflicts, and ensures that system implementation proceeds efficiently. The project team takes great care to ensure minimal disruption to existing EDACS service when installing the new P25 system in existing equipment locations. Site equipment installations follow industry standards, including Harris Grounding and Lightning Protection. The Team reviews the installation work to ensure implementation of these

standards.

Antenna Systems

A key aspect of the infrastructure equipment work is installation of the new P25 antenna systems. Installation of new antenna systems may occur on a newly constructed tower, existing towers in use by NDOT as part of their legacy radio system, or on existing towers that are not part of the legacy radio system. In the case of newly constructed NDOT-owned towers, antenna system installation is straightforward per the system design. For towers that are part of NDOT's legacy system, new antenna system installations must consider the location of the existing NDOT antennas, and the timing of their removal. Antenna system installation on existing towers that are not part of NDOT's current system are not impacted by the presence of legacy system antennas. However, NDOT must coordinate the location of the antenna systems on the tower with the tower owner when it is a leased site.

The Harris Team uses experienced tower crews to install the antenna systems. The antennas mount on side arm mounts, and support the RF cables with transmission line hangers secured to the tower cable ladder. The cables have ground kits that will be installed at the top, at the bottom as the cable leaves the tower, and at the end of the ice bridge before the cable entry port. Where applicable, grounding kits will be installed in the middle every 75 feet, so that there is no more than a 75-foot gap between grounds. The tower crew runs coaxial cables down the tower cable ladder, and onto the ice bridge terminating just inside the cable entry port.

After installation, the Team sweeps the RF transmission lines and antennas with an Anritsu Site Master, or equivalent cable-testing device, on the appropriate frequency band(s) to ensure proper performance. The Team records the baseline test data and provides it to NDOT. A copy will remain on-site for future reference.

Infrastructure Equipment

Upon completion of the tower work, installation crews install the base-stations, and associated equipment. The MASTR V P25 trunked stations and associated equipment typically mounts in 86-inch standard aluminum EIA 19-inch open-frame racks. The RF connections extend to the coaxial cables using appropriately sized jumper cables.

Harris assumes that NDOT-provided shelters will accommodate the height of these open racks,

and allow them to position to maintain the desired 36 inches of free aisle space (in front and in the rear). Racks and cabinets anchor to the floor using at least four anchor points. All racks will be installed in accordance to seismic zone 4 requirements.

Harris assumes that NDOT-provided shelters will have sufficient primary and back-up power systems.

Once the infrastructure racks secure in place, we ground and connect them to power, and technicians verify proper levels and settings preparing the site for the acceptance test.

NDOT personnel and/or their representatives are given advanced notice to prepare for their participation in acceptance testing. The installation team records the alignment and test data, and provides copies to NDOT. Copies of the individual site alignment and test data will be available at the sites. Installation crews also install and commission the network switches, dispatch consoles, logging recorders, alarm terminals, and other infrastructure equipment, per the detailed implementation plan.

SOW Exhibit 3 contains the Responsibility Matrix for antenna systems and infrastructure equipment, that is repeated for each region.

System Optimization

Upon installation of infrastructure equipment, the system engineer(s) works with the on-site technicians to optimize the equipment in preparation for acceptance testing.

- **Simulcast** – Per Simulcast cell, includes verify launch timing, verify timing drive test, iterative adjustments, repeat timing drive test (if required due to non-compliance to specifications), verify configuration, test voter, test network latency, verify network switches, and dispatch console operation.
- **Multisite** – Includes setting up site adjacency in the virtual network interface controller (VNIC), build roaming personality, drive test roaming and hand-off, and finalize roaming personalities.

Harris will conduct a preliminary Acceptance Test to determine that the systems are fully optimized and ready for the Acceptance Test with NDOT. SOW Exhibit 3 contains the

Responsibility Matrix for those tasks to be performed during the System Optimization phase for each Region.

Fleet Mapping

Fleet Mapping is the process used by the Radio System Administrator (RSA) to define regions, agencies, and talkgroups. NDOT's administrators create agencies by assigning an identifier to each agency, creating one or more administrators for the agency, and defining the "pools" of resources for the agency. The Agency administrators organize and configure their users, subscriber units (mobile radios), and consoles.

Harris will rely on input and direction from NDOT in the development of the fleet map. The new fleet map can be a carry-over from the existing one used today, or this can be an opportunity to streamline and generate a completely new fleet map. Either way, the fleet map will contain:

- Talkgroup IDs
- Agency definitions based on Work Unit or Division
- Emergency actions to be taken when a user declares an emergency
- Encryption capability for either persistent encryption or toggling on/off
- Roaming capability amongst NDOT sites, as well as surrounding systems
- Scan Priority and lists

Defining fleet maps as early in the project as possible allows flexibility for NDOT and the Harris Team to deliver and utilize radios early in the implementation. The Harris Team will work with NDOT's staff to develop templates for user radio programming promptly. Each template will have the basic features and functions defined for a user radio and user type (e.g. high-tier portable for public safety) such as talkgroups for their work department, control head displays, alias displays, and other information necessary for each user. In prior implementations, Harris customers benefitted by programming a small set of radios with the new fleet map templates. This approach affords them the opportunity to verify that a radio with the intended programming is really what is desired, or make changes to only a small subset of users.

Once the project team finalizes and NDOT approves the fleet map and templates, Harris starts mobilizing adequate resources to ensure timely fleet mapping and radio programming. Given the added benefit that Harris radios support both the existing EDACS technology and the new P25 communication protocols, this step can and should be taken prior to the migration over to the new system. All finalized fleet map documentation and templates will be provided as part of the final as-built documentation.

Coverage Testing

After the project team completes installation in a region, coverage testing will be executed. The Coverage Acceptance Test Plan (CATP) provided in this contract is preliminary. A final CATP will be submitted to NDOT for approval at the DDR and again 30 days prior to starting the coverage test.

Harris will complete coverage tests in cooperation with NDOT representatives. These tests include automated BER testing and Delivered Audio Quality (DAQ) tests. Harris will provide the lab test reports indicating that the radios have been tested and confirmed to meet the bit error rate that is equivalent to the required DAQ 3.4 audio quality. Both inbound and outbound automated BER tests will be performed over the entire service area. The DAQ voice call testing will be sampled over 10% of the number of tiles in urban areas across Nevada.

Harris' CATP is in conformance with the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88-D titled "Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification." TSB-88-D 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.

Harris fully complies with the Test Configurations section 6.5.D.5 of the Attachment 1 Scope of Services document. Coverage testing of a region will only commence after the components in that region have been fully tested at the system level.

Cutover & Migration Plan

Harris understands the importance of continuous end user communications for all personnel.

These users should be focused on carrying out their duties, and should not need to worry about what features their radio can support before, during or after the migration phase. The Harris strategy is to make the migration transparent to the end user by maintaining functionality throughout the migration process.

A safe and seamless transition from the current EDACS system to the new Harris P25 communication system is a critical advantage unique to the Harris solution. Safe means the transition over to the new system minimizes communications or system outages, while ensuring the safety for every user that carries a Harris radio. Seamless means that the expected functionality that NDOT uses every day is still available, while at the same time being complemented by the new functionality the VIDA system offers.

Harris fully understands that the migration plan is one of the critical components of the overall project. As such, the plans' goal is to meet the following objectives:

- Maintain reliable and stable mission-critical communications
- Complete, functional system deployment in a timely manner
- Integrate with existing systems
- Smooth transition from existing operations for users
- Definition of clear roles and responsibilities between Harris and NDOT
- Provide training for all users, administrators and service personnel

The implementation and migration of such a large system will be completed in a phased, or regional approach. Each region will be handled as its own system, but with maintained focus on the interdependencies with surrounding regions and/or systems. The regions will be installed, tested and activated one by one until the entire statewide system is complete. As regions are completed, NDOT agencies can be cutover for operational use. Figure 1 shows the preliminary regional breakdown. This plan is flexible, and can be adjusted to NDOT's needs.

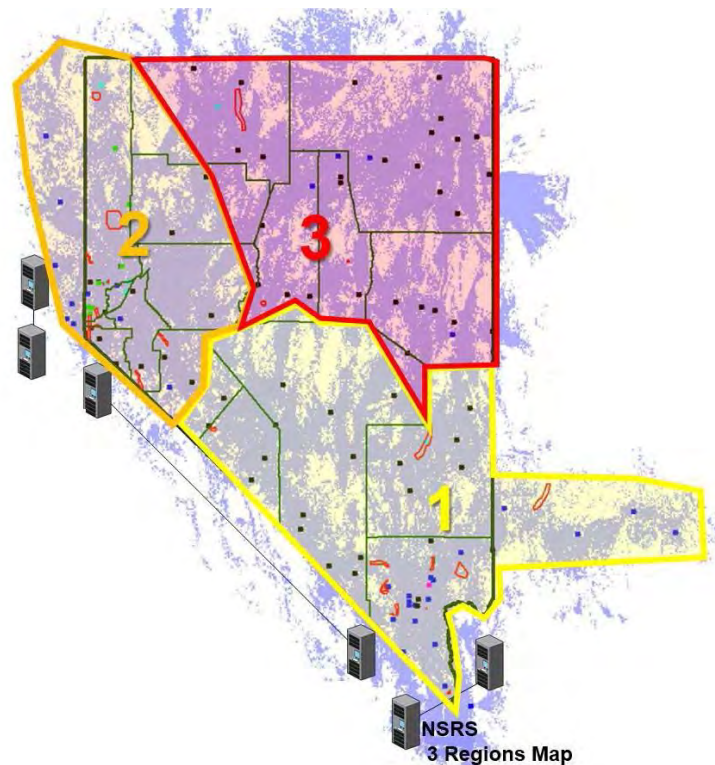
Harris will provide a detailed migration plan to NDOT at the Detailed Design Review. The final migration plan will detail the dispatch installation, migration phases, radio fleet transition, and details the site by site floor plans showing before, during, and after transition arrangements.

Planned system outages will also be covered in the plan, with the goal of minimizing or mitigating any from being required. NDOT will have a single point of contact and a backup for technical and logistical communications.

The plans presented to each Member will be very similar in nature, though the scope may change slightly depending on the encompassed entities within the defined boundary. Each plan will detail the fallback procedures should it be necessary to pull back off the P25 system. With proper planning and upfront communication, this event is unlikely to occur. One of the added benefits of the regional approach is that the scope of such an effort is smaller and can be refined as information and lessons learned are gained from earlier region's implementations.

Harris will work with NDOT on migration coverage areas, especially along regional borders, to ensure that NDOT's coverage needs are met prior to cutover and are aligned with expected coverage during the design. The individual agency cutover timelines will be dependent on the new coverage footprints being operational.

Figure 1. NSRS Regional Map



Harris implementation teams have been very successful in cutting over new systems. This is attributable to proper planning and execution by both the project team and the customer. Tools to achieve this include:

- Dedicated project team assigned to NDOT project implementation
- Developing a solid cutover plan between Harris and NDOT
- A customer-focused collaboration during the planning phases to build consensus and buy-in from user groups
- Mobilizing adequate resources to ensure timely fleet mapping and radio programming
- Providing seamless communications between the legacy system and the new infrastructure (i.e. use of the EDACS Migration Gateway outlined below)
- Continual dialogue and cutover support to address user concerns

Experience shows that when the user community is fully involved and can ask questions and voice concerns, the cutover experience is much more efficient with greater end-user acceptance. From the program's start, through fleet mapping and user training, the local Harris team works directly with NDOT's project team to capture concerns, answer questions, and modify the final plan to suit each user's needs.

Throughout the transition process, the Harris team will monitor the system and respond to every reported communication incident. This methodical and detailed process provides the highest level of quality and oversight throughout the transition and cutover needs.

Migrating to the Power of IP

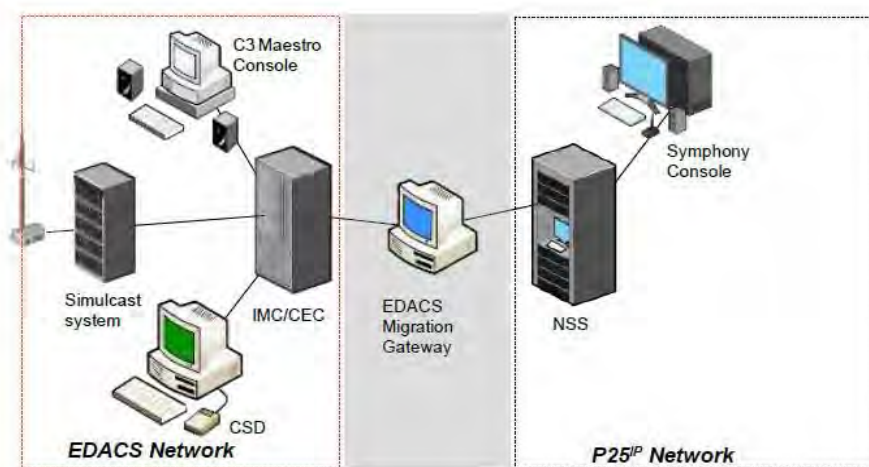
Many of NDOT's radios are capable of both EDACS and P25 modes, including Phase 1, with potential upgrade to Phase 2. Harris is providing NDOT with free EDACS software on any new P25 radios purchased as replacements for those radios that cannot operate on P25 as part of the system offering. The existing EDACS system will remain online and provide the existing coverage during the migration. As users are cutover to the new system, they will require reach back capability to the legacy EDACS system. Powered by the EDACS Migration Gateway (EMG), the Harris solution will provide full integration between the existing EDACS system and the P25 Phase 2 system. Unlike traditional gateways, the EMG is the only solution that can pass

the following features from EDACS users to P25 users during migration:

- Full range of P25 & EDACS IDs
- Transmission trunked group calls
- Patch and simulselect
- Emergency indicators/clears
- Caller IDs across the two systems
- Pre-empt EDACS calls from the Symphony consoles
- Encrypted call support
- Individual calls

A network diagram for the EMG is shown below. The EMG provides a suitable migration tool for maintaining interoperability with legacy EDACS systems via the latest VIDA network technology. Providing dispatch connectivity to both systems using a single screen and single headset, to listen to both systems, is a critical advantage of the Harris system during the transition period.

With the provided dispatch configuration, the Harris Symphony console dispatches over both the existing EDACS network and the new P25 network. Dispatchers see full information and have full control over both networks from a single console.



Harris understands that NDOT is working with the other NSRS Members that are in the process of implementing a new IP-based microwave system and Harris has provided the bandwidth requirements for the system. (See VIDA Network WAN Requirements in System Description)

- 50 Mbps minimum between primary and secondary VIDA Premier cores

- 100 Mbps minimum between primary and secondary VIDA Premier/Connect cores.
- The dispatch sites require a minimum of 10 Mbps connection to the VIDA Connect Cores
- 1.5 Mbps minimum between RF site and Core
- Minimum simulcast distributive control point (DCP) layer 1 site link bandwidth to the microwave network is 5 Mbps
- Minimum simulcast layer 2 transmit site link bandwidth is 1.5 Mbps

221 Mbps minimum allocation over new microwave ring for connecting all cores, PSAPs and RF sites

Key Components of the Migration

Harris' primary goal for migration is to make the transition as transparent to the end user as possible by maintaining functionality throughout the migration process. Whether a user needs their Harris radio for administrative use or emergency response, the operational requirements they meet to perform their job will be enhanced on the Harris P25 system. The migration and cutover plan laid out in the following sections highlights the Harris strategy for each facet of the design, providing a summary of the strategy for each of the various subsystems in NDOT's portion of the NSRS P25 system. The following table identifies the RF sites in accordance to their assigned region.

Region 0 RF Sites (Pilot Region)			
E/Cheyenne	E/Durango	E/Beltway RF	E/Decatur P25
E/Westside	E/Cabana	E/Sloan P25	E/Washington P25
E/Angels P25	E/Ryan Center		

Region 1 RF Sites			
E/Blue Diamond	E/Reid Gardner	E/Pipe Springs	D/White River P
E/Christmas	E/Silerhawk	E/Buckskin	D/Highland Peak

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Exhibit 10 – Statement of Work
Project Implementation Plan

Region 1 RF Sites			
E/Big Horn	E/Apex	E/Page	D/Wilson
E/Laughlin	E/Lenzie	D/Coyote Springs	D/Sunnyside
E/Opal	E/Glendale	E/Pahranagat	D/Timber
D/Hoover Dam	D/Ragged Ridge	D/Alamo	D/Warm
E/Potosi	D/Mesquite	D/Irish	D/Fitzpatrick
E/Red Mountain	E/Beaver Dam	D/Caliente	D/Pilot Peak
D/Mercury	D/Schader	E/Indian Springs	D/Deer Creek
D/Red Rock	D/Millers	D/Brock	D/Palmetto
D/Sawtooth	D/Tempiute	D/Montezuma	D/Sober
D/Amargosa	D/Mt Charleston		

Region 2 RF Sites			
D/Kinkaid	E/Muller	W/Tahoe SC	W/Marble Bluff
E/TV Hill	D/Spooner Summit	E/Ophir	D/Toulon
D/Pinegrove	E/Pinenut	E/High Camp	W/Poito
W/Snowflake	D/Eagle Ridge	E/Alder Hill	W/Truckee 18
D/Bald West	D/Painted Rock	E/Beckworth	E/Likely
W/Biltmore	D/USA Highway	W/Chimney Peak	W/Fox
D/Fairview Peak	E/Patrick	W/Peavine	W/Fortyniner Mt
D/Hot Springs	W/Slide	W/Red Peak	W/Yellow Peak
D/Wildcat Mt	W/Smokey Quarts	W/Virginia Peak	E/Fencemaker
D/Imlay	D/New Pass		

Region 3 RF Sites			
D/Mt Moses	E/Connors Pass	D/Peavy Hill	E/Chevas
D/Mt Austin	D/Border Inn	D/HD Summit	D/Penn Hill
D/Prospect Peak	D/Victoria	D/Jackpot	E/Argenta
D/Buster Mountain	D/Spruce	D/Ellen Dee	D/Golconda
D/Currant Summit	D/Secret Pass	D/Elko Mountain	D/Winnemucca Mountain
D/Kimberly	D/3 Mile	E/East Twin	D/Trident Peak
D/Squaw Peak	D/Loray	D/Emigrant	D/Double H
D/Cave Mountain	D/Rocky Point	D/Mary's	D/Hickison
D/Flat Creek			

1	2	3	4	5	6	7
Site Inspection, Scope Finalization	Frequency Migration Plan	Install Core Equipment, Gateways, Dispatch Centers	System Install, Optimization, Testing	Subscriber Rollout Plan, Execution	Cutover from EDACS to P25	"Burn-In" Test
						

Stage 1 – Site Inspection and Scope Finalization

Harris' design approach uses as many of the existing sites in the current system as possible. There will be additional sites required as well. Harris outlines our site development and site equipment costs critical to support the P25 system in the pricing pages. We will finalize these costs from site surveys, and collected quotes from local contractors to perform the expansion work. Equipment installation is dependent on-site readiness and will be determined after site surveys.

Harris' solution accounts for these intrinsically challenging upgrades and new installations. The efforts require coordination, planning, and risk mitigation. Harris understands these efforts and is uniquely positioned to tackle them in this upgrade. After project kick-off, Harris will start this

process with the following critical activities to inspect sites, finalize scopes, and complete the Detail Design Review.

- Schedule site surveys with NDOT
- Perform structural analysis on the existing antenna structures to determine the capabilities to support the P25 antenna design loads
 - Any underperforming towers will require an additional change order and approved engineering drawings before antenna mounting work may proceed
- Perform an electrical load study at each site to determine the spare load available in the local panel. This information will inform the final Harris load transition plan to support the DC Power upgrade from the legacy system to the new P25 system.
 - Identified additional power needs will result in a change order and possible delays at the site.
- Finalize the physical rack and antenna installation plan given the constraints imposed by the RF equipment space.
- During site survey inspections the Harris team will identify and document any site upgrades that are required or recommended to support the new P25 system. During the DDR the Harris team will work with NDOT to finalize site civil requirements and submit a change order documenting the final site designs.

Below are the recommended site civil requirements to support the new P25 communications system. Following site surveys Harris will submit a report identifying required site upgrades, upon NDOT's approval a change order will be submitted to complete the necessary upgrades

Site Name	48 VDC Plant Current	Back-up Generator	Space Available for TX Antenna	Space Available for RX Antenna	Space Available for # Racks	Dual HVAC
3-Mile	142.5 amps	25 KW	25 Ft.	45 Ft.	4 racks	2 ton
Alamo	81 amps	25 KW	40 Ft	60 Ft	2 racks	1.5 ton

Nevada Shared Radio Replacement Project
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Exhibit 10 – Statement of Work
Project Implementation Plan

Site Name	48 VDC Plant Current	Back-up Generator	Space Available for TX Antenna	Space Available for RX Antenna	Space Available for # Racks	Dual HVAC
Amargosa Valley	81 amps	25 KW	140 Ft	160 Ft	2 racks	1.5 ton
Austin	127.7 amps	25 KW	5 Ft	20 Ft	4 racks	2 ton
Bald West	142.5 amps	30 KW	30 Ft	50 Ft	4 racks	2 ton
Border Inn	81 amps	25 KW	20 Ft	40 Ft	2 racks	1.5 ton
Brock	125.7 amps	25 KW	70 Ft	90 Ft	2 racks	2 ton
Buster	81 amps	25 KW	20 Ft	40 Ft	2 racks	1.5 ton
Caliente	127.7 amps	25 KW	100 Ft	120 Ft	4 racks	2 ton
Cave	142.5 amps	35 KW	45 Ft	65 Ft	4 racks	2 ton
Coyote Springs	110.8 amps	25 KW	60 Ft	80 Ft	2 racks	1.5 ton
Currant Summit	127.7 amps	25 KW	35 Ft	55 Ft	4 racks	2 ton
Eagle Ridge	172.3 amps	30 KW	40 Ft	60 Ft	4 racks	2.5 ton
Elko Mtn	187.2 amps	30 KW	30 Ft	50 Ft	4 racks	2.5 ton
Ellen Dee	142.5 amps	30 KW	40 Ft	60 Ft	4 racks	2 ton

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Site Name	48 VDC Plant Current	Back-up Generator	Space Available for TX Antenna	Space Available for RX Antenna	Space Available for # Racks	Dual HVAC
Emigrant	81 amps	25 KW	40 Ft	60 Ft	2 racks	1.5 ton
Fairview Peak	142.5 amps	30 KW	5 Ft	20 Ft	4 racks	2 ton
Fitzpatrick	142.5 amps	30 KW	15 Ft	25 Ft	4 racks	2 ton
Flatcreek	81 amps	25 KW	30 Ft	50 Ft	2 racks	1.5 ton
Golconda	110.8 amps	25 KW	100 Ft	120 Ft	2 racks	1.5 ton
HD Summit	81 amps	25 KW	40 Ft	60 Ft	2 racks	1.5 ton
Hickison	81 amps	25 KW	40 Ft	60 Ft	2 racks	1.5 ton
Highland Pk	142.5 amps	30 KW	16 Ft	36 Ft	4 racks	2 ton
Hoover Dam	81 amps	25 KW	80 Ft	100 Ft	2 racks	1.5 ton
Imlay	110.8 amps	25 KW	40 Ft	60 Ft	2 racks	1.5 ton
Irish	81 amps	25 KW	45 Ft	65 Ft	2 racks	1.5 ton
Kimberly	95.9 amps	25 KW	40 Ft	60 Ft	2 racks	1.5 ton
Kinkaid	95.9 amps	25 KW	40 Ft	60 Ft	2 racks	1.5 ton
Loray	95.9 amps	25 KW	80 Ft	100 Ft	2 racks	1.5 ton

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Site Name	48 VDC Plant Current	Back-up Generator	Space Available for TX Antenna	Space Available for RX Antenna	Space Available for # Racks	Dual HVAC
Mary's	172.5 amps	30 KW	20 Ft	40 Ft	4 racks	2.5 ton
Mercury	95.9 amps	25 KW	30 Ft	50 Ft	2 racks	1.5 ton
Mesquite	157.4 amps	25 KW	50 Ft	80 Ft	4 racks	2.5 ton
Millers	81 amps	25 KW	40 Ft	60 Ft	2 racks	1.5 ton
Montezuma	81 amps	25 KW	30 Ft	50 Ft	2 racks	1.5 ton
Moses	127.7 amps	25 KW	40 Ft	60 Ft	4 racks	2 ton
New Pass	81 amps	25 KW	60 Ft	80 Ft	2 racks	1.5 ton
Palmetto	81 amps	25 KW	40 Ft	60 Ft	2 racks	1.5 ton
Peavy Hill	157.4 amps	30 KW	40 Ft	60 Ft	4 racks	2.5 ton
Penn Hill	127.7 amps	25 KW	40 Ft	60 Ft	4 racks	2 ton
Pilot Pk	127.7 amps	25 KW	5 Ft	25 Ft	4 racks	2 ton
Pinegrove	142.5 amps	30 KW	5 Ft	30 Ft	4 racks	2 ton
Prospect Pk	157.4 amps	30 KW	40 Ft	60 Ft	4 racks	2.5 ton
Ragged Ridge	81 amps	25 KW	40 Ft	60 Ft	2 racks	1.5 ton

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Site Name	48 VDC Plant Current	Back-up Generator	Space Available for TX Antenna	Space Available for RX Antenna	Space Available for # Racks	Dual HVAC
Rocky Pt	110.8 amps	25 KW	40 Ft	60 Ft	2 racks	1.5 ton
Sawtooth	110.8 amps	25 KW	8 Ft	8 Ft	2 racks	1.5 ton
Schader	81 amps	25 KW	45 Ft	65 Ft	2 racks	1.5 ton
Secret Pass	81 amps	25 KW	40 Ft	60 Ft	2 racks	1.5 ton
Sober	127.7 amps	25 KW	10 Ft	30 Ft	4 racks	2 ton
Spooner	81 amps	25 KW	60 Ft	80 Ft	2 racks	1.5 ton
Spruce	157.4 amps	35 KW	35 Ft	55 Ft	4 racks	2.5 ton
Squaw Pk	127.7 amps	25 KW	45 Ft	65 Ft	4 racks	2 ton
Sunnyside	95.9 amps	25 KW	30 Ft	50 Ft	2 racks	1.5 ton
Timber	81 amps	25 KW	20 Ft	40 Ft	2 racks	1.5 ton
Toulon	157.4 amps	30 KW	5 Ft	20 Ft	4 racks	2.5 ton
Trident Pk	127.7 amps	25 KW	25 Ft	45 Ft	4 racks	2 ton
Victoria	81 amps	25 KW	20 Ft	40 Ft	2 racks	1.5 ton
Warm Springs	142.5	30 KW	16 Ft	36 Ft	4 racks	2 ton

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Site Name	48 VDC Plant Current	Back-up Generator	Space Available for TX Antenna	Space Available for RX Antenna	Space Available for # Racks	Dual HVAC
Wildoat	95.9 amps	25 KW	50 Ft	70 Ft	2 racks	1.5 ton
Wilson	95.9 amps	25 KW	40 Ft	60 Ft	2 racks	1.5 ton
Winnemucca	142.5 amps	30 KW	30 Ft	50 Ft	4 racks	2 ton
Deer Creek	81 amps	25 KW	60 Ft	80 Ft	2 racks	1.5 ton
Double H	81 amps	25 KW	60 Ft	80 Ft	2 racks	1.5 ton
Hot Springs	110.8 amps	25 KW	180 Ft	200 Ft	2 racks	1.5 ton
Jackpot (NDOT constructing)	81 amps	25 KW	40 FT	60 FT	2 racks	1.5 ton
Mtn Springs	81 amps	25 KW	80 Ft	100 Ft	2 racks	1.5 ton
Painted Rock (NDOT constructing)	110.8 amps	25 KW	60 Ft	80 Ft	2 racks	1.5 ton
Tahoe Mtn	81 amps	25 KW	60 Ft	80 Ft	2 racks	1.5 ton
Tempiute	81 amps	25 KW	80 Ft	100 Ft	2 racks	1.5 ton

Nevada Shared Radio Replacement Project
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Site Name	48 VDC Plant Current	Back-up Generator	Space Available for TX Antenna	Space Available for RX Antenna	Space Available for # Racks	Dual HVAC
USA Pkwy (NDOT constructing)	95.9 amps	25 KW	60 Ft	80 Ft	2 racks	1.5 ton
S. of White River	81 amps	25 KW	180 Ft	200 Ft	2 racks	1.5 ton



Stage 2 – Frequency Migration Plan

The process for developing a Statewide frequency plan is a long, intensive and often iterative process. Harris has taken the first step in developing a frequency plan for the P25 system by evaluating spectrum availability. Harris' goal is to reuse as many of NDOT's current spectrum holdings as possible while also looking to implement *additional channels* to provide for coverage testing and avoid impacting the EDACS users during the multi-year cutover period. A final and comprehensive frequency plan will be provided at the DDR. Harris will work to completely build out the P25 site alongside the existing EDACS sites, allowing for a smooth and logical cutover.

Harris plans to implement a phased, or regional, cutover, thus allowing the 800 MHz EDACS frequencies to be placed back into the P25 pool for reuse. This plan mitigates risk, and allows the new P25 system to be fully vetted, and loaded at NDOT's discretion. In addition, Harris will put forth the due diligence in determining the viability of using any available 700 MHz channels. Harris will provide NDOT with a draft frequency plan before DDR. In addition to the plan, a report will be provided which substantiates the ability to license frequencies associated with the plan.

Finally, Harris' frequency plan mitigates these additional risks.

- Minimum of 250 kHz of channel separation within any sites' transmitter combiner
- Minimum of 50 kHz of channel separation between any channel assigned in overlap areas of the network
- No interference with existing system frequencies during the various migration phases



Stage 3 – Installation of Core Equipment, Gateways, and Dispatch Centers

New core equipment is being provided for NDOT, which gives Harris the ability to build out in parallel with the existing EDACS core, and move resources over to the new core while maintaining a connection back to the EDACS system via the EMG.

Harris will install the core equipment for all NSRS members during the rollout of region 0 allowing the Harris team to turn RF sites on as we move through the regions.

Once the new core is in place and connected to the microwave ring, Harris will make it operational and begin the testing of the new core. Other subsystems that will be installed in the system with the new core include:

- New Network Management System (NMS)
- EDACS Migration Gateway (EMG)
- New centralized Logging Recorder

These devices must be cutover to the new core prior to the transition of dispatch operations.

The migration plan includes steps to evaluate the maintenance or replacement of current gateways, or other interfaces to analog or non-P25 systems. This will prevent loss or degradation of connectivity during migration. Users on either the existing EDACS system or new P25 system will have access to all system resources prior to transition. Harris will work with NDOT to prevent loss or degradation of connectivity with outside agencies by determining what systems and interop agencies are critical to the operations within a region during the migration. This step is critical in terms of *risk mitigation*, allowing NDOT to maintain operation on the current EDACS system before any sites or dispatch consoles are moved to the new network.

DISPATCH MIGRATION

Harris understands the important role of the dispatcher regarding critical communications, and we developed our newest Symphony console to simplify dispatch operations and empower dispatchers. With console space restrictions in mind, Harris designed the Symphony console to require minimal space in already tight dispatch centers.

Harris installers will work with NDOT's Dispatch Centers to custom design their console screen layout to meet the individual dispatcher needs. Likewise, the Symphony console supports individual dispatcher login and personalization to provision dispatcher specific settings from the network so dispatchers can access their specific settings at any dispatch console location and not be tied to a specific workstation location.

With the EDACS Migration Gateway, dispatchers can access both P25 and EDACS talkgroups, allowing a seamless transition to the new system. As users transition to P25 from EDACS, dispatchers will be there every step of the way, leveraging their new dispatch consoles to operate both systems. The EMG provides the capability to operate all the scenarios outlined below:

- New Symphony Consoles dispatching on EDACS
- Existing Consoles dispatching on P25
- Backup control stations can also operate on both systems with multi-mode software
- Having both existing and new consoles in operation at the same time

A Harris technician or console trainer will be on hand during the cutover period as each shift begins to train the dispatchers on use of the new consoles. The guidance provided to the dispatchers will ensure a smoothly running operation. Dispatch consoles can be installed prior to or during migration thanks to the benefits the EMG provides.

Installing consoles in a 24-hour dispatch center requires consideration of minimum staffing as well as operational peak times. Harris will interview the dispatch center managers to identify downtimes, console availability and operational peak times to schedule console installs accordingly. Evening or weekend console installation can be scheduled as well, should NDOT feel it is beneficial to install consoles at non-peak operational times.

Realizing that operations must continue while consoles are being installed, console installations will occur using hand tools rather than power tools (as much as practical) to limit background noise in the dispatch center. Typical console installation requires approximately two to three hours per installer. Harris will provide additional installers as necessary to meet console availability and to install consoles at the allowable pace at each individual dispatch center.

Once up and running, dispatchers can transition to the new platform with proper training to *handle all operational requirements* including administration, day-to-day operations, emergency response, and how to handle catastrophic events on the new platform.

NEW NETWORK MANAGEMENT SYSTEM INTEGRATION

The new core equipment has its own built in network management platform. Harris *recommends system training* on the new platform to bring system administrators up to speed on the latest feature available. Once the core is in place, NDOT administrators can begin using the new Network Management System immediately.



Stage 4 – System Installation, Optimization & Testing

Once the VIDA core and dispatch capabilities are operational, Harris is ready to finalize the installation, optimization and cutover to the P25 system on a regional basis. Harris will install all P25 site equipment in parallel to existing EDACS equipment at existing facilities. Prior to commencing user cutover within a region, Harris will fully test and optimize the new system to ensure that all functional and coverage acceptance test plans have been completed, and the system is ready. This includes the completion and signoff of the Functional Acceptance Test Plan (FATP) and Coverage Acceptance Test Plan (CATP) procedures, per region. This critical step minimizes risk and ensures the region is ready for cutover.



Stage 5 – Subscriber Rollout Plan and Execution

Harris can safely move EDACS users over to P25 during the transition with a single radio device. This is accomplished using dual programming of both EDACS and P25 modes. All existing subscribers capable of P25 Phase 1 or Phase 2 operation can be upgraded and programmed ahead of the transition date. Harris strongly encourages NDOT to provide new radios to users that will be operating in a region before migration starts for that region. By orchestrating this programming effort ahead of the actual migration, radios can be fielded in advance to minimize disruption, and not require the need to pull users out of service. This also prevents users from having to carry two radios at any point during the transition. EDACS operators will continue to use their EDACS talkgroups all the way up to their transition date. For mobile users, their radios can be installed and programmed ahead of time, which limits how many users need to be taken out of service for the cutover date.

On their cutover date, users will be trained on how to switch modes on the radio, the differences between analog and digital modes of operation, and what talkgroups are available to them in P25 mode. This training will cover administrative use, day-to-day operations, how to handle emergency events, and what occurs on the radio in the event of catastrophic failures. Careful consideration of fleet mapping up front will minimize reprogramming efforts that can prove costly and timely for the users. The new fleet map structure will closely resemble the existing EDACS structure since primary EDACS talkgroups will be bridged to the same P25 talkgroups. Once on the P25 system, users will likely not know the difference between users that have transitioned, and those that haven't on their primary talkgroups.

The final radio procurement and upgrade plan will be finalized at Detail Design Review (DDR). Harris will work with NDOT to identify the number and type of existing radios they wish to upgrade, as well as the quantity of new radios they want to procure. Once these radio quantities are finalized, Harris will provide a detailed plan to accommodate the programming, training, install and removal of radios into the final migration plan. In general, Harris intends on using the EDACS migration gateway and mixed mode radios (i.e. radios that support both EDACS and

P25 operation) to provide a flexible and seamless migration.

Once an entire talkgroup moves to the new P25 network, the EMG talkpaths are available for the next talkgroup. Throughout the transition, legacy system users will always hear audio and see emergencies from those that are on the new P25 network and vice versa. Training will be provided in alignment with the migration plan to ensure each user is fully capable of operating the new radio.

User cutover within a region occurs once the new P25 network system is tested and accepted. Once ready for transition, Harris' strategy is to move radio users by functionality (public services, police, fire, etc.) but is flexible in their approach and looks forward to working with NDOT to finalize the plan. Throughout the transition, the Harris team will monitor the system and respond to communication incidents. With dual operation, fallback is seamless to the existing EDACS system.

User Radio Equipment Implementation

Harris will be responsible for programming and installing radios. The project team will coordinate the distribution of portable radios and accessories with NDOT. In addition, the project team will begin mobile installations for the initial group in concert with the training schedule. Technicians and subcontractors will equip vehicles with new mobiles in accordance with a schedule created by NDOT and mutually agreed upon by Harris. Harris will work with NDOT to identify installation areas where old mobile radios will be swapped out for new mobile radios.

Technicians and subcontractors experienced with user radio operations will be available to answer any last-minute questions. Harris will ensure that the subcontractors perform the work to Harris specifications and that they leave the work area as it was found at the end of each day.

To identify the specific radios assigned to individuals and vehicles, the project team will provide an inventory list of all radios, including serial numbers, calibration data, and radio programming information. The cutover team will work together to schedule the delivery of the radios to each user shortly before they go live on the new P25 system. As required, installations will consist of completely placed, anchored, and installed equipment, including the placement of associated cabling, appropriate layout, and full testing of the radio. Harris will provide associated power

supplies and any other hardware, adapters, and/or connections to deliver a complete operable user radio to NDOT at the time of field acceptance.

User Equipment

The Harris Team and NDOT personnel will develop a mutually agreeable cutover schedule. The Harris Team will provide overall management and planning of the installation and test activities, while its subcontractors perform the installations. The Harris Team will schedule and coordinate the user training and distribution of the portable and mobile user equipment per the cutover plan installation schedule. All mobile radio installations will be closely coordinated with NDOT and participating user agencies, to minimize disruption to their operation, and to reduce out-of-service and unproductive time.

Radio Installation Planning

Mobile Radio Installations*	Portable Radio Distribution*
Harris <u>Knows</u> mobile installs: - Require extensive planning and coordination - Remain with the vehicle for years - Have a need for collaborative planning/continuous quality management = decreased end-user agency impact - Can be accomplished ahead of cutover dates due to Harris' ability to support both EDACS and P25 modes of operation	Harris <u>Knows</u> portable distribution: - Can occur concurrently with mobile installs, but encourages distributing ahead of time due to the capability of supporting both EDACS and P25 modes of operation - And if the user's legacy radio is not a P25 Phase 1 or 2 capable radio, the user will turn it in and walk away with the new P25 Phase 2 radio(s) - And if the user's existing radio is P25 Phase 1 or 2 capable, NDOT has the option to upgrade the radio to P25 Phase 1 or 2

*Harris will be responsible for updating each system users radio equipment to operate on the network before, during, and after system migration.



Stage 6 – System Cutover from EDACS to P25

Our migration solution installs the new system in parallel with the legacy system. All installations and verifications will complete prior to starting the migration. Therefore, Harris expects little downtime as users migrate from the EDACS system to the new P25 system because of the parallel systems approach. Momentary downtimes may occur when de-activating a frequency on the legacy system and activating that frequency on the new P25 system. However, as the frequency plan outlines, the new system only uses a small subset of channels from the legacy system. Harris expects to perform frequency migrations during off-peak hours during scheduled windows of time to reduce impacts.

With the EDACS Migration Gateway in operation, NDOT can migrate users to the new system as entire disciplines, while maintaining the legacy communication infrastructure if users need to switch back to the legacy system. Since critical communications between systems will support trunking features such as IDs and emergencies, end users will have constant communications between both the EDACS and P25 system so that they can still communicate with users that have not completed migration.

Harris will provide a detailed cutover plan as part of Detail Design Review, which will incorporate NDOT's suggestions for which regions should be upgraded first, the order of those regions, and traffic analysis outlining the results on both the legacy EDACS and new P25 system during each transition step.

Final Acceptance Testing

The Harris Team will perform systems acceptance testing per the agreed upon final acceptance test plan (FATP) for each region. The Harris Team will provide two weeks written notice to NDOT when installation and optimization are complete, the FATP has been fully dry-run successfully and the system is ready for acceptance testing. The following is a sample outline of Harris' FATP.

- Facility Test - Visual Inspection
- VIDA Universal Administration Server (UAS) Operation
- Encrypted Voice Operations
 - Single site, Multisite and Console encrypted group calls
 - Encrypted Individual (Private) Calls
- Over the Air Rekeying (OTAR)
 - Includes Rekeying and Changing Over a Crypto Net, plus Zeroing subscribers
 - Rekeying a Console
- Redundant Wide Area and High Availability Router Failover
- Site Activity using the Activity Warehouse
- VIDA Regional Network Manager
 - Reporting of RF System Alarm Indications
- Enterprise Network Manager (ENM)
- P25 Station Reconfiguration using the Device Manger
- NSS Switchover
- Control Point Movement
 - DCP Forced Control Point Movement
 - DCP Control Point Movement in response to Faults at the Active Control Point
- P25 Trunked Calls and Site Features
 - Includes Emergency calls, All-Call, Call Priority and Scanning
- Transcoder Operation
- P25 Phase 2 Functionality
 - Includes Mixed-Mode and standard call operation
- Symphony Dispatch Platform Features and Operation

- Includes Emergency Calls, Pre-empt, Patching, Simulselecting, Console Cross-mute
- Trunked Logging Recorder Operation
- P25 Simulcast Bypass Operation
- VIDA Interoperability Gateway Tests

The system engineer provides documentation defining each of the test areas. The FATP procedures contain a short description, test methodology, and a record form for logging results and acceptance signatures for each test. The Harris Team uses a punch list to document any issues found, so the team can quickly resolve them. Follow-up tests and documentation will show the correction of open items. Upon satisfactory completion of each testing phase, the project manager will present the system acceptance documentation to NDOT’s project manager(s). The project team and NDOT can proceed with cutover of a region with each approval NDOT provides.

SOW Exhibit 3 contains the Responsibility Matrix for Final Acceptance Testing activities performed by Harris, and those activities that NDOT will perform for each region.



Stage 7 – “Burn-In” Test

The new P25 radio system will undergo a 30-day burn-in period encompassing 30 consecutive days of uninterrupted operation following cutover for each region of the system implemented, as well as the complete statewide system. The 30-day burn-in period is intended to demonstrate reliable system operation. Several important aspects of the reliability test are to have no disruption in communication, and to have no reduction in the quality of communication. Failure modes, categories, and correction scenarios will be topics to be discussed.

Major failures might include items such as a complete loss of network switching capability, loss of wide area trunking mode operation, complete loss of simulcast control point equipment, etc.

In general, a major system failure will result in the test period being stopped and restarted from zero after correction of the issue.

Minor failures could include any non-critical failures that don't affect trunking or system operation. In general, minor system failures do not result in testing being suspended. Minor system failures are added to an incident report tracking document and these items are addressed while reliability testing is on-going.

At the completion of the 30-day burn-in period, the project manager will arrange a meeting with the field service team to review maintenance support during the warranty period. The team will provide the contact information and procedures used to obtain service during the warranty period for standard business hours and after hours.

APPROACH

The Burn-in Period Test will be conducted once the System Acceptance Test Plan and Coverage Acceptance Test Plan have been successfully completed and users loaded on the system for that region. During the test, the region shall operate for a period of 30 accumulated calendar days without a major failure relating to hardware or software infrastructure. Neither the (Customer) nor Harris shall perform any system maintenance during the test unless mutually agreed upon in writing.

During the test, records of hardware and software failures will be collected, evaluated and resolved as required. The failures will be classified as a "Critical System Failure", an "Intermediate System Failure", or a "Minor Failure" (as defined below in 2). The test will be successfully completed upon the completion of a 30 calendar day period without the occurrence of a "Major System Failure". Event failures could either stop and reset the cycle time, or temporarily pause the Burn-in Period test, but have no effect on the 30 calendar day overall testing period.

Harris and NDOT shall assign a primary and secondary point of contact which will be available at all times during active testing of the region. These contacts will comprise the "test committee". Any in-process failures will be reviewed by both parties, a determination made as to the actions to be taken, and the effect on the test clock following the guidelines and definitions of failures

below. During this time, all documented issues will be logged, evaluated, resolved and reviewed by the test committee.

MONITOR AND CONTROL

The Regional Network Manager (RNM) application will be used to monitor system health status. The Harris project engineering team will require VPN Remote Access to NDOT's network in order to perform remote monitoring and diagnosis of the LMR System.

Site and terminal configurations will be locked during the Burn-in Period Test preparation. Any mutually agreed changes will be documented and become a part of the test report.

FAILURE DEFINITIONS AND SAMPLES

Figure 2. Failure Types

Failure Types	Description
Critical	A Critical failure of the system during this test will cause the thirty (30) day burn-in period and warranty to reset and restart from the beginning after completion the repair. A critical failure is defined as follows: • Any failure which causes a loss of fifteen percent or more in capacity or coverage in any cell • Any failure which causes a loss of the primary core • Any failure which causes a loss of simulcast capability • Any system failure that causes the loss of two or more console positions • Any failure that renders the logging recorder inoperable or causes the irretrievable loss of recorded audio • The concurrent failure of two (2) or more repeaters • Concurrent failure of two (2) or more switches and/or routers • Failure of the receiver voting system • Two (2) or more repetitive minor failures of the same functionality with or without the same root cause

Failure Types	Description
Intermediate	Defined as Harris supplied hardware or software failure which INTERRUPTS 30-Day Burn-in Period Test and will STOP testing. Harris and/or its authorized repair service will make the necessary repairs/adjustments, and the 30-calendar day test period will be re-started at the point that it was discontinued and will continue until the sixtieth day occurs without further interruptions. For example, if failure occurs on Day 15 of the reliability test, repairs will be made, and the Burn-in Period Test will restart and continue on Day 15. The Burn-in Period Test will then be deemed successfully completed when Day 30 is completed without further interruptions of failures. Two or more intermediate failures will constitute a major failure and therefore the burn-in period will stop and a new test period will have to be restarted once the issue has been resolved.
Minor	A minor failure will cause the burn-in period to temporarily hold until the issue has been fully resolved to the Members satisfaction. On approval, the burn-in period can resume. The Members will accept a maximum two (2) minor failures before a full reset of the burn-in period will be required. Two (2) or more repetitive minor failures of the same functionality with or without the same root cause shall be defined as a major failure. Two (2) or more of the same minor failure without the determination of cause will temporarily hold the burn-in test until a cause is found, confirmed and corrected, or the Members are satisfied there is little likelihood of a systemic recurring issue
Other	Defined as one or any combination of the following type of events considered out of Harris' Control: Radio call failures in "known" poor coverage areas, non-Harris customer provided equipment such as the backhaul, commercial power failures, customer staff/operator errors, previously agreed system maintenance downtime and/ or harsh environmental conditions or acts which cannot be prevented. Testing will stop while troubleshooting occurs.

System failure definitions are shown in Figure 3.

Figure 3. System Failure Definitions

Item	Failure Description	Critical	Intermediate	Minor
A	Complete Loss of Network Switching capability.	X		
B	Loss of wide area trunking mode of operation.	X		
C	Base station failure	X		
D	Loss of simulcast control point equipment.	X		
E	Failure of 20% or more dispatch console positions including control stations.	X		
F	A software failure or download or any intervention by a Harris software developer or programmer on the radio system infrastructure components resulting in a service outage that would otherwise be classified as a major failure.	X		
G	Failure of the radio system infrastructure to properly recognize the emergency alert from a terminal subscriber.	X		
H	Complete Loss of Network Management capability.		X	
I	Loss of more than ten percent traffic capacity of the user base.		X	
J	Failure of any single Network First Gateway interface equipment between the Gateway		X	
K	Any non-critical failure that does not affect trunking operation			X

Item	Failure Description	Critical	Intermediate	Minor
L	Any user terminal equipment			X
M	Single Console position			X

Test Planning Procedures

Prior to the start of the 30-Day Burn-in Period Test, the following activities must take place:

- System Acceptance Test Plan completed
- xxxx users identified (full radio cutover completed for the region)
- User training completed
- Test Committee members identified
- Team meeting with users and test committee to review the test plan and failure definitions and examples
- Issue reporting process reviewed and approved

FAILURE REPORTING

Upon observing a system issue, the user will complete the Radio System Issue Report (**Figure 4**) and submit it to the test committee within 12 hours. Upon receipt of the issue report, the Harris representative will log the report and make a preliminary classification of the issue and report it to the Test Committee within 12 hours of receiving the report. Should the issue be classified a major failure, the test will be halted until resolved.

All reported issues will be logged documenting the details of the issue resolution. Should the initial classification be disputed by another member of the test committee, the committee will meet within 24 hours to review the issue and reach agreement on the classification. The test will continue until the team meets and reaches agreement.

In the unlikely event that the test committee cannot reach consensus on the issue classification, or restart of the test after a major failure, the Harris Project Manager and NDOT Project Manager will meet and discuss. If they cannot reach agreement, the test will resume and the issue will be referred to the Dispute Resolution Board.

Weekly meetings will take place to review the progress of the test, discuss issues identified and their resolution. Attendees of the meetings will include the Test Committee and others as identified by APS and Harris Project Managers. The Harris Project Manager will document and distribute meeting minutes and action items for each meeting.

Figure 4. NDOT P25 Radio System Issue Report Form

Name/User:				
Date:				
Time:				
Location:				
In Building (Y/N):				
GPS Coordinates:				
Agency:				
User ID:				
Talk Group/Channel:				
Selected System:				

Issue Description

Scheduled Maintenance or Intermediate Failure (see Fig 2 above for definitions)

Upon completion of the maintenance or resolution of the failure, the test shall resume as if the maintenance or failure had not occurred (i.e. if the test is stopped on day 5 for maintenance, it would then resume on day 6 after the maintenance is complete).

MAJOR FAILURE

Should a major failure occur, the Harris team will take prompt action to evaluate the issue and implement corrective action. After resolving the issue, the Harris project manager or engineering manager will document the resolution and provide notice of restarting the test at day 1.

RESOURCES AND DESIGNATIONS

Harris and NDOT will determine the necessary resources to execute and monitor the testing and ensure they are available to meet, perform, and complete the technical requirements as agreed upon. Such resources include personnel, facilities, site access, and the assistance of required NDOT personnel to conduct testing. Identified and agreed upon resources will be made available such that there is no impact to the cycle-time of the reliability test and performance of the task.

ACCEPTANCE

As identified on the project schedule, upon successful completion of the 30-Day Burn-in Period Test, Harris will submit the results of the test including a summary of issues and descriptions of resolutions performed. A joint meeting will follow, at a mutually agreeable location, to review the test documentation and obtain acceptance and agreement that the Burn-in Period Test was successfully executed, completed and approved.

Conclusion

Our philosophy is to maintain existing operations throughout the transition process. This continuous radio communications operations approach minimizes impact on the users until and during the time of transition. Harris will commit to the following:

- Uninterrupted operability between the new and existing radio system during transition
- Continued communications on normal and interoperability talkgroups in place today
- Single radio use during the transition and the operation of the new Harris radio device will stay consistent with existing operations

- Single dispatch console use during the transition

Warranty Plan

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Scope of Warranty Plan

SERVICE PROVIDER will provide this Warranty Plan (“Warranty Plan”) for a projected forty-two (42) months for Region 1, twenty-seven (27) months for Region 2 and twelve (12) months for Region 3 such that all warranties end on the same date for Infrastructure Equipment and Software per the preliminary implementation schedule contained in Exhibit 4 – Project Schedule

If there are DEPARTMENT caused schedule delays beyond the projected implementation schedule from the acceptance of Region 1 to the acceptance of Region 3, SERVICE PROVIDER reserves the right to charge the DEPARTMENT an additional amount to compensate for schedule delays (i.e. Warranty extension).

Harris will also provide a 2-year warranty on Terminal Hardware from the date the hardware is put in service by the DEPARTMENT.

SERVICE PROVIDER is providing standard Warranty services packaged with additional Premium Warranty services for the Warranty Plan. The scope of the Warranty Plan is listed in Figure 1 and described individually in Statement of Works (SOWs).

Figure 1. Warranty Plan Scope of Services

Scope of Services	Standard and Premium Services During Warranty		
	NDOT	NVE	Washoe
Depot Repair and Return	YES	YES	YES
Priority Technical Assistant Center (P-TAC)	YES	YES	YES
Tech-Link (included in P-TAC)	YES	YES	YES
Software FX with SUMS - Harris Infrastructure and Subscribers	YES	YES	YES
Software Maintenance - Tait Infrastructure and Subscribers	YES	YES	YES
Software FX with SUMS and Tait Software Maintenance Installation	YES	YES	YES
Issue Resolution Support	YES	YES	YES
Preventive Maintenance (Infrastructure)	YES	YES	YES

Equipment Covered

The Warranty Plan covers all Equipment and Services provided by SERVICE PROVIDER under the Agreement as listed in Exhibit 5 – Equipment List.

Reused equipment is not covered by this Warranty Plan. Console upgrade software to Windows 10 is covered by this Warranty Plan but not the physical console hardware. The physical hardware is considered reused equipment.

DEPARTMENT Performed Warranty Repair

SERVICE PROVIDER provides DEPARTMENT the ability to perform maintenance and/or repairs during the Warranty Period without voiding or affecting the SERVICE PROVIDER's warranty or other responsibilities with proper, documented training. DEPARTMENT will provide all First Echelon support as outlined in the Issue Resolution Support SOW contained in this Warranty Plan.

DEPARTMENT technicians conducting warranty service work must complete the following technical training to be authorized to conduct the service work.

Figure 2. Technical Training Required

System Administration Training

Course Name	Course No.
P25 System Overview	YTSN4F
Unified Administration System	YTSN6B
Regional Network Manager	YTSN3V
Over-The-Air Rekeying	YTSN6C
Radio Programming & OTAP	YTSN6X

In addition to the classroom training, the technicians need to take the online System Administrator/Manager web-based training package through HTU.

- P25 Fleet Mapping Overview
- XL-200P Radio Operation
- Symphony Console Operation
- Radio Programming Overview
- Advanced Access Control (AAC)
- Radio Personality Manager (RPM & RPM 2)
- Unified Administration System (UAS) Overview
- Regional Network Manager (RNM) Overview
- Enterprise Network Manager (ENM)
- Over-The-Air Programming (OTAP)

- Active Directory
- Over-The-Air Rekeying (OTAR)
Fundamentals
- Activity Warehouse
- Inter-RF Subsystem Interface (ISSI)
Fundamentals

Radio Infrastructure Training

Course Name	Course No.
P25 System Maintenance	YTSN6D
Network Operation and Maintenance	YTSN3W
MASTR V Station Maintenance	YTSN8G
P25 Simulcast System Maintenance	YTSN8H
Tait P25 Conventional Configuration & Maintenance	YTSN4M
Regional Network Manager	YTSN3V

Radio Subscriber Training

Course Name	Course No.
RF Maintenance	YTSP7P

Work that is performed by a DEPARTMENT technician that has not been certified by receiving the prerequisite training will void the warranty for portions of the subsystems or components that they attempted to service. SERVICE PROVIDER will keep a list of all certified, trained technicians that have met the training requirements. If new technicians join the DEPARTMENT's staff, they must receive training and certification before working on the system.

Warranty Plan Statement of Works

Depot Repair and Return

SERVICE PROVIDER RESPONSIBILITIES

1. Provide a Return Material Authorization ("RMA") within two business days from the date of receipt of DEPARTMENT request.

2. Depot Repair and Return receipt and inspection.

- Receive Equipment from DEPARTMENT.
- Verify against DEPARTMENT submitted RMA.
- Perform a visual inspection.
- Perform an operational check to determine if there is a problem and the nature of the problem.

3. Standard Repair

- Schedule the standard repairs to be made to the Equipment.
- Make the required repairs and test the functionality of the repaired Equipment.
- Package, ship, and return the repaired Equipment to DEPARTMENT at SERVICE PROVIDER expense.
- Provide a Summary Report, per repair as exemplified below, or another format as determined by SERVICE PROVIDER.

Repair Order	Date	Problem	Resolution	Resolution Date
123456	7/4/2017	No card communication.	Corrupt software. Reloaded. Passed communication tests.	7/4/2017

4. Standard Third-Party Original Equipment Manufacturer (“OEM”) Equipment

- Provide proper method for processing RMA against Third- Party Equipment.
- Track Equipment sent to the OEM.
- Provide status updates to DEPARTMENT.
- Package, ship, and return the repaired Equipment to DEPARTMENT at SERVICE PROVIDER expense.

5. Non-standard Repair

- SERVICE PROVIDER may determine with mutual agreement with the DEPARTMENT, that the repair of Equipment is not within the scope of Services of this SOW due to:
 - Extraordinary physical and other damages.
 - Equipment misuse, mishandling, improper storage, unauthorized Equipment modifications, detrimental exposure, or involvement in an accident (including without limitation liquid intrusions), Acts of God, including, without limitation, lightning damages.
- If the Parties determine, for the reasons set forth above, that the Equipment is not within the scope of Services of this SOW, SERVICE PROVIDER shall either:
 - Determine and provide to DEPARTMENT an estimate of all additional charges required to perform repairs on the Equipment; or
 - Determine and provide to DEPARTMENT an estimate of all additional charges for replacement Equipment.
- If DEPARTMENT approves the additional charges, the repaired or replacement Equipment shall be shipped to DEPARTMENT.
- If DEPARTMENT disapproves the additional charges, SERVICE PROVIDER will charge a Diagnostic Fee of \$105 per incident and return the unrepaired Equipment to DEPARTMENT.

6. Schedule

- Fixed equipment mail-in board repair shall be completed within seven calendar days of receipt. Equipment will be returned to the DEPARTMENT via second-day shipping, with tracking number provided to the DEPARTMENT.
- Standard Repairs – The time for completion for standard repairs is approximately ten business days from the date of receipt of the Equipment to the date of shipment of the repaired Equipment to DEPARTMENT.
- Standard Third-Party Original Equipment Manufacturer (“OEM”) Equipment Repairs – The time for completion for standard Third-Party OEM Equipment

repairs is approximately 30 business days from the date of receipt of the Equipment to the date of shipment of the repaired Equipment to DEPARTMENT.

- Non-standard Repairs – Non-standard repairs may take longer than standard repairs. SERVICE PROVIDER will notify DEPARTMENT of any repairs that take longer than ten business days.

7. Return Shipments to DEPARTMENT

- Equipment shipments shall occur as the individual RMA Equipment is repaired.
- Multiple Equipment listed on a single RMA shall be shipped together to DEPARTMENT if complete shipment is specifically requested by DEPARTMENT.
- SERVICE PROVIDER will properly pack outbound shipments and bears the responsibility for damage that occurs prior to delivery to DEPARTMENT.

DEPARTMENT RESPONSIBILITIES

1. Request RMA using SERVICE PROVIDER provided process.
 2. Follow the current RMA instructions.
 3. Pack Equipment adequately to prevent damages during transit. Equipment damaged in transit will be returned to DEPARTMENT un-repaired and may incur a Diagnostic Fee.
 4. Ship, at DEPARTMENT's expense, the Equipment listed in the RMA either to SERVICE PROVIDER' Depot Repair and Return or another mutually agreed facility.
 5. If DEPARTMENT wants multiple items listed on a single RMA to be returned together, DEPARTMENT shall request complete shipment.
 6. Approve or disapprove additional charges within five business days.
 7. Pay a Diagnostic Fee if DEPARTMENT disapproves the additional charges.
- Contact SERVICE PROVIDER and arrange for advanced replacement.

Priority Technical Assistance Center (P-TAC)

DESCRIPTION OF SERVICES

1. Priority TAC provides technical telephone support twenty-four (24) hours per day, seven (7) days a week, including holidays via a dedicated telephone number and access to Tech-Link. Knowledgeable and experienced TAC personnel provide support on product operation, programming, maintenance and troubleshooting for SERVICE PROVIDER fixed site equipment, mobiles, and portables. Priority TAC also guarantees a two (2) hour response time if TAC personnel are not readily available to answer the call and a one (1) hour response time for Emergency Calls.

SERVICE PROVIDER RESPONSIBILITIES

1. Provide DEPARTMENT with twenty-four (24) hours per day - seven (7) days a week - three hundred sixty-five (365) days a year technical telephone assistance for resolving problems with their SERVICE PROVIDER fixed site equipment, mobile and portable Subscriber equipment. TAC support personnel will endeavor to respond to calls as quickly as they are received; however, if all support personnel are busy, a call back will be made within one (1) hour from the time the first support request was received.
2. Provide emergency assistance twenty-four (24) hours per day- seven (7) days a week - three hundred sixty-five (365) days a year. TAC support personnel will return all Emergency Calls within one (1) hour.
3. Provide DEPARTMENT with access to Tech-Link. Tech-Link provides access to various on-line support tools via a secure website; DEPARTMENT will receive a user ID and password allowing them access to the secured website. This secure website gives DEPARTMENT 24x7x365 access to technical service memos, the technical library, current software release notes, user documentation and answers to frequently asked questions.
4. If on-site support is required, the TAC personnel will coordinate with the appropriate SERVICE PROVIDER personnel to provide the needed on-site support.

Software FX with SUMS – SERVICE PROVIDER Infrastructure and Subscribers**DESCRIPTION OF SERVICES**

SERVICE PROVIDER's Software FX is a comprehensive software maintenance program that provides periodic Software Updates to SERVICE PROVIDER developed software applications and system Security Updates. Software FX is made of three elements. This SOW covers system software release 10A and succeeding versions.

1. The first element provides updates to SERVICE PROVIDER developed software programs. These Software Updates are baseline tested as system level releases and provided as a package to ensure compatibility across system infrastructure, radio components, and programming utilities. The Software Updates include enhancements to the existing software baseline, corrections to issues, and the ability to purchase and enable newly developed licensed features. All software media and revised software manuals are provided at the time of any software revisions, and are available in manual form or on-line through SERVICE PROVIDER's Tech-Link web portal. SERVICE PROVIDER will separate corrective revisions from enhancements; however, if new releases are necessary to provide corrections, then the entire release (including enhancements) shall be provided.
2. The second element, SUMS, for SERVICE PROVIDER Infrastructure only, provides periodic security-related updates to mitigate identified software vulnerabilities. SERVICE PROVIDER monitors governmental and open source information databases to identify vulnerabilities applicable to the Designated System. Updates are tested on dedicated security verification test systems to ensure proper system operation prior to general release. Security Updates may include Microsoft security updates, Sybase, SQL, Red Hat Linux and other security-related updates that are relevant to the Designated System. Security Updates are electronically distributed to target devices via a client - server application running within the designated system. This application provides the full scheduling capabilities should an application restart or server reboot be necessary to complete the update process.
3. The third element, Tech-Link, provides DEPARTMENT access to various on-line support tools via a secure website. DEPARTMENT will receive a user ID and password allowing them access to the secured website. In addition to providing

access to Software Updates, the secure website gives DEPARTMENT 24x7x365 access to technical service memos, the technical library, current software release notes, user documentation and answers to frequently asked questions.

4. All updates shall be shipped to the DEPARTMENT's Software FX contact as designated below, and installed by SERVICE PROVIDER.

SERVICE PROVIDER RESPONSIBILITIES

1. SERVICE PROVIDER will provide DEPARTMENT Software Updates, documentation updates and software release notes.
2. Prior to the general release of a major system release, SERVICE PROVIDER shall make available a system level release document announcing the impending release, and detailing its contents and impact.
3. Provide Security Updates, security release notes, and installation instructions at periodic intervals targeting bi-monthly releases. More frequent Security Update distributions may be required to address urgent product security vulnerabilities. Security Update distributions on other than a bi-monthly basis does not constitute a contractual default or breach by SERVICE PROVIDER.
4. Provide method to deliver Security Updates to the target devices within the DEPARTMENT's Designated System via an automated client - server distribution application.
5. Monitor pertinent governmental, vendor, independent and open source databases for security vulnerabilities and any subsequent resolutions that affect products provided by SERVICE PROVIDER that are part of the DEPARTMENT's Designated System.
6. Identify and document latest system vulnerabilities and compliance issues discovered. Provide a status and recommendations report via Tech-Link.
7. Pretest the Security Updates to ensure that they do not adversely affect SERVICE PROVIDER' stated performance of the DEPARTMENT's Designated System. Testing is performed on dedicated security verification test systems to ensure proper operation prior to general release.
8. Reassess the system configuration annually and provide revised pricing should any significant changes be made to DEPARTMENT's Designated System(s)

configuration. Unless otherwise identified in this SOW, revised pricing will be reflected in the following year's Software FX fee. If SERVICE PROVIDER's rates for Software FX should increase, the DEPARTMENT will be notified in writing of any such increases at least 120 days prior to the end of Subscriber's yearly Software FX period then in effect.

9. Replace any hardware that is impacted by software updates during the Warranty Period

DEPARTMENT RESPONSIBILITIES

1. Properly install or allow SERVICE PROVIDER to install the Software Updates provided by SERVICE PROVIDER in order of receipt from SERVICE PROVIDER. DEPARTMENT recognizes that software support provided by SERVICE PROVIDER is limited to SERVICE PROVIDER's current and current minus 2 software release levels of software programs.
2. Complete or allow SERVICE PROVIDER to complete the Security Update process on the target devices (e.g. rebooting the target devices) following the instructions accompanying each Security Update distribution.
3. Cooperate with SERVICE PROVIDER and perform all acts that are reasonable or necessary to enable SERVICE PROVIDER to provide the services in this SOW to DEPARTMENT.
4. Designate a contact individual(s) or group(s) with sufficient technical expertise to be able to interact knowledgeably with SERVICE PROVIDER's technical support personnel.
5. Purchase of all necessary software licenses to enable the automated distribution of Security Updates for new and existing devices not previously licensed as part of the original Designated System purchase.
6. DEPARTMENT hereby delegates, grants, and assigns to SERVICE PROVIDER, acting as the DEPARTMENT's agent, all approval rights relating to the selection of vendor patches. All approvals given to Third-Party vendors shall be deemed as being granted by the DEPARTMENT.

7. Provide the below designated contact information. The below designated contact will receive all notices and software and Security Updates provided under this SOW

Name:

Email Address:

Shipping Address:

OTHER CHARGES

1. DEPARTMENT may be required to have currently executed service(s)/support agreement(s) with Third-Party vendor(s) separate from this SOW to receive certain Security Updates. Failure to do so may limit the DEPARTMENT's right to receive the Third-Party software.

EXCLUSIONS

1. Any Software products released by SERVICE PROVIDER for which an earlier generation or release level of software is not already contained within DEPARTMENT's Designated System is not included in this SOW.

Software Maintenance – Tait Infrastructure and Subscribers**DEPARTMENT IS ENTITLED TO RECEIVE**

1. Software and firmware releases relevant to and within the licensed feature set of Equipment.
2. Access to the Software releases referred to in this SOW shall be through PSPC Info Center or via email PSPC_TAC@Harris.com.
3. SERVICE PROVIDER will provide technical support described in this SOW for the current and up to three previous releases of Software and firmware. Technical support for previous software releases is at SERVICE PROVIDER's discretion and may require additional payment by DEPARTMENT.
4. SERVICE PROVIDER shall maintain only the current Software release for Tait Equipment. If DEPARTMENT has a problem with a non-current release of Software, DEPARTMENT may be required to install, at DEPARTMENT's expense, the most current version of Software to remedy such problem.
5. This SOW does not include the provision of DEPARTMENT requested enhancements, modifications, or developments. Any such enhancement, modification or development may be requested by DEPARTMENT, for an additional fee, via the Help Desk, for consideration by SERVICE PROVIDER.

Software FX with SUMS and Tait Software Maintenance Installation**SERVICE PROVIDER RESPONSIBILITIES**

1. Provide DEPARTMENT with a Business Hours installation schedule and approximate Equipment outage times (if applicable).
2. Install Software FX and SUMS updates and Tait Software Maintenance updates.
3. Provide DEPARTMENT with a Summary Report as part of a monthly reporting cycle as exemplified below, or another format as determined by SERVICE PROVIDER:

WO No.	Date	Problem	Resolution	Resolution Date
123456	7/4/2017	Software FX received.	Loaded new Software per release notes.	7/4/2017

4. Provide software update for all SERVICE PROVIDER and Tait Infrastructure, Dispatch and User Radio equipment to the same and latest software release prior to the end of Warranty.

DEPARTMENT RESPONSIBILITIES

1. Decide whether to install or not install Software Updates based on the risks and benefits involved, and waive all SERVICE PROVIDER liability for such decision.
2. Provide a suitable service environment (HVAC, power, illumination, grounding, internet access if applicable).
3. Provide SERVICE PROVIDER unlimited, safe, physical, and remote access to DEPARTMENT sites and Equipment to support delivery of Services.
4. Notify SERVICE PROVIDER when there is any activity that impacts the system, Equipment, or Services.
5. Provide SERVICE PROVIDER instant and easy access to all Equipment, data, and power points.
6. Provide Subscriber equipment collected in at several, mutually agreed, central points.

7. Ensure SERVICE PROVIDER can perform Services in one continuous effort.
8. Waive Services and reimbursement for Services when access is not provided to SERVICE PROVIDER for scheduled Services or the Software installation is deemed not necessary by SERVICE PROVIDER or SERVICE PROVIDER is unable to provide Services due to DEPARTMENT responsibilities.
9. Pay Demand Services for additional efforts including, delays in work, non-SERVICE PROVIDER Software or cable interface acquisition, configuration or engineering services, or repairs.
10. Cooperate with SERVICE PROVIDER and perform all efforts that are necessary to enable SERVICE PROVIDER to provide the Services to DEPARTMENT.

EXCLUSIONS

1. No Software Installation will be provided on Equipment unless targeted by the SERVICE PROVIDER Software FX Software Update or Tait Software Maintenance update.

Issue Resolution Support

INTRODUCTION

This SOW describes the procedure and SERVICE PROVIDER's involvement to address periodic system issues as they arise during the Warranty period. To facilitate understanding, flow charts will be utilized for each step of escalation.

STEP 1: First Echelon DEPARTMENT Support

The first step in exploring an issue is for the DEPARTMENT to attempt to correct an issue on their own (i.e. First Echelon support). The DEPARTMENT will attempt to resolve the issue remotely with their own staff. If not correctable remotely, the DEPARTMENT will dispatch a DEPARTMENT technician to go to the location and work with the remote DEPARTMENT in an attempt to resolve the issue.

Figure 3 – First Echelon Support Flow provides a visual of the process flow for First Echelon support.

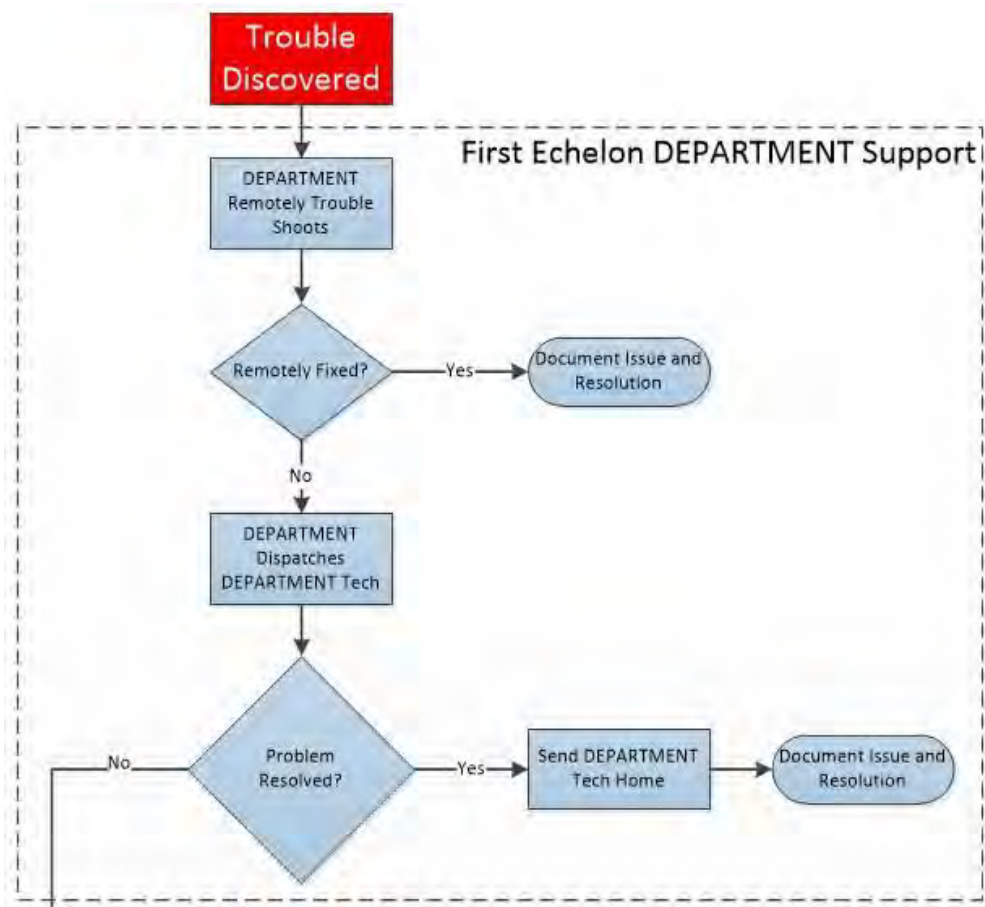
SERVICE PROVIDER Responsibilities:

- None

DEPARTMENT Responsibilities:

- Provide technical personnel and networked based computing resources that can remotely examine system performance.
- Provide technical personnel that can troubleshoot issues at a site.
- Provide computers, networking equipment and calibrated test equipment to DEPARTMENT staff that will adequately allow the staff to troubleshoot issues.
- Maintain adequate spares to support quick issue resolution.
- Log each ticket in the AMPS system or similar platform.

Figure 3. First Echelon Support Flow



STEP 2: SERVICE PROVIDER Level 1 (L1) Support

The second step in the process is initiated if DEPARTMENT team cannot solve the issue remotely or with a DEPARTMENT technician on site.

DEPARTMENT would then call an answering service who would attempt to call the on-call technician. If the on-call technician does not reply within 15 minutes of DEPARTMENT's call to the answering service, the answering service will continue to call the on-call tech plus call the Western Regional Service Manager. If neither reply within 25 minutes of DEPARTMENT's call to the answering service, the answering service will call the Director of Field Services. This is the Escalation Plan that will be followed to ensure the DEPARTMENT receives a call back acknowledging receipt of an issue reported within 30 minutes of DEPARTMENT contacting the answering service. The requirement is for a SERVICE PROVIDER person to call the DEPARTMENT back within 30 minutes acknowledging awareness of the issue.

The support structure is identified below in the flow chart as "Nevada 24x7". Nevada 24x7 is a group of in-state personnel that will support the DEPARTMENTS in their efforts to trouble shoot issues. The Western Regional Service Manager and his direct staff and indirect channel partners will provide the second line of defense for system issues that arise.

The process flow for L2 support is shown in **Figure 2 – L1 Support Flow**.

The Escalation Plan:

- Step 1
 - DEPARTMENT's single point of contact or on-call personnel will call a defined local number for an answering service. The answering service will take DEPARTMENT's name, number and reason for the call. The answering service will then attempt to contact the SERVICE PROVIDER on-call technician.
- Step 2
 - If after fifteen (15) minutes of DEPARTMENT's call to the answering service the SERVICE PROVIDER on-call technician has not responded to the answering service and DEPARTMENT, the answering service will continue to call the SERVICE PROVIDER on-call technician plus the Regional Service Manager.
- Step 3

- If after twenty-five (25) minutes of DEPARTMENT's call to the answering service neither the SERVICE PROVIDER on-call technician or the Regional Service Manager have responded to the answering service and DEPARTMENT, the answering service will call the SERVICE PROVIDER's Director of Field Services.
- Step 4
 - If SERVICE PROVIDER does not reply to the answering service within 30 minutes, answering service will call DEPARTMENT with a status update and continue to call all three levels of SERVICE PROVIDER escalation.
 -

For L1 support, SERVICE PROVIDER will also attempt to remotely diagnose the issue along with the DEPARTMENT remote support person and on-site DEPARTMENT technician.

If SERVICE PROVIDER L1 remote person cannot assist in the resolution, the next step in the L1 process is for the SERVICE PROVIDER remote person to contact SERVICE PROVIDER' PTAC group for assistance.

If SERVICE PROVIDER L1 remote person, PTAC, DEPARTMENT remote person and DEPARTMENT on site technician cannot resolve the issue, the issue is escalated to Level 2 (L2). The Regional Service Manager will be responsible for driving the actions to resolve the issue.

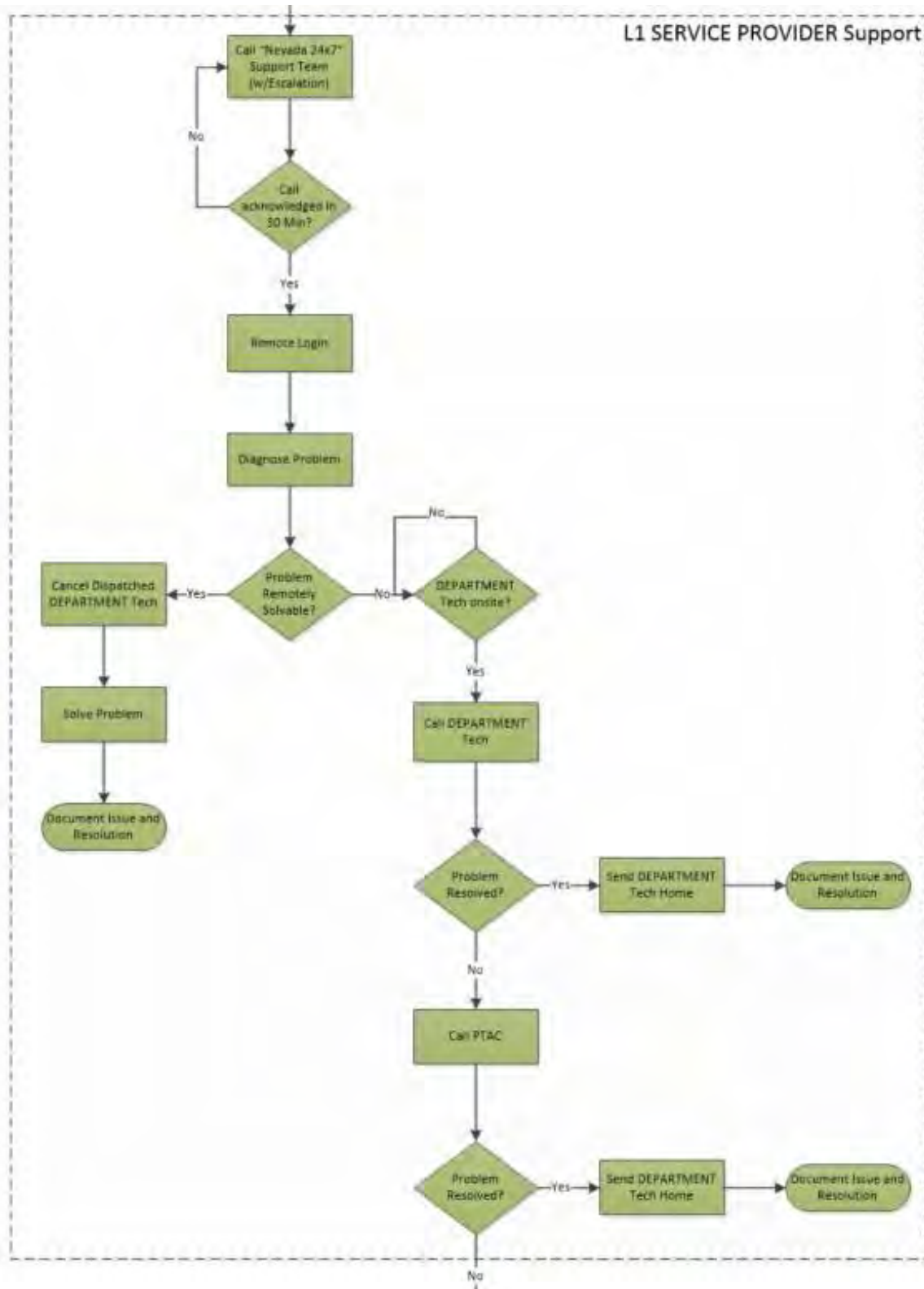
SERVICE PROVIDER Responsibilities:

- Provide qualified technical people to be on-call 24x7 that meet DEPARTMENT access policies.
- Provide the tools and equipment to the SERVICE PROVIDER staff for being able to remotely diagnose
- Provide PTAC assistance (separate service/SOW that is being procured by the DEPARTMENTS).

DEPARTMENT Responsibilities:

- Provide remote access to the NSRS systems for approved SERVICE PROVIDER staff.
- Provide technical personnel and networked computing resources that can remotely examine system performance
- Provide technical personnel that can troubleshoot issues at a site
- Provide computers, networking equipment and calibrated test equipment to DEPARTMENT staff that will adequately allow the staff to troubleshoot issues.
- Maintain adequate spares to support quick issue resolution.
- Ensure DEPARTMENT technician will remain on site throughout the duration of resolution

Figure 4. L1 Support Flow



STEP 3: SERVICE PROVIDER Level 2 (L2) Support

The third step in the process is initiated if the First Echelon and L1 support are unsuccessful in solving the issue.

If the issue is escalated to L2, the first step in the process is to conduct a Joint Action Plan meeting between DEPARTMENT and SERVICE PROVIDER. The goal of the meeting is to coordinate efforts, determine if a SERVICE PROVIDER direct staff technician or SERVICE PROVIDER indirect channel partner technician should be dispatched and to determine severity of the issue. The Regional Service Manager will be responsible for driving the actions from the Joint Action meeting.

If the decision is made to dispatch a SERVICE PROVIDER technician, the timing and logistics of getting SERVICE PROVIDER technician on site to join the DEPARTMENT technician will be mutually agreed upon. The goal for easily accessible sites with a Critical Service issue will be 8 hours. For remote and special vehicle access sites, best effort will be utilized with the goal of having the SERVICE PROVIDER technician on site within 24 hours. SERVICE PROVIDER and the DEPARTMENT will mutually agree on the best method and timing to reach remote sites. will mutually agree on the best method and timing to reach remote sites.

Figure 5 – Critical Service Issues identifies the issues that are deemed “Critical” and require the utmost urgency to resolve and Figure 6 – L2 Support Flow outlines the process flow for L2 support.

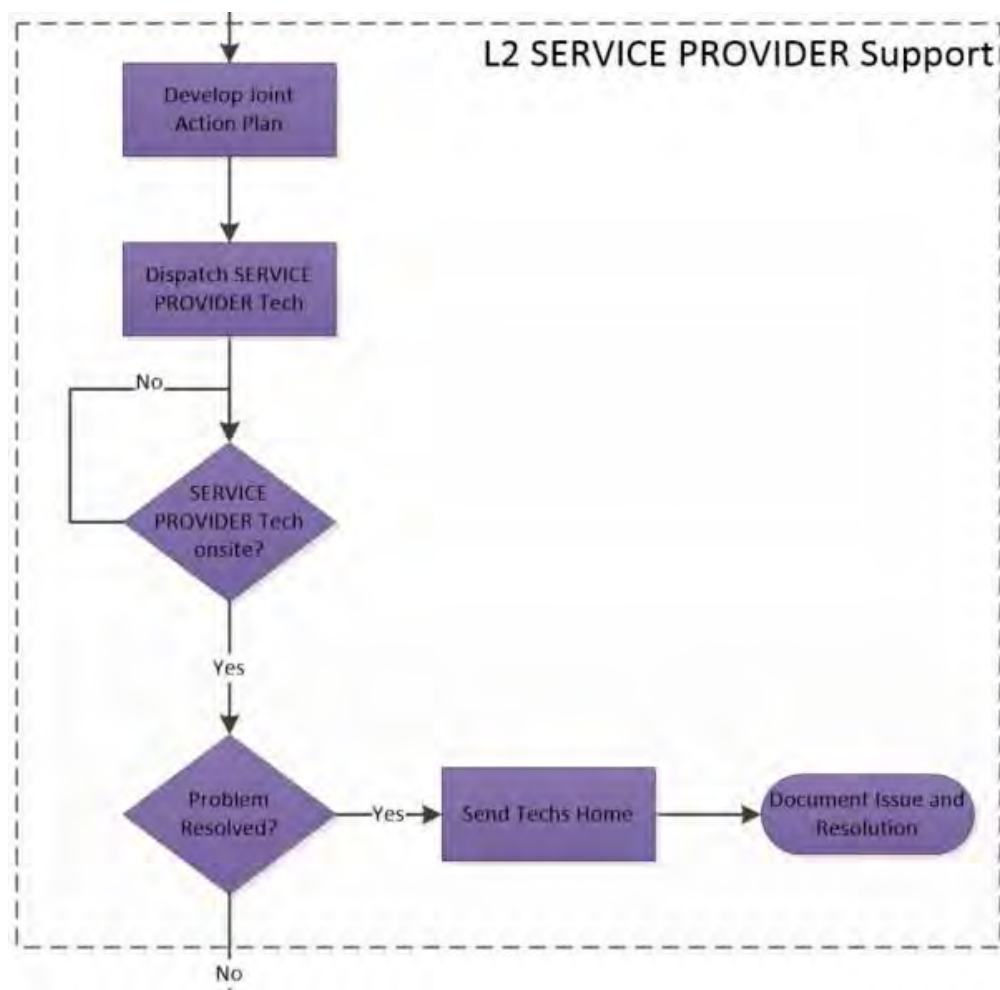
Figure 5. Critical Service Issues

Critical Service Issues	
Any failure which causes a loss of 15% or more in capacity or coverage in any cell	
Any failure which causes a loss of simulcast capability	
Any failure which causes a loss of the primary core	
Any system failure that causes the loss of two or more console positions	
Any failure that renders the logging recorder inoperable or causes a loss of recorded audio	
The failure of two or more repeaters	
Concurrent failure of two or more switches and/or routers	
Failure of the receiver voting system	

Once the technician is on site, five different technical personnel will be attempting to diagnose the issue.

1. DEPARTMENT Remote support
2. SERVICE PROVIDER Remote support
3. P-TAC
4. DEPARTMENT on site technician
5. SERVICE PROVIDER on site technician

Figure 6. L2 Support Flow



SERVICE PROVIDER Responsibilities:

- Provide qualified technical people to be on-call 24x7 that meet DEPARTMENT access policies.
- Provide the tools and equipment to the SERVICE PROVIDER staff for being able to remotely diagnose
- Provide PTAC assistance (separate service/SOW that is being procured by the DEPARTMENT).
- Provide technical personnel that can troubleshoot issues at a site that meet DEPARTMENT access policies.
- Provide computers, networking equipment and calibrated test equipment to SERVICE PROVIDER staff that will adequately allow the staff to troubleshoot issues.
- Ensure SERVICE PROVIDER technician will remain on site throughout the duration of resolution.

DEPARTMENT Responsibilities:

- Provide remote access to the NSRS systems for approved SERVICE PROVIDER staff.
- Provide technical personnel and networked computing resources that can remotely examine system performance
- Provide technical personnel that can troubleshoot issues at a site
- Provide computers, networking equipment and calibrated test equipment to DEPARTMENT staff that will adequately allow the staff to troubleshoot issues.
- Maintain adequate spares to support quick issue resolution.
- Ensure DEPARTMENT technician will remain on site throughout the duration of resolution

STEP 4: SERVICE PROVIDER Level 3 (L3) Support

The fourth step in the process is initiated if the First Echelon support, L1 support and L2 support are unsuccessful in solving the issue.

If the issue is escalated to L3, the first step in the process is to conduct a Joint Action Plan meeting between DEPARTMENT and SERVICE PROVIDER. The goal of the meeting is to coordinate efforts, determine if a SERVICE PROVIDER engineer should be dispatched. The Regional Service Manager will be responsible for driving the actions from the Joint Action meeting.

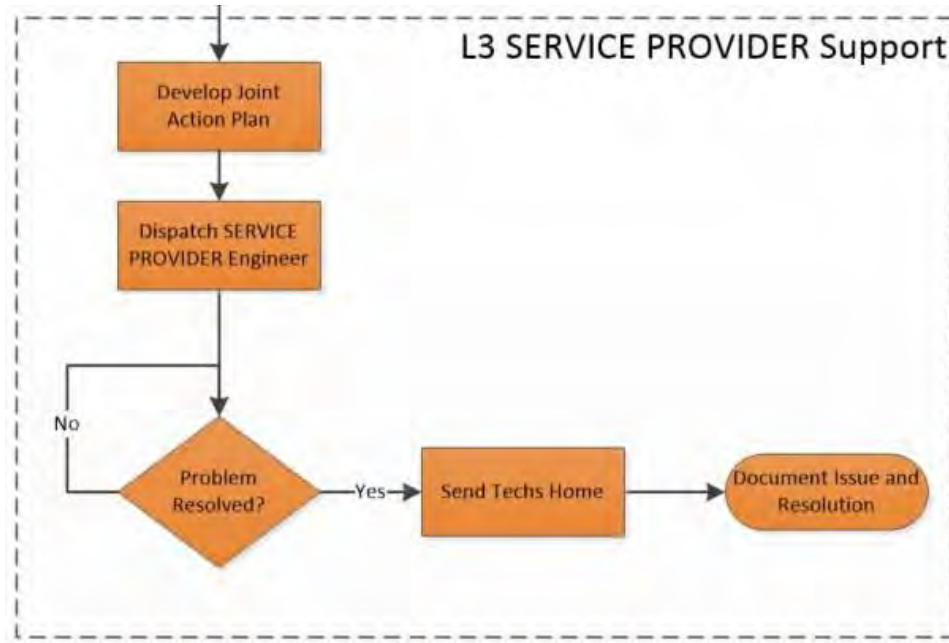
If the decision is made to dispatch a SERVICE PROVIDER engineer, the timing and logistics of getting the SERVICE PROVIDER engineer on site to join the DEPARTMENT technician and SERVICE PROVIDER technician will be mutually agreed upon. The goal for easily accessible sites with a Critical Service issue will be 8 hours. For remote and special vehicle access sites, best effort will be utilized with the goal of having the SERVICE PROVIDER engineer on site within 24 hours. SERVICE PROVIDER and the DEPARTMENT will mutually agree on the best method and timing to reach remote sites.

Figure 7 – L3 Support Flow outlines the process flow for L3 support. Notice that the issue will remain at L3 status until resolved.

Once the SERVICE PROVIDER engineer is on site, six different technical personnel will be attempting to diagnose the issue.

1. DEPARTMENT Remote support
2. SERVICE PROVIDER Remote support
3. P-TAC
4. DEPARTMENT on site technician
5. SERVICE PROVIDER on site technician
6. SERVICE PROVIDER on site engineer

Figure 7. L3 Support Flow

**SERVICE PROVIDER Responsibilities:**

- Provide qualified technical people to be on-call 24x7 that meet DEPARTMENT access policies.
- Provide the tools and equipment to the SERVICE PROVIDER staff for being able to remotely diagnose
- Provide PTAC assistance (separate service/SOW that is being procured by the DEPARTMENT).
- Provide technical personnel that can troubleshoot issues at a site that meet DEPARTMENT access policies.
- Provide computers, networking equipment and calibrated test equipment to SERVICE PROVIDER staff that will adequately allow the staff to troubleshoot issues.
- Ensure SERVICE PROVIDER technician and engineer will remain on site throughout the duration of resolution.

DEPARTMENT Responsibilities:

- Provide remote access to the NSRS systems for approved SERVICE PROVIDER staff.
- Provide technical personnel and network based computing resources that can remotely examine system performance
- Provide technical personnel that can troubleshoot issues at a site
- Provide computers, networking equipment and calibrated test equipment to DEPARTMENT staff that will adequately allow the staff to troubleshoot issues.
- Maintain adequate spares to support quick issue resolution.
- Ensure DEPARTMENT technician will remain on site throughout the duration of resolution

REPORT GENERATION

If the issue is resolved by the DEPARTMENT First Echelon team, the DEPARTMENT will be responsible for generating the issue resolution report.

If the issue is resolved by SERVICE PROVIDER at the L1, L2 or L3 levels of support, SERVICE PROVIDER will be responsible for generating the issue resolution report.

SERVICE PROVIDER and the DEPARTMENT will mutually agree on the format of the issue resolution report but, at a minimum, it must include:

- Time issue was reported
- Location where issue is being observed
- Symptoms of the issue
- Information regarding Group ID, Unit ID and functionality impacted.
- Time to resolve issue
- Disposition of issue
- Date of issue closure

- Corrective Action if applicable

SPARE PART CONTROL

The DEPARTMENT will be responsible for Spare Part Control including replenishment and usage reporting.

DEPARTMENTDEPARTMENTDEPARTMENTDEPARTMENT

ADDITIONAL CONDITIONS REGARDING SITE ACCESS AND RESPONSE TIMES

1. The goal for easily accessible sites with a Critical Service issue will be 8 hours. For remote and special vehicle access sites, best effort will be utilized with the goal of having the SERVICE PROVIDER engineer on site within 24 hours. SERVICE PROVIDER and the DEPARTMENT will mutually agree on the best method and timing to reach remote sites.
2. DEPARTMENT is responsible to ensure that all necessary clearances, escorts, ID cards, network access requirements including custom software or security credentials, or other special requirements have been provided to SERVICE PROVIDER in advance to allow technicians and engineers prompt access to any Equipment requiring service that may be located in a secured or limited access area under DEPARTMENT's control.
3. DEPARTMENT agrees to provide SERVICE PROVIDER an appropriate work environment and unlimited access, working space including heat, light ventilation, electric current and outlets, and local wireless, telephone access or networking port for the use of SERVICE PROVIDER' service personnel in the Equipment's physical location if reasonably possible.
4. DEPARTMENT agrees to setup a communications coordination talk group on the system for troubleshooting purposes in support of this Issue Resolution plan primarily for use at remote sites.

Preventive Maintenance on SERVICE PROVIDER Infrastructure and Tait Infrastructure**SERVICE PROVIDER RESPONSIBILITIES**

1. Perform Preventive Maintenance which provides tests, checks, and alignment DEPARTMENT's Equipment to ensure the Equipment meets specifications. 's Equipment to ensure the Equipment meets specifications.
2. At DEPARTMENT's request, at Demand Services rates, perform services for work other than tests, checks, and alignment.
3. Provide DEPARTMENT with a Preventive Maintenance Work Hours schedule and approximate Equipment outage times (if any).
4. Provide optimization of Equipment to SERVICE PROVIDER' best practices or third party best practices as applicable.
5. Provide DEPARTMENT with a Summary Report as part of a monthly reporting cycle as exemplified by Preventive Maintenance SERVICE PROVIDER Infrastructure Table, or another format as determined by SERVICE PROVIDER.
6. If spares are consumed during a Preventative Maintenance, include the model and serial number of both the defective unit and the spare in the Summary Report.

DEPARTMENT RESPONSIBILITIES

1. Provide a suitable service environment (HVAC, power, illumination, grounding, internet access if applicable).
2. Provide SERVICE PROVIDER unlimited, safe, physical and remote access to DEPARTMENT sites and equipment to support delivery of Service.
3. Notify SERVICE PROVIDER when there is any activity that impacts the system, Equipment, or Services.
4. Provide SERVICE PROVIDER instant and easy access to all Equipment, data, and power points.
5. Ensure SERVICE PROVIDER can perform Services in one continuous effort.

6. Waive Services and reimbursement for Services when access is not provided to SERVICE PROVIDER for scheduled Services or SERVICE PROVIDER is unable to provide Services due to DEPARTMENT responsibilities.
7. Pay Demand Services for additional efforts including Equipment removal, Equipment aggregation management, delays in work, repairs or replacement.
8. Cooperate with SERVICE PROVIDER and perform all efforts that are necessary to enable SERVICE PROVIDER to provide the Services to DEPARTMENT.
9. Review Summary Report, and within 30 days of receipt, provide direction for further action.

ADDITIONAL CONDITIONS

1. DEPARTMENT is responsible to ensure that all necessary clearances, escorts, ID cards, network access requirements including custom software or security credentials, or other special requirements have been provided to SERVICE PROVIDER in advance to allow technicians prompt access to any Equipment requiring service that may be located in a secured or limited access area under DEPARTMENT's control.
2. DEPARTMENT shall be billed at Demand Services rates for time lost or changes due DEPARTMENT in the provision or execution of the Services. in the provision or execution of the Services.

PREVENTATIVE MAINTENANCE CHECKLIST

Figure 8 provides Services to be performed as applicable during the Preventive Maintenance Exhibit 5 – Equipment List. The technician will attempt to bring the equipment into specification, if necessary. If repairs are required and authorized by the DEPARTMENT, a separate work order will be created and noted in the actions., a separate work order will be created and noted in the actions.

Figure 8. Preventive Maintenance Checklist**Technician** _____ **Date** _____

SERVICE PROVIDER Infrastructure Equipment	Preventive Maintenance (If Applicable & as Necessary)	Period	Pass Fail	Notes or Recommended Actions to Take
GENERAL	Check RF, data and audio cable condition	Once per year during the Warranty term		
	Check general alarm status, troubleshoot and investigate any found alarm conditions	Once per year during the Warranty term		
	Check condition of punch blocks	Once per year during the Warranty term		
	Perform a general talkgroup test	Once per year during the Warranty term		
	Perform a multisite test	Once per year during the Warranty term		
	Perform an individual call test	Once per year during the Warranty term		

Nevada Shared Radio Replacement Project
Nevada Department of Transportation

Exhibit 11 – Statement of Work
Warranty Plan

SERVICE PROVIDER Infrastructure Equipment	Preventive Maintenance (If Applicable & as Necessary)	Period	Pass Fail	Notes or Recommended Actions to Take
MASTR V BASE STATION (Manual MM-017079-001)	Check simulcast timing, adjust, if needed	Once per year during the Warranty term		
MASTR V	Check transmitter RF power output per design specifications	Once per year during the Warranty term		
MASTR V	Check transmitter frequency stability is within specification	Once per year during the Warranty term		
MASTR V	Check modulation deviation is within specification	Once per year during the Warranty term		
Receive Multicoupler and connections to RX	Check Receiver sensitivity and BER	Once per year during the Warranty term		
Network Alarm Equipment	Verify alarm functionality	Once per year during the Warranty term		
System	Check call processing, each working (voice) channel	Once per year during the Warranty term		
All equipment including network equipment	Clean physical filters clean or replace, as needed	Once per year during the Warranty term		

Nevada Shared Radio Replacement Project
Nevada Department of Transportation

Exhibit 11 – Statement of Work
Warranty Plan

SERVICE PROVIDER Infrastructure Equipment	Preventive Maintenance (If Applicable & as Necessary)	Period	Pass Fail	Notes or Recommended Actions to Take
Antenna System	Inspect and sweep RF TX and RX antenna cables. Inspect RF cable, connectors and suppressor in the shelter. lines	Once per year during the Warranty term		
Network and Console Equipment	Inspect audio and data cables for snug connection and corrosion	Once per year during the Warranty term		
Site/system	Verify control channel operation and rolling	Once per year during the Warranty term		
Site Equipment	Perform power supply voltage checks	Once per year during the Warranty term		
CONVENTIONAL RADIO BASE STATION	Check transmitter RF power output doesn't exceed design specifications	Once per year during the Warranty term		
Tait 800/VHF	Check transmitter frequency stability is within specification	Once per year during the Warranty term		

Nevada Shared Radio Replacement Project
Nevada Department of Transportation

Exhibit 11 – Statement of Work
Warranty Plan

SERVICE PROVIDER Infrastructure Equipment	Preventive Maintenance (If Applicable & as Necessary)	Period	Pass Fail	Notes or Recommended Actions to Take
Tait 800/VHF	Check modulation deviation is within specification on VHF and 800	Once per year during the Warranty term		
Tait 800/VHF	Check Receiver sensitivity	Once per year during the Warranty term		
Tait 800/VHF	Verify alarm functionality	Once per year during the Warranty term		
Tait 800/VHF	Perform voice call processing, each 800 and VHF channel	Once per year during the Warranty term		
Tait 800/VHF and Network Equipment	Clean or replace physical filters	Once per year during the Warranty term		
Tait 800/VHF	Inspect and sweep RF, TX, and RX antenna cables. Inspect RF cable, connectors and suppressor in the shelter.	Once per year during the Warranty term		

Nevada Shared Radio Replacement Project
Nevada Department of Transportation

Exhibit 11 – Statement of Work
Warranty Plan

SERVICE PROVIDER Infrastructure Equipment	Preventive Maintenance (If Applicable & as Necessary)	Period	Pass Fail	Notes or Recommended Actions to Take
Tait 800/VHF	Inspect audio and data cables for snug connection and corrosion	Once per year during the Warranty term		
Tait 800/VHF	Perform power supply voltage checks			
GPS RECEIVERS	Verify GPS sync	Once per year during the Warranty term		
	Verify alarm functionality	Once per year during the Warranty term		
	Verify battery functionality	Once per year during the Warranty term		
	Check power supply voltage	Once per year during the Warranty term		
NETWORK	Check and verify RNM alarms	Once per year during the Warranty term		

Nevada Shared Radio Replacement Project
Nevada Department of Transportation

Exhibit 11 – Statement of Work
Warranty Plan

SERVICE PROVIDER Infrastructure Equipment	Preventive Maintenance (If Applicable & as Necessary)	Period	Pass Fail	Notes or Recommended Actions to Take
	Inspect Ethernet cables	Once per year during the Warranty term		
	Check MPLS router voltage	Once per year during the Warranty term		
	Check MPLS router cables	Once per year during the Warranty term		
	Check MPLS router alarms	Once per year during the Warranty term		
	Check dual CPU operation	Once per year during the Warranty term		
	Check servers for dust; clean and replace filter, as necessary	Once per year during the Warranty term		
CONSOLE ACCESSORIES	Check microphone, headset jacks, foot switches for condition and functionality	Once per year during the Warranty term		

Nevada Shared Radio Replacement Project
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Exhibit 11 – Statement of Work
Warranty Plan

SERVICE PROVIDER Infrastructure Equipment	Preventive Maintenance (If Applicable & as Necessary)	Period	Pass Fail	Notes or Recommended Actions to Take
CALL DIRECTOR	Check functionality	Once per year during the Warranty term		
ISSI	Coordinate with DEPARTMENT for outside agencies and check functionality	Once per year during the Warranty term		
	Check for alarms	Once per year during the Warranty term		
NSS	Verify high availability (HA) functionality	Once per year during the Warranty term		
	Check for alarms	Once per year during the Warranty term		
	Check servers for dust	Once per year during the Warranty term		

Nevada Shared Radio Replacement Project
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Exhibit 11 – Statement of Work
Warranty Plan

SERVICE PROVIDER Infrastructure Equipment	Preventive Maintenance (If Applicable & as Necessary)	Period	Pass Fail	Notes or Recommended Actions to Take
	Check servers are operating on most current software revision	Once per year during the Warranty term		
	Check BeOn functionality	Once per year during the Warranty term		
SYMPHONY CONSOLES	Check for system connectivity	Once per year during the Warranty term		
	Verify console basic call functionality. Perform voice calls on talk groups	Once per year during the Warranty term		
	Check select and unselect speaker audio output for clarity	Once per year during the Warranty term		
	Check microphone, headset jacks, foot switches for condition and functionality	Once per year during the Warranty term		

Warranty Plan Definitions

BUSINESS HOURS. Business Hours are defined as 8:00 a.m. to 5:00 p.m. PST, Monday through Friday excluding, national, state, and local holidays.

DEPARTMENT. Means “Buyer”, the end-user entity, named in the Agreement, purchasing Services for its own internal use under this Warranty Plan.

DEMAND SERVICES. Means service requests beyond the scope of and not defined in this Warranty Plan. Demand Services may be performed at SERVICE PROVIDER’ rates plus any other applicable expenses, fees, and escalations, as determined by SERVICE PROVIDER. The installation, removal, reinstallation, and/or replacement of equipment not associated with the Services as defined in this Warranty Plan shall be considered Demand Services or Other Services, as applicable. SERVICE PROVIDER has the right to reasonably refuse to provide Demand Services or Other Services. Demand Services may include work performed outside of Business Hours and Other Services, as applicable. Demand Services may be escalated yearly.

DESIGNATED SYSTEM(S). Means the SERVICE PROVIDER system(s) purchased by DEPARTMENT and identified in Equipment List for the Software FX SOW. The Designated System does not include Third Party Software products, excluded products or other systems to which the Designated System may be linked.

DIAGNOSTIC FEE. Means the fee that is charged if DEPARTMENT disapproves charges to repair and/or replace Equipment upon SERVICE PROVIDER’ determination for repair or replacement of Equipment, as per applicable SOW. SERVICE PROVIDER will charge DEPARTMENT a Diagnostic Fee based on the repair facility used and return the unrepaired Equipment to DEPARTMENT.

EQUIPMENT. Means the products and related systems, as identified in the Equipment List for which Services are to be provided under and as set forth in this Warranty Plan.

EQUIPMENT LIST. Means the specific, serialized list of Equipment for Services to be provided under and is set forth in this Warranty Plan.

INFRASTRUCTURE. Means the i) Radio Frequency (RF) site (consisting of only a duplexer, combiner, multicoupler, channels, Internet Protocol (IP) channel routers with interface cards, network sentry, Unified Audio Card (UAC), and Mini-Mobility Exchange (MME); ii) the dispatch site (consisting of only IP consoles, IP console switches, IP console routers, IP console internal interface cards, and IP console power supplies; or iii) an Network Switching Center (NSC) site (consisting of only the NSC IP server, storage array, IP router, backup device, firewall, fault management data collection device, and network management pc interface). Infrastructure and respective quantities are specifically itemized in the Equipment List.

NON-SERVICE PROVIDER INFRASTRUCTURE. Means the Equipment not part of Infrastructure or Subscribers. Non SERVICE PROVIDER Infrastructure may comprise of the following: microwave or data transport system components (such as microwave, fiber, multiplexors, and routers), logging recorder timing receiving or generation systems, towers, tower top amplifiers, shelters, fences, landscaping, dehydrators, fuel tanks, bi-directional amplifiers (BDAs), alternating or direct current power systems (uninterruptible power supply (UPS), monitors, inverters, converters, generators, or feeds), heating ventilation air conditioning (HVAC), fire suppression, and/or other environmental monitoring or affecting systems. Non-SERVICE PROVIDER Infrastructure and respective quantities are specifically itemized in the Equipment List.

NON-SERVICE PROVIDER SOFTWARE. Means software whose copyright is owned by a party other than SERVICE PROVIDER or its affiliated companies, including but not limited to the applications, anti-virus updates, operating system patches, and signature files.

OTHER SERVICES. Means Demand Services as requested by DEPARTMENT that entail subcontractors, Third Parties, or non-SERVICE PROVIDER services on a time and material basis plus 35%. SERVICE PROVIDER has the right to reasonably refuse to provide Other Services. Other Services may include work performed outside of Business Hours and Demand Services, as applicable.

PREVENTIVE MAINTENANCE. Means tests, checks, and alignment on DEPARTMENT's Equipment to ensure that the Equipment meets the specifications of each Equipment's manual.

RESPONSE TIMES. Means the expected timeframe to respond to an unscheduled system problem or outage event as described in the applicable SOW. Response Times are based on the assumption that the site is accessible by normal transportation methods and vehicles. On-site Response Time requirements exclude site locations that require extensive drive time due to traffic conditions, obstructions, distances, or site locations where specialized vehicles are required.

SECURITY UPDATES. Means Software Updates, as stated in the Software FX SOW to the Designated System, that mitigate, address and/or resolve product security vulnerabilities in system components offered by SERVICE PROVIDER, including but not limited to, operating system updates, antivirus signatures, and other security related Windows-based third-party updates (Microsoft security patches, Red Hat Linux security patches, and vulnerability updates for third party products). Security Updates may include Non-SERVICE PROVIDER software patches and/or a work-around.

SECURITY UPDATE MANAGEMENT SERVICE (“SUMS”). Means SERVICE PROVIDER' automated patch management system that provides periodic, security-related Software Updates as stated in the Software FX SOW to the Designated System.

SOFTWARE UPDATES. Means SERVICE PROVIDER provided Software Updates to either SERVICE PROVIDER Designated System components or Security Updates. Updates may contain modifications, enhancements, and/or corrections to existing features, as determined solely by SERVICE PROVIDER. Software Updates means commercially available corrections, modifications, or minor enhancements to the licensed programs generally released and/or provided by SERVICE PROVIDER.

SOFTWARE UPGRADES. Means a major release that replaces the current version of software and provides new features and/or functionality.

SPARE PART(S). Means required additional Equipment to be purchased by DEPARTMENT for use to complete repairs of Equipment. Should DEPARTMENT not purchase Spare Parts, SERVICE PROVIDER shall not be responsible to provide the Services under the SOWs, in this Warranty Plan that are dependent upon Spare Parts being purchased by DEPARTMENT.

SUBSCRIBERS. Means mobile radios, portable radios, control stations, vehicle repeaters, modems, routers, Wi-Fi devices, tablets, or back up dispatch radios that consist of mobile or portable radios as their prime radio transmitter, as listed in the Equipment List.

SUMMARY REPORT. Means communication to indicate action taken in a report to be provided to DEPARTMENT within the frequency and intervals, and as exemplified, under the applicable SOW for Services.

TECH-LINK. Means SERVICE PROVIDER' secure web portal containing on-line support tools offered to DEPARTMENT as part of the applicable SOW. Access is restricted to authorized DEPARTMENTS via user ID and password login.

THIRD PARTY (IES). Means any entity other than SERVICE PROVIDER that provides products or services to DEPARTMENT, whether managed by or processed through SERVICE PROVIDER.

Training

Overview

The Training Plan for the Nevada Department of Transportation (NDOT) encompasses *Technical and System Management Training*, *Dispatch Equipment Training*, and *User Radio Equipment Training*. NDOT will receive the training syllabus for approval 1-month prior to scheduling any training class. Participants will receive and own hard- and soft-copies of the training materials used in class. Additionally, NDOT may video the training classes for future purposes.

Technical and System Management Training

Technical and System Management Training is comprised of multiple training courses on System Administration, Radio Infrastructure, and Radio Subscribers so that NDOT can manage, configure and maintain the NSRS. All traditional classroom training will be conducted in Las Vegas and Reno at facilities provided by an NSRS Member on mutually agreeable dates and at the appropriate time during system implementation. Each course will be conducted three times for up to 12 students per session and will be jointly attended by all three Members.

System Administration Training

System Administration Training will be conducted for technical personnel responsible for defining the fleet map and associated properties, planning radio feature usage and personalities, developing operating procedures, maintaining unit and group databases, generating reports, controlling radios (e.g., enabling and disabling units), and monitoring system performance. Figure 1 defines the training program on system administration.

Figure 1. The System Administration Training Program

Course Name	Length	No. of Times Delivered	Total No. of NDOT Students
P25 System Overview	Five 4-hour sessions	3	16

Course Name	Length	No. of Times Delivered	Total No. of NDOT Students
P25 Fleet Mapping Workshop	3 days	3	16
Unified Administration System	2 days	3	16
Regional Network Manager	2 days	3	16
Over-the-Air Rekeying	1 day	3	16
Radio Programming & OTAP	1 day	3	16
ISSI Configuration & Admin.	1 day	3	16

The *P25 System Overview Course* will be delivered using a virtual classroom setting and is limited to four hours each day.

Participants in the System Administration Training Program will receive unlimited access to the following self-paced, web-based training courses for one year beginning the week participants attend the *P25 System Overview* virtual classroom course.

- P25 Fleet Mapping Overview
- Radio Operation
- Symphony Console Operation
- Radio Programming Overview
- Advanced Access Control
- Active Directory
- Activity Warehouse
- Radio Personality Manager (RPM & RPM 2)
- Unified Administration System (UAS) Overview
- Regional Network Manager (RNM) Overview
- Enterprise Network Manager (ENM)
- Over-the-Air Programming (OTAP)
- Over-the-Air Rekeying (OTAR) Fundamentals
- Inter-RF Subsystem Interface (ISSI) Fundamentals

Harris will provide access to the self-paced, web-based training for system administrators until one year after final system acceptance.

Radio Infrastructure Training

Radio Infrastructure Training provides technicians with the knowledge and skills needed to conduct preventive maintenance, troubleshoot problems, and take corrective action Figure 2 defines the training program on radio system infrastructure.

Figure 2. The Radio Infrastructure Training Program

Course Name	Length	No. of Times Delivered	Total No. of NDOT Students
P25 System Maintenance	7 days	3	16
Regional Network Manager	2 days	3	16
Network Operation & Maintenance	3 days	3	16
MASTR V Station Maintenance	1½ days	3	16
P25 Simulcast System Maintenance	3 days	3	16

Radio Subscriber Training

Radio Subscriber Training will be provided for technical personnel responsible for programming and maintenance of all user radios. Harris will conduct a five-day *RF Maintenance Course* that provides in-depth discussion and hands-on exercises to maintain the Harris XL family of portable and mobile radios. Technicians and engineers will participate in classroom presentations and discussions on radio programming for testing as well as radio personality modification to meet specific needs. Harris will demonstrate and discuss radio disassembly, and identify field replaceable parts and service tools, in addition to covering individual radio field serviceability plans including field replaceable modules and components. Hands-on exercises will include radio programming, testing, and maintenance to the level authorized by the field serviceability plan.

The *RF Maintenance Course* will be conducted three times for up to 12 students per session and will be jointly attended by all three Members. The training will be conducted at a facility provided by the Members at mutually agreeable locations and dates. A total of 16 NDOT personnel will participate.

Dispatch Equipment Training

Dispatch Equipment Training consists of *Console Configuration, Operation & Maintenance Training* for dispatch supervisors and maintenance technicians and *Console Operation Refresher Training* for dispatchers.

Console Configuration, Operation & Maintenance Training

This two-day course will provide designated dispatch supervisors and maintenance technicians with the knowledge and skills to configure the Symphony Dispatch Console to meet operational needs, conduct training for dispatchers, and maintain the console. The training will include a detailed operational overview that introduces the various features and capabilities of the console. Participants will work within the Configuration Utility to explore the various settings and how these settings impact the operation of the console. With an understanding of the Configuration Utility settings, participants will have the requisite knowledge to define the parameters that best suit their operational needs. NDOT will save these settings and use them as a template to set up additional consoles. The remainder of the course involves defining the operating characteristics of the console and using the Configuration Editor to create setups to address the various functions required. This includes adding, renaming and deleting workspace tabs; designing communications modules (i.e., entities, colors, sizes, etc.); adding, deleting and moving communication modules; changing the sidebar panel layout; creating, switching, deleting and password protecting console setups; and setting encryption indicators and controls, if applicable.

The console operational portion of the training will be conducted using a train-the-trainer approach and includes performing tasks such as selecting communication modules; transmitting and receiving group and individual calls; transmitting, receiving and clearing emergency calls; reviewing call history and playing back audio; modifying communication modules; creating, modifying and transmitting on patches and simuselects; controlling conventional channels; using the paging function; changing console setups; and using special and enhanced console features.

Harris will conduct three training sessions in Elko and one training session in Reno. This training will occur approximately two-to-four weeks prior to the start of the performance period. Each training session may have up to six participants.

Console Operation Refresher Training

Harris will provide unlimited access to the web-based *Symphony Console Operation Course* for all NDOT dispatch personnel for one year beginning after completion of the train-the-trainer courses. Web-based training is hosted by Harris Technical University (HTU). Each student will require a unique e-mail address and create a unique username and password. Students will be

able to access transcript information showing course progress and completion status, and print a completion certificate once all course activities are complete.

User Radio Equipment Training

Harris will provide *Radio User Training* based on a train-the-trainer approach. Harris will provide model training and support materials for designated NDOT trainers to use during the implementation phase. Each train-the-trainer session on radio operation is scheduled for one day and includes an overview of the NSRS P25 radio system, a description of system operation including failure modes, a discussion of radio/system coverage expectations, a discussion and demonstration of the differences between analog and digital voice, a demonstration of basic radio operations including proper radio use, hands-on practice with the radios, and a discussion of basic radio care including battery maintenance.

Harris recommends that NDOT select trainers from the departments who will use the radio system. The trainers need to be familiar with current operations and aware of any operational issues. Harris will provide customized presentation materials for the instructors and electronic copies of the training materials to allow for additional customization, if desired.

Harris will conduct two train-the-trainer sessions approximately two-to-four weeks prior to the start of the performance period. Each session is limited to a maximum of 15 participants. This training will use Harris radios purchased as part of the system.

User Radio Operation Refresher Training

Harris will provide unlimited access to standard web-based radio operation courses for all NDOT radio users for one year beginning after completion of the train-the-trainer sessions. Web-based training is hosted by Harris Technical University (HTU). Each student will require a unique e-mail address and create a unique username and password. Harris will train and provide a designated individual with administrative rights to the HTU Learning Management System (LMS). The LMS utilizes a tiered structure so that the administrator can create and modify user accounts, distribute account registration links, manage course access, monitor student activity and progress in completing courses, and generate reports.

ATTACHMENT B

SOFTWARE LICENSE AGREEMENT

This License Agreement ("License Agreement") is made upon the Effective Date of the Primary Agreement (the "Effective Date") between Harris Corporation, a Delaware Corporation, acting through its Communication Systems Segment, ("LICENSOR") with offices at 221 Jefferson Ridge Parkway, Lynchburg, VA 24501, and the State of Nevada, acting by and through its Department of Transportation, 1263 S Stewart Street, Carson City, NV 89712 ("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.

1.1 "Designated Systems": Means the Harris system(s), products, and Designated Terminals purchased by the DEPARTMENT and identified in the Primary Agreement for which the Licensed Programs and documentation are intended to be used.

1.2 "Designated Terminals": Means the LICENSOR's Terminals purchased by LICENSEE.

1.3 "Licensed Programs": The term Licensed Programs shall mean the wireless communications computer programs in software or firmware supplied under this License Agreement by LICENSOR in binary object code format to the LICENSEE (stand alone or in conjunction with the purchase of a LICENSOR wireless communications system.) Licensed Programs shall also include all other material related to the Licensed Programs 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.

1.4 "Open Source Software": Means software with either freely obtainable source code, license for modification, or permission for free distribution.

1.5 "Open Source Software License": The terms or conditions under which the Open Source Software is licensed.

1.6 "Primary Agreement": The agreement to which this exhibit is attached.

1.7 "Third Party Software Products": Shall mean programs that are not developed by LICENSOR which are licensed / purchased by LICENSOR for inclusion in its products.

2.0 License Grant for Licensed Programs.

2.1 Subject to the 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, limited license to use the Licensed Programs in object code format only and (b) install and execute such Licensed Programs on Licensee's equipment and (c) are to be used for internal business purposes only. All licensed programs under this License Agreement shall only be used in conjunction with the Designated System. This license does not transfer any right, title, or interest in the Licensed Programs. The license granted authorizes Licensee to use the Licensed Programs in object code format and does not grant any rights to source code.

2.2 LICENSEE will not reproduce, modify, or make derivative works of the Licensed Programs, except that LICENSEE may make one archival, and one inactive backup, copy of the Licensed Programs. 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 Licensed Programs and any attempt to do so shall be a material breach of this License Agreement. With respect to the Licensed Programs, 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 Third Party Software Products may be subject to additional license terms, which, if applicable, are set out in Product Specific License Terms delivered with each product. To the extent applicable, LICENSEE shall comply with any additional Third Party Software Product license terms.

2.4 If the Software licensed under this License Agreement contains or is derived from Open Source Software, the terms and conditions governing the use of such Open Source Software are in the Open Source Software Licenses of the copyright owner and not this License Agreement and, to the extent applicable, LICENSEE will comply with the Open Source Software License terms. If there is a conflict between the terms and conditions of this License Agreement and the terms and conditions of the Open Source Software Licenses governing Licensee's use of the Open Source Software, the terms and conditions of the license grant of the applicable Open Source Software Licenses will take precedence over the license grants in this License Agreement. If requested by Licensee, Harris will use commercially reasonable efforts to: (i) determine whether any Open Source Software is provided under this License Agreement; (ii) identify the Open Source Software and provide Licensee a copy of the applicable Open Source Software License (or specify where that license may be found).

3.0 Protection and Security of Licensed Programs.

LICENSEE acknowledges and agrees that the Licensed Programs and any materials and/or documentation related thereto, and any portion thereof, supplied by LICENSOR hereunder are proprietary and confidential to LICENSOR or applicable third party licensors and are a valuable commercial asset of LICENSOR or their third party owners. 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 Licensed Programs 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, or such (iii) shall not use the Licensed Programs nor any materials or documentation related thereto except for the purposes for which they are being made available as set forth in this License Agreement and (iv) shall not reproduce, print, disclose, or otherwise make said Licensed Programs 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 License Agreement.

4.0 Warranty

SERVICE PROVIDER warrants, for the greater of a period of one year or, if a longer warranty period for the product containing the Licensed Program is set forth in a Primary Agreement, the longer warranty period shall apply commencing with the date of Licensee's acceptance of their Designated System, that any Licensed Program furnished to Licensee under this License Agreement shall be capable of successfully operating on the Designated System 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, NONINFRINGEMENT, SHALL APPLY, ALL OF WHICH ARE EXPRESSLY DISCLAIMED BY LICENSOR.

Licensed Programs 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 programs warrants such sublicensed programs to LICENSOR.

In the event that the Licensed Programs do not conform to the representation above, LICENSEE's sole remedy and LICENSOR's sole and exclusive liability shall be to replace such Licensed Programs with the then current released version of such Licensed Programs.

5.0 Limitation of Liability.

5.1 THE LIMITATION OF LIABILITY PROVISION IN THE PRIMARY AGREEMENT SHALL GOVERN THIS LICENSE AGREEMENT AND SECTION 5.2 SHALL NOT APPLY. IF THERE IS NO LIMITATION OF LIABILITY PROVISION IN THE PRIMARY AGREEMENT, SECTION 5.2 SHALL APPLY.

5.2 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) HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. LICENSOR'S AND THIRD PARTY LICENSORS' LIABILITY IN CONTRACT, TORT OR OTHERWISE ARISING OUT OF OR IN CONNECTION WITH THIS LICENSE AGREEMENT OR THE USE OF THE LICENSED PROGRAMS SHALL NOT EXCEED THE TOTAL COMPENSATION PAID TO LICENSOR BY LICENSEE FOR THE PRODUCTS CONTAINING THE LICENSED PROGRAMS.

6.0 Term and Termination.

6.1 LICENSOR reserves the right, in addition to any other remedies it may retain in this License Agreement or may be entitled to in law or equity (including immediate injunctive relief and repossession of all non-embedded Licensed Programs and documentation), to terminate this License Agreement at any time prior to the expiration of any Term in the event LICENSEE breaches any material term or condition or fails to perform or observe any obligations or covenants of this License Agreement and such failure and/or breach is not remedied within thirty (30) calendar days of written notice from LICENSOR.

6.2 Within thirty (30) calendar days after termination or expiration of this License 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 Licensed Programs and any equipment owned by LICENSOR in LICENSEE's possession.

7.0 Assignment/Transfer.

This License Agreement, the licenses granted hereunder, and the Licensed Programs provided to LICENSEE under this License Agreement may not be assigned, sub-licensed, or otherwise transferred by LICENSEE to any third party without LICENSOR's prior written consent, except that this license may be assigned if the Products containing the Licensed Programs are

transferred, but the new owner or user of the Products may only use the Licensed Programs in accordance with terms of this License Agreement. Subject to the foregoing, any assignee hereunder shall be subject to all of the terms, conditions, and provisions of this License Agreement. Any attempt by LICENSEE to assign, sub-license, or transfer the Licensed Programs, or any of the rights or duties contained in this License Agreement, without LICENSOR's prior written consent shall be void.

8.0 Severability.

If any term or provision of the License 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 License Agreement and the remainder of its provision shall otherwise remain in full force and effect.

9.0 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.

10.0 Compliance with Laws.

Licensee acknowledges that the Licensed Programs are subject to the laws and regulations of the United States, and Licensee will comply with all applicable laws and regulations, including export laws and regulations of the United States. Licensee will not, without the prior authorization of Harris and the appropriate governmental authority of the United States, in any form, export or re-export, sell or resell, ship or reship, or divert, through direct or indirect means, any item or technical data or direct or indirect products sold or otherwise furnished to any person within any territory for which the United States Government or any of its agencies at the time of the action, requires an export license or other governmental approval. Violation of this provision is a material breach of this License Agreement.

11.0 Governing Law.

This License Agreement will be governed by the laws of the United States to extent that they apply and otherwise to the laws of the State of Nevada. The terms of the U.N. Convention on Contracts for the International Sale of Goods do not apply. The parties expressly agree that the Uniform Computer Information Transactions Act ("UCITA") applicable in any jurisdiction shall not apply to this License Agreement.

12.0 U.S. Government.

If Licensee is the U.S. Government, the Licensed Programs and documentation qualify as "commercial items," as that term is defined at Federal Acquisition Regulation ("FAR") (48 C.F.R.) 2.101, consisting of "commercial computer software" and "commercial computer software documentation" as such terms are used in FAR 12.212. Consistent with FAR 12.212, and notwithstanding any other FAR or other contractual clause to the contrary in any agreement into which the License Agreement may be incorporated, Customer may provide to Government end user or, if the License Agreement is direct, Government end user will acquire, the software and documentation with only those rights set forth in the License Agreement. Use of either the software or documentation or both constitutes agreement by the Government that the software and documentation are "commercial computer software" and "commercial computer software documentation," and constitutes acceptance of the rights and restrictions herein.

13.0 Agreement.

This License Agreement may be part of a Primary Agreement between LICENSOR and LICENSEE for the purchased products by LICENSEE from LICENSOR. The Primary Agreement and this License Agreement contain the full understanding of the parties with respect to the subject matter hereof and which supersede all prior understandings and writings relating thereto and which shall become binding on the Effective Date of this License Agreement. No waiver, consent, modification, amendment, or change to the terms of this License 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 Primary Agreement and this License Agreement as to the Licensed Programs, the terms of this License Agreement will prevail.

14.0 Notices.

Notices shall be provided as set forth in the Primary Agreement. In the event there is no notice provision in the Primary Agreement, notices and other communications between the parties shall be transmitted in writing by certified mail or nationally recognized overnight courier service.

15.0 Survival.

Sections 2, 3, 5, 6, 8, 9, 11, and 13 of this License Agreement shall survive termination of this agreement.

END USER LICENSE AGREEMENT FOR HARRIS BEON SOFTWARE APPLICATION

IMPORTANT - READ CAREFULLY:

THIS HARRIS END-USER LICENSE AGREEMENT ("AGREEMENT") IS A LEGAL AGREEMENT BETWEEN YOU (EITHER AN INDIVIDUAL OR A GOVERNMENTAL OR CORPORATE ENTITY HEREINAFTER REFERRED TO AS "THE DEPARTMENT") AND HARRIS CORPORATION ("SERVICE PROVIDER") FOR THE HARRIS SOFTWARE PRODUCTS IDENTIFIED BELOW (THE "LICENSED PROGRAMS"). BY DOWNLOADING, INSTALLING, COPYING, OR OTHERWISE USING THE LICENSED PROGRAMS OR BY CLICKING THE "ACCEPT" BUTTON AND AGREEING TO THESE TERMS AND CONDITIONS, YOU AS AN INDIVIDUAL AND, AS APPLICABLE, ON BEHALF OF THE DEPARTMENT ENTITY AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THIS AGREEMENT, AND THIS AGREEMENT SHALL BE EFFECTIVE AS OF THE DATE OF YOUR FIRST INSTALLATION, COPYING OR USE OF THE LICENSED PROGRAMS OR THE DATE OF THE "ACCEPT" CLICK THROUGH. IF YOU DO NOT AGREE TO THE TERMS AND CONDITIONS OF THIS AGREEMENT, YOU SHOULD NOT CLICK THE "ACCEPT" BUTTON AND YOU ARE NOT AUTHORIZED TO DOWNLOAD, INSTALL OR USE THE LICENSED PROGRAMS AND YOU MUST IMMEDIATELY DELETE ANY LICENSED PROGRAMS THAT YOU MAY HAVE.

The DEPARTMENT and SERVICE PROVIDER agree as follows:

1. Definitions

1.1 "The DEPARTMENT" means:

1.1.1 If The DEPARTMENT is an individual, that individual;

1.1.2 If The DEPARTMENT is a government entity, all agencies, branches, departments and divisions that are legally part of that government entity; and

1.1.3 If The DEPARTMENT is a corporation, the legal entity that is the named The DEPARTMENT plus all other legal entities that are wholly owned by the named The DEPARTMENT.

1.2 "Contract(s)" means the separate written contract(s) or agreement(s), if any, between The DEPARTMENT and either SERVICE PROVIDER or another party authorized by SERVICE PROVIDER to provide the Licensed Programs to The DEPARTMENT. Each Contract will include the required execution of this End User License Agreement by The DEPARTMENT and The DEPARTMENT's users prior to the installation and use of the Licensed Programs.

1.3 "Device" means the products used by The DEPARTMENT to run the Licensed Programs.

1.4 "Licensed Programs" means the object code version of the software programs including, without limitation, any scripts, interfaces, graphics, displays, text, images, artwork, drivers, photographs, animations, video, audio, music, text, applets, documentation, associated media, and other components or content provided as well as any services provided by SERVICE PROVIDER with the software, if any, together with any Modifications or Enhancements of the above items provided by SERVICE PROVIDER. This Agreement is limited to the object code programs only. No rights in or access to any source code or program listings are provided.

1.5 “Modifications and Enhancements” shall mean any updates, upgrades, patches, fixes, feature additions, modifications or enhancements of the Licensed Programs.

2. License Grant

2.1 Subject to the terms and conditions contained in this Agreement and the performance by The DEPARTMENT of its obligations hereunder, SERVICE PROVIDER hereby grants to The DEPARTMENT, and The DEPARTMENT hereby accepts from SERVICE PROVIDER, a personal, non-transferable, non-exclusive, limited license to use the Licensed Programs in accordance with any documentation that accompanies the Licensed Programs.

2.2 Any Modifications and Enhancements of the Licensed Programs that SERVICE PROVIDER chooses to make available to The DEPARTMENT shall be subject to the terms and conditions of this Agreement as well as any additional terms and conditions that may apply to the Modifications and Enhancements. This Agreement does not entitle The DEPARTMENT to receive any Modifications and Enhancements and any Modifications and Enhancements may be provided by SERVICE PROVIDER at its discretion.

3. The DEPARTMENT's Obligations

3.1 The DEPARTMENT hereby accepts the Licensed Programs “AS IS” and shall determine the applicability of the Licensed Programs for The DEPARTMENT's desired use on The DEPARTMENT's Devices. Except as expressly set forth in the Contract, all installation, training and maintenance is the sole responsibility of The DEPARTMENT.

3.2 Nothing in this Agreement shall be construed as giving The DEPARTMENT any right to sell, assign, lease, or in any other manner transfer or encumber SERVICE PROVIDER's ownership of the Licensed Programs.

3.3. The DEPARTMENT shall not duplicate the Licensed Programs, or any portion thereof, except The DEPARTMENT may make archival copies of the Licensed Programs in accordance with The DEPARTMENT's documented standard computer software back-up procedures. The media containing such authorized copies shall have prominently placed thereon, without change or alteration, the same copyright notices and proprietary legends and markings that are on the delivered Licensed Programs media.

3.4 The techniques, algorithms, and processes contained in the Licensed Product constitute trade secrets of SERVICE PROVIDER. The DEPARTMENT agrees to take all measures reasonable and necessary to protect the confidentiality of the Licensed Product and SERVICE PROVIDER's rights therein. Except as expressly provided in the Contract between SERVICE PROVIDER and The DEPARTMENT, The DEPARTMENT may not rent, lease, network, display, or distribute the Licensed Programs to any third party without SERVICE PROVIDER's prior written consent. Furthermore, The DEPARTMENT may not reverse engineer, disassemble, decompile, modify, alter, translate, or adapt the Licensed Programs or create any derivative thereof. The obligations set forth in this Subsection shall survive termination or expiration of this Agreement

3.5 The Licensed Programs are licensed as a single product and neither the individual programs comprising the Licensed Programs nor any Modifications or Enhancements may be separated for use by more than one concurrent user.

3.6 The act of copying any portion of the Licensed Programs as authorized hereunder shall not cause, or be construed as causing, any portion thereof to be considered as being in the public domain or generally available on a nonproprietary basis. All such copies shall be treated as confidential as required for original information under Section 3.3.

3.7 To the extent applicable, The DEPARTMENT must comply with all applicable privacy, consumer data and protection laws and all laws that apply to collecting, accessing, storing, processing, using, disclosing and securing user data, including any obligations to notify and obtain consents of users regarding The DEPARTMENT's access to users' personal information.

3.8 In addition to any license fees and other compensation paid for the use of the Licensed Programs, The DEPARTMENT 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 any Products or services furnished hereunder or to their use by SERVICE PROVIDER or The DEPARTMENT, or The DEPARTMENT shall otherwise furnish SERVICE PROVIDER with tax exemption certificates acceptable to all applicable taxing authorities.

4. Ownership

The DEPARTMENT is given possession of a copy of the Licensed Programs, but SERVICE PROVIDER shall at all times retain title or full ownership interest in such Licensed Programs and all Modifications and Enhancements thereof, regardless of the form or media in or on which the original and other copies thereof may subsequently exist. All rights, title, and copyrights in and to the Licensed Programs (including, but not limited to, any images, photographs, animations, video, audio, music, text, and applets incorporated into the Licensed Programs), the accompanying printed materials, and any copies of the Licensed Programs are owned by SERVICE PROVIDER and/or its licensors. Nothing contained herein shall be deemed to convey any title or ownership interest in the Licensed Programs to The DEPARTMENT.

5. Warranty

5.1 Provided: (a) that connectivity and interoperability of The DEPARTMENT's Device with the cellular commercial carrier network or other third party network being used by The DEPARTMENT is fully available and fully functioning; and (b) that the Licensed Programs are used on a Device designated by SERVICE PROVIDER as acceptable for Licensed Programs' use, and (c) correct input data is supplied to The DEPARTMENT's Device, SERVICE PROVIDER warrants, for a period of ninety (90) calendar days from the download of the Licensed Programs onto The DEPARTMENT's Device, that the Licensed Programs furnished to The DEPARTMENT by SERVICE PROVIDER shall be capable of successfully operating on The DEPARTMENT's Device in accordance with the logic defined in the Licensed Programs' operator manuals or other official supporting documentation designated by SERVICE PROVIDER for the Licensed Programs. If, on the basis of evidence submitted to SERVICE PROVIDER within the ninety (90) calendar day term of this warranty, it is shown that any Licensed Program does not meet this warranty, SERVICE PROVIDER, at its option, will either: (i) correct the defect or error in the Licensed Program free of charge and provide a corrected Licensed Program, or (ii) make available to The DEPARTMENT free of charge a satisfactory substitute Licensed Program.

5.2 SERVICE PROVIDER is unable to and cannot guarantee either the extent or consistency of the wireless coverage and communications of a cellular commercial carrier's network or other third party network nor can SERVICE PROVIDER guarantee the quality of the data service provided. Given the dependency on commercial cellular and third party networks, the use of the Licensed Programs, including location information, is not intended for mission critical communications but rather for administrative and other communications.

IN PARTICULAR, SINCE THE LICENSED PROGRAMS' PERFORMANCE, FEATURES AND FUNCTIONALITY MAY BE UNAVAILABLE, IMPRECISE OR INACCURATE DEPENDING ON SYSTEM, NETWORK, CAPACITY, ENVIRONMENTAL, TERRAIN, COMPATIBILITY, INTEROPERABILITY AND OTHER CONDITIONS, SERVICE PROVIDER AND ITS THIRD

PARTY SUPPLIERS AND SUBCONTRACTORS HEREBY DISCLAIM, EXCEPT FOR THE EXPRESS WARRANTY SET FORTH IN SECTION 5.1 ABOVE, ALL OTHER EXPRESS OR IMPLIED WARRANTIES AND CONDITIONS, WHETHER ORAL, EXPRESS, OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES AND CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, PERFORMANCE, ACCURACY, RELIABILITY, AND NONINFRINGEMENT, WHETHER SUCH WARRANTIES OR CONDITIONS MAY BE IMPLIED BY STATUTE, CUSTOM, COURSE OF DEALING BETWEEN THE PARTIES, TRADE USAGE OR COMMON LAW. FURTHERMORE, EXCEPT FOR THE EXPRESS WARRANTY SET FORTH IN SECTION 5.1 ABOVE, SERVICE PROVIDER AND ITS THIRD PARTY SUPPLIERS AND SUBCONTRACTORS MAKE NO OTHER WARRANTY THAT THE LICENSED PROGRAMS OR THIRD PARTY CONTENT AND SERVICES PROVIDED AS PART OF THE LICENSED PROGRAMS (INCLUDING, WITHOUT LIMITATION, LOCATION DATA) WILL BE UNINTERRUPTED, ACCURATE, RELIABLE, TIMELY, SECURE, FREE FROM VIRUSES OR OTHER HARMFUL COMPONENTS OR ERROR-FREE.

5.3 THE WARRANTIES AND REMEDIES SET FORTH IN THIS SECTION 5 CONSTITUTE THE ONLY WARRANTIES WITH RESPECT TO THE LICENSED PROGRAMS AND ANY MODIFICATIONS OR ENHANCEMENTS TO THE LICENSED PROGRAMS PROVIDED BY SERVICE PROVIDER. THE WARRANTIES AND REMEDIES SET FORTH IN THIS SECTION 5 CONSTITUTE THE DEPARTMENT'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 SERVICE PROVIDER BE LIABLE FOR SPECIAL, CONSEQUENTIAL OR INDIRECT DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR REVENUES.

6. HIGH RISK ACTIVITIES; LOCATION DATA

6.1 THE LICENSED PROGRAMS ARE NOT FAULT-TOLERANT AND ARE NOT DESIGNED, MANUFACTURED OR INTENDED FOR ANY USE REQUIRING FAIL-SAFE, EMERGENCY OR MISSION CRITICAL PERFORMANCE IN WHICH THE FAILURE OF A LICENSED PROGRAM COULD LEAD TO DEATH, PERSONAL INJURY, PHYSICAL OR ENVIRONMENTAL DAMAGE. THIS USE RESTRICTION INCLUDES, WITHOUT LIMITATION, THE OPERATION OF AIRCRAFT AND THE DESIGN, CONSTRUCTION, OPERATION AND MAINTENANCE OF NUCLEAR FACILITIES.

6.2 ANY LOCATION DATA INCLUDED IN THE LICENSED PROGRAMS IS FOR BASIC INFORMATIONAL PURPOSES ONLY AND IS NOT INTENDED TO BE RELIED UPON IN SITUATIONS WHERE PRECISE LOCATION INFORMATION IS NEEDED OR WHERE ERRONEOUS, INACCURATE OR INCOMPLETE LOCATION DATA MAY LEAD TO DEATH, PERSONAL INJURY, PROPERTY OR ENVIRONMENTAL DAMAGE. NEITHER SERVICE PROVIDER NOR ITS SUBCONTRACTORS AND SUPPLIERS CAN GUARANTEE THE AVAILABILITY, ACCURACY, COMPLETENESS AND RELIABILITY OF THE LOCATION DATA INCLUDED IN THE LICENSED PROGRAMS.

7. LIMITATION OF LIABILITY

7.1 The total liability of SERVICE PROVIDER, including its third party subcontractors and 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 Agreement or from the use of the Licensed Programs shall not exceed the total amount of license fees and other amounts paid by The DEPARTMENT to SERVICE PROVIDER for the purchase and use of the Licensed Programs.

7.2 IN NO EVENT, WHETHER AS A RESULT OF BREACH OF AGREEMENT, WARRANTY, TORT (INCLUDING NEGLIGENCE OR INFRINGEMENT), STRICT LIABILITY OR OTHERWISE, SHALL SERVICE PROVIDER, 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 A DEVICE OR ANY OTHER HARDWARE OR EQUIPMENT, COST OF CAPITAL, COST OF SUBSTITUTE GOODS, FACILITIES, SERVICES OR DOWNTIME COSTS.

7.3 The provisions of this Section, LIMITATION OF LIABILITY, shall apply notwithstanding any other provisions of this Agreement or any other agreement and shall survive the expiration or termination of this Agreement.

8. Term and Termination.

8.1 Except as expressly set forth in a Contract providing for a shorter term and unless earlier terminated as provided herein, the term of this Agreement shall be perpetual. If a shorter term is set forth in the Contract, the term of this Agreement shall be the shorter term set forth in the Contract.

8.2 This Agreement may be terminated at any time by written mutual agreement of the parties.

8.3 SERVICE PROVIDER 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:

8.3.1 The DEPARTMENT breaches any material term or condition or fails to perform or observe any obligations or covenants of this Agreement or the Contract and such failure and/or breach is not remedied within thirty (30) calendar days of written notice from SERVICE PROVIDER; or

8.3.2 The DEPARTMENT 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 The DEPARTMENT, or if The DEPARTMENT 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.

8.4 In the event this Agreement expires or is revoked or terminated by SERVICE PROVIDER, it is agreed that (a) such termination or revocation shall not affect any provisions of the Agreement which by their nature are inherently intended to survive expiration or termination, and (b) The DEPARTMENT shall be entitled to a reasonable period of time to wind down its use of the Licensed Programs in an orderly fashion, after which The DEPARTMENT shall discontinue use of the Licensed Programs. To discontinue the use of the Licensed Programs, The DEPARTMENT shall un-install and remove the Licensed Programs from The DEPARTMENT's Devices and delete all copies of the Licensed Programs in The DEPARTMENT's possession.

9. U.S. Government Contracts

9.1 The DEPARTMENT agrees that it will not use the Licensed Programs in the performance of a contract, or subcontract, with the U.S. Government in a manner so as to affect SERVICE PROVIDER's rights to Licensed Programs. If The DEPARTMENT desires to use the Licensed Programs in the performance of a contract, or subcontract, with the U.S. Government, prior to such use The DEPARTMENT shall consult with SERVICE PROVIDER as to the procedures and use of restrictive markings required to protect the ownership interest of SERVICE PROVIDER.

9.2 If The DEPARTMENT is an agency or department of the U.S. Government, then the following notice applies: The Licensed Programs is Commercial Computer Software as defined in 48 CFR 227.7201 through 227.7202-4 and in 48 CFR 2.101 and 12.212, as appropriate or any equivalent regulations of other governmental agencies, and the rights of the U.S. Government to utilize the Licensed Programs are those expressly set forth in this Agreement. The U.S. Government does not receive unlimited rights to the Licensed Programs. The contractor is Harris Corporation, acting by and through its RF Communications Division, 221 Jefferson Ridge Parkway, Lynchburg, Virginia 24501.

10. Export Control

10.1 The export regulations of the United States prohibit, with certain exceptions, the export from the United States or the transfer to foreign persons (non-U.S. citizens or "green card" permanent residents), whether in the U.S. or abroad, of technical data relating to certain commodities unless the exporter has obtained written authorization from the U.S. Government and received written assurance from the foreign importer that the technical data will not be further exported without permission of the exporter and the cognizant U.S. Government agency. The DEPARTMENT agrees to comply fully with all relevant regulations of the United States to assure that no violation of such regulations occurs.

10.2 The DEPARTMENT further acknowledges that violations of these laws and regulations include, but are not limited to, exporting or re-exporting, or otherwise supplying or providing access to the Licensed Programs, the accompanying documentation or any other materials provided by SERVICE PROVIDER, to: (a) any country against which the United States imposes trade sanctions or export controls; (b) persons on the U.S. Commerce Department's Denied Parties List or Entity List, the U.S. Treasury Department's Specially Designated Nationals List, or the U.S. State Department's List of Debarred Parties; (c) end uses related to nuclear weapons, missile technology, or chemical/biological weapons; or (d) any destination for which an export license is required.

10.3 The DEPARTMENT further acknowledges that the export of the Licensed Programs, documentation and any other materials provided by SERVICE PROVIDER may be controlled by the U.S. State Department's Office of Defense Trade Controls, through the Arms Export Control Act as implemented in the International Traffic in Arms Regulations, 22 C.F.R. §§ 120-130 ("ITAR"), the U.S. Commerce Department's Bureau of Industry and Security, through the Export Administration Act as implemented in the Export Administration Regulations, 15 C.F.R. §§ 730-774 ("EAR"), and/or the U.S. Treasury Department's Office of Foreign Assets Control, and depending on which agency has jurisdiction over these items different restrictions on export, re-export, and use activities will apply. The DEPARTMENT agrees that it is The DEPARTMENT's responsibility to determine which of these U.S. agencies has export control jurisdiction over the Licensed Programs, documentation, and any other materials provided by SERVICE PROVIDER, and The DEPARTMENT acknowledges that export jurisdiction over these items may change from time to time.

10.4 Further, The DEPARTMENT agrees that any violation by The DEPARTMENT of any of these laws and regulations will also constitute material breach of this Agreement, and The DEPARTMENT agrees to indemnify SERVICE PROVIDER against any criminal or civil monetary sanctions, costs, losses or expenses (including but not limited to reasonable attorneys' fees and costs) resulting from The DEPARTMENT's failure to comply. The DEPARTMENT agrees to defend, indemnify and hold SERVICE PROVIDER, and its officers, directors, agents and employees harmless against all criminal and/or civil monetary sanctions, costs, losses or expenses (including but not limited to reasonable attorneys' fees and costs) incurred as a result of any failure on The DEPARTMENT's part to comply with these laws. The DEPARTMENT further agrees to notify The DEPARTMENT's of, and to use best efforts to ensure their compliance with,

the restrictions imposed by these laws and regulations.

11. Maintenance Support

SERVICE PROVIDER may, from time to time, issue Modifications and Enhancements to the Licensed Programs. If SERVICE PROVIDER should issue a Modification or Enhancement to the Licensed Programs, The DEPARTMENT may obtain such Modification or Enhancement at the current price then charged by SERVICE PROVIDER or the price set forth in the Contract, as applicable.

12. Intellectual Property Indemnification

12.1 SERVICE PROVIDER agrees that it shall, at its own expense and at its option, defend or settle any claim, suit, or proceeding brought against The DEPARTMENT, based on an allegation that the Licensed Program furnished under this Agreement constitutes a direct or a contributory infringement of any claim of any United States patent, mask work, copyright or any other intellectual property right. This obligation shall be effective only if The DEPARTMENT shall have made all payments then due to SERVICE PROVIDER for the purchase and/or use of the Licensed Programs and if SERVICE PROVIDER is notified of said allegation promptly in writing and given authority, information, and assistance for the settlement or defense of said claim, suit, or proceeding. If, in any such suit arising from such claim, the continued use of the Licensed Programs for the purpose intended is enjoined by any court of competent jurisdiction, SERVICE PROVIDER shall, at its expense and option, either: (a) procure for The DEPARTMENT the right to continue using the Licensed Programs, or (b) modify the Licensed Programs so that they become non-infringing, or (c) replace the Licensed Programs or portions thereof so that they become non-infringing, or (d) remove the Licensed Programs and refund the license fee paid by The DEPARTMENT to purchase the Licensed Programs license (less reasonable depreciation for use). The foregoing states the entire liability of SERVICE PROVIDER for intellectual property infringement by the Licensed Programs and is subject to any limitation of total liability set forth in this Agreement.

12.2 The preceding subsection 12.1 shall not apply to the use of the Licensed Programs in conjunction with any other hardware or software not supplied by SERVICE PROVIDER to the extent that such conjoined use causes the alleged infringement. As to any portion of the Licensed Programs or use described in the preceding sentence, SERVICE PROVIDER assumes no liability whatsoever for intellectual property right infringement.

12.3 THE INTELLECTUAL PROPERTY INDEMNITY OBLIGATIONS RECITED ABOVE ARE IN LIEU OF ALL OTHER INTELLECTUAL PROPERTY INDEMNITIES WHATSOEVER, WHETHER ORAL, WRITTEN, EXPRESS, IMPLIED OR STATUTORY.

13. Third-Party Software Licenses

Licensed Programs contain material original to SERVICE PROVIDER and may contain material provided by third parties either under separate end-user license agreements or under Open Source licenses. Open Source Licensed Programs are provided under license from individual third party sources, identified in the Appendix attached to the end of this license agreement, if any. Each Open Source third party software license is incorporated herein verbatim from the source and the terms and conditions thereof are accepted by The DEPARTMENT as a condition of use of the Licensed Programs. As used herein, Open Source means any software that is licensed under terms in any license for software which require, as a condition of use, modification and/or distribution of such software or of other software incorporated into, derived from or distributed with such software (hereinafter referred to as "Work"), any of the following: (a) the making available of source code or design information regarding the Work; (b) the granting of

permission for creating derivative works regarding the Work; or (c) the granting of a royalty-free license to any party under intellectual property rights regarding the Work. By means of example and without limitation Open Source includes the following licenses or distribution models: the GNU General Public License (GPL), the GNU Lesser or Library GPL (LGPL), or any similar open source, free software or community licenses. Under no circumstances shall The DEPARTMENT combine Licensed Programs with any Open Source Software not supplied by SERVICE PROVIDER in any way. Third party software products included in the Licensed Programs are only to be used with the Licensed Programs for The DEPARTMENT's internal business purposes and are not to be used, modified or further developed for other purposes.

14. Assignment/Transfer.

This Agreement, the licenses granted hereunder and the Licensed Programs provided to The DEPARTMENT under this Agreement may not be assigned, sub-licensed, or otherwise transferred by The DEPARTMENT to any third party without SERVICE PROVIDER's express 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 The DEPARTMENT to assign, sub-license, or transfer the Licensed Programs, or any of the rights or duties contained in this Agreement, without SERVICE PROVIDER's prior written consent shall be void.

15. 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.

16. 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.

17. General

17.1 This Agreement supersedes all prior agreements, proposals, representations, and communications between SERVICE PROVIDER and The DEPARTMENT relating to the Licensed Programs. In the event of a conflict in the terms and provisions of this Agreement and the terms and provisions of a Contract, the terms and provisions of this Agreement shall govern.

17.2 The headings for each section are stated for convenience only and are not to be construed as limiting.

17.3 Under the terms of this Agreement, The DEPARTMENT is a licensee of SERVICE PROVIDER. The DEPARTMENT is not an employee, agent, partner, contractor or representative of SERVICE PROVIDER. The respective obligations and rights of SERVICE PROVIDER and The DEPARTMENT are specifically limited by the terms of this Agreement. The DEPARTMENT hereby specifically acknowledges that it does not have authority to incur any obligations or responsibilities on behalf of SERVICE PROVIDER.

17.4 The DEPARTMENT acknowledges that any unauthorized use or disclosure of Licensed Programs will cause irreparable damage to SERVICE PROVIDER and that injunctive relief or other equitable remedies may be necessary to prevent or minimize such damage to SERVICE PROVIDER. The DEPARTMENT agrees that it will not contest the applicability of injunctive relief on any grounds other than no unauthorized use or disclosure of Licensed Programs has occurred.

In addition, SERVICE PROVIDER shall not be required to provide a bond or other financial security to obtain injunctive relief.

17.5 Nothing in this Agreement shall limit SERVICE PROVIDER from using the Licensed Programs and/or licensing the Licensed Programs to other parties.

17.6 Governing Law

17.6.1 It is expressly understood and agreed to by SERVICE PROVIDER and a The DEPARTMENT located in the United States that in the event of any disagreement or controversy between the parties, the terms and conditions of this Agreement shall be governed by the laws of the state set forth in the Contract between SERVICE PROVIDER and The DEPARTMENT without regard to that state's conflicts of laws principles. In the event that no such governing law state is established in the Contract between SERVICE PROVIDER and The DEPARTMENT, then it is expressly understood and agreed to by the parties hereto that in the event of any disagreement or controversy between the parties, the terms and conditions of this Agreement shall be governed by the laws of the State of Nevada without regard to its conflict of laws provisions.

17.6.2 If The DEPARTMENT is located outside of the United States, then, without limiting either party's right to seek injunctive or other equitable relief in court, either party may elect (by written notice given prior to filing a complaint or, in the case of the defendant, prior to answering a complaint) to resolve a dispute by binding arbitration in the English language in London, Great Britain, under the International Arbitration Rules of the International Centre for Dispute Resolution; the decision of the arbitrator will be enforceable in any court. The original of this Agreement has been written in the English language and that version will apply if there is any dispute.

17.6.3 Both SERVICE PROVIDER and The DEPARTMENT agree to exclude application of the U.N. Convention of Contracts for the International Sale of Goods and the Uniform Computer Information Transactions Act (UCITA) to this Agreement, if either were otherwise applicable.

APPENDIXOpen Source Licensed Programs
(See Article 13)

Third Party SW	<u>Licenses</u>	<u>License Location</u>
Android LogBack	GNU LGPL 2.1	https://github.com/twall/jna/blob/master/LGPL2.1
SLF4J	MIT license	http://slf4j.org/license.html
Google Maps	Google	https://developers.google.com/maps/licensing

ATTACHMENT C

Consultant's Name:*Enter Name***LIVE SCAN FINGERPRINTING INSTRUCTIONS**

1. The consultant **MUST** take with them and provide to DPS the following when they go to do their LiveScan fingerprinting:
 - A. A money order or cashier's check made payable to General Services Division in the amount of \$36.25 (as of October 1, 2016).
 - B. The Fingerprint Request Form provided by Jeramie Brown or designee from the NDOT Purchasing Division.

FOR DPS LIVE SCAN PROCESSING OF FINGERPRINTS

1. *In order to do the Live Scan fingerprinting, the consultant must call and make an appointment at the Department of Public Safety (DPS). The phone number is:*
 - A. **775-684-6262** – individual needs to make an appointment and also call the morning they are going to go to make sure the machine is functioning.
2. *The address for the Live Scan fingerprinting is:*

Department of Public Safety (DPS) Records and Technology Division
333 West Nye Lane, Suite 100
Carson City, NV 89706
3. ***Please Note: If you are more than five (5) minutes late in arriving for your Live Scan appointment, DPS may turn you away requiring the appointment to be rescheduled and final system access authorization to be delayed.***
4. *DPS will submit the results to the agency for vetting. Upon a clean check, the agency will provide final system access authorization.*



FINGERPRINT BACKGROUND WAIVER

As an applicant who is the subject of a Federal Bureau of Investigation (FBI) fingerprint-based criminal history record check for a noncriminal justice purpose you have certain rights which are discussed below.

1. You must be notified by (enter name of requesting agency) Nevada Department of Transportation that your fingerprints will be used to check the criminal history records of the FBI and the State of Nevada.

2. If you have a criminal history record, the officials making a determination of your suitability for the job, license or other benefit for which you are applying must provide you the opportunity to complete or challenge the accuracy of the information in the record. You may review and challenge the accuracy of any and all criminal history records which are returned to the submitting agency. The proper forms and procedures will be furnished to you by the Nevada Department of Public Safety, Records Bureau upon request. If you decide to challenge the accuracy or completeness of your FBI criminal history record, Title 28 of the Code of Federal Regulations Section 16.34 provides for the proper procedure to do so:

16.34 - Procedure to obtain change, correction or updating of identification records.

If, after reviewing his/her identification record, the subject thereof believes that it is incorrect or incomplete in any respect and wishes changes, corrections or updating of the alleged deficiency, he/she should make application directly to the agency which contributed the questioned information. The subject of a record may also direct his/her challenge as to the accuracy or completeness of any entry on his/her record to the FBI, Criminal Justice Information Services (CJIS) Division ATTN: SCU, Mod. D-2, 1000 Custer Hollow Road, Clarksburg, WV 26306. The FBI will then forward the challenge to the agency which submitted the data requesting that agency to verify or correct the challenged entry. Upon the receipt of an official communication directly from the agency which contributed the original information, the FBI CJIS Division will make any changes necessary in accordance with the information supplied by that agency.

3. Based on 28 CFR § 50.12 (b), officials making such determinations should not deny the license or employment based on information in the record until the applicant has been afforded a reasonable time to correct or complete the record or has declined to do so.

4. You have the right to expect that officials receiving the results of the fingerprint-based criminal history record check will use it only for authorized purposes and will not retain or disseminate it in violation of federal or state statute, regulation or executive order, or rule, procedure or standard established by the National Crime Prevention and Privacy Compact Council.

5. I hereby authorize (enter name of requesting agency) Nevada Department of Transportation to submit a set of my fingerprints to the Nevada Department Public Safety, Records Bureau for the purpose of accessing and reviewing State of Nevada and FBI criminal history records that may pertain to me.

In giving this authorization, I expressly understand that the records may include information pertaining to notations of arrest, detainments, indictments, information or other charges for which the final court disposition is pending or is unknown to the above referenced agency. For records containing final court disposition information, I understand that the release may include information pertaining to dismissals, acquittals, convictions, sentences, correctional supervision information and information concerning the status of my parole or probation when applicable.

6. I hereby release from liability and promise to hold harmless under any and all causes of legal action, the State of Nevada, its officer(s), agent(s) and/or employee(s) who conducted my criminal history records search and provided information to the submitting agency for any statement(s), omission(s), or infringement(s) upon my current legal rights. I further release and promise to hold harmless and covenant not to sue any persons, firms, institutions or agencies providing such information to the State of Nevada on the basis of their disclosures. I have signed this release voluntarily and of my own free will.

A reproduction of this authorization for release of information by photocopy, facsimile or similar process, shall for all purposes be as valid as the original.

In consideration for processing my application I, the undersigned, whose name and signature voluntarily appears below; do hereby and irrevocably agree to the above.

Applicant's Name: _____
(PLEASE PRINT LAST, FIRST, MIDDLE)

Address: _____

Applicant's Signature: _____

Date: _____

Submitting Agency: Nevada Department of Transportation

Address: 1263 South Stewart Street, Carson City, NV 89712

Agency representative: Jeramie Brown
(PLEASE PRINT LAST, FIRST, MIDDLE)

Agency representative's Signature: _____

Date: _____



STATE OF NEVADA FINGERPRINT REQUEST FORM

Applicant:

Please provide this form to the fingerprint technician/official at the time the fingerprints are taken to ensure that all fields contain the required/authorized information needed for processing.

Fingerprint technician:

Please ensure that you see photo ID for identity verification purposes prior to fingerprinting.

APPLICANT INFORMATION							
Applicant Name (Last, First, MI):							
Applicant Address:							
City, State, Zip:							
Date of Birth:				Place of Birth:			
SSN (if required):				Citizenship:			
Sex:		Race:					
Height:		Weight:		Eyes:		Hair:	

AUTHORIZED ENTITY INFORMATION			
Account Number (MNU):	151654	ORI:	NV0131700
Bill to Account Number (MNU): (If applicable)	Cash	Reason Fingerprinted: (NRS or Public Law)	NRS239B.010.B
Submit Fingerprints Electronic Livescan:			
Yes:	X	No: (If no, please print hand cards and return to applicant for manual submission:)	

SIGNATURE OF AUTHORIZATION	
<i>Signature of Employer or Authorized Entity Requesting Fingerprints</i>	
<i>Jeramie L Brown</i> on behalf of Nevada Department of Transportation	

FINGERPRINT SITE INFORMATION			
Signature of Official Taking Prints:			Date:
TCN Number: (Used for Tracking Purposes)			

PRIOR ARRESTS AND CRIMINAL CONVICTION DISCLOSURE

Employee/Contractor Name:	

State Agency Name:	Nevada Department of Transportation

Contract or Project Name (if applicable):	

Commented [LD1]: You can enter your project name or contract gives you a reference as to what it was for.

Prior Arrests/Criminal Conviction/Traffic Violations (Omitting or providing incomplete information is a basis for rejecting an applicant) Have you ever been arrested? ☐ Yes ☐ No Have you ever been convicted of a misdemeanor, gross misdemeanor or felony (exclude juvenile adjudication)? ☐ Yes ☐ No Have you received a moving traffic violation within the last five years? ☐ Yes ☐ No If yes, give date(s), time(s), locations(s), circumstance(s), and dollar amount of fine(s). Include any conditions of your parole and/or probation, if applicable. Moving traffic violations will only be considered if driving a vehicle is a job requirement. An arrest or criminal conviction is not an automatic bar to employment. Each case is considered on its individual merits.				
DATE	TIME	LOCATION	CIRCUMSTANCE	FINE AMOUNT

Remarks:

Employee/Contractor Signature:	Date:



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105	G	Personnel Security	2/03/2017	1 of 4

1.0 PURPOSE

This standard establishes the minimum Personnel Security standards for users of State information and information technology (IT).

The greatest harm/disruption to a system comes from the actions of individuals, both intentional and unintentional.

The Personnel Security process begins with a review of the user's mission needs, relevant policies, regulations, standards, and threats for a defined environment. Their interaction with the information systems, their roles, responsibilities, and authorities must be identified and documented.

2.0 SCOPE

This standard applies to all state agencies meeting the requirements identified in the State Information Security Consolidated Policy, Section 1.1, Scope and Applicability.

3.0 EFFECTIVE DATES

This standard becomes effective at the time of approval of the State Chief Information Officer (CIO).

4.0 RESPONSIBILITIES

The agency head and appointed agency Information Security Officer (ISO) have the responsibility to ensure the implementation of and compliance with this standard.

Agency management and personnel staff are responsible for coordinating and cooperating with the ISO to ensure compliance with the requirements of this standard.

5.0 RELATED DOCUMENTS

State Information Security Consolidated Policy, 100
State Information Security Officer (ISO) Roles and Responsibilities, 102

6.0 STANDARDS

- A. Positions shall be identified and classified with regard to the sensitivity of the data they control or process and the facilities to which they have access. Agency managers and ISOs shall use the following guidelines to determine sensitive positions. If the position:
 - 1) Has a major responsibility for the development, planning, direction, or implementation of a computer system.
 - 2) Has a major responsibility for the development, planning, direction or implementation of a computer security program.



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- 3) Has approval authority for major component of a computer system, including hardware and software.
 - 4) Has the ability to cause grave damage to a system or realize significant personal gain through their access or responsibility.
 - 5) Has the potential for detrimentally impacting computer security.
 - 6) Has duties of considerable importance to the agency IT mission, with significant program responsibilities.
 - 7) Has access to, or affect the processing of, proprietary data or privileged information.
- B. The following IT positions, at a minimum, shall be identified as sensitive positions:
- 1) Positions grade 39 and above.
 - 2) Managers
 - 3) Security Officers
 - 4) Systems Administrators
 - 5) Systems Maintenance
 - 6) Network Administrators
 - 7) Database Administrators
 - 8) Programmers
 - 9) Backup Administrators
 - 10) Contractors and Vendors who work for or provide IT services to the state
- C. Employees who will hold sensitive positions shall have pre-employment screenings, which are documented and maintained within the agency Personnel File. Please refer to NAC 284.317 below as a guideline for such screenings.

NAC 284.317 Investigations of applicants; minimum age requirement.

1. To determine whether an applicant meets the minimum qualifications established for the class or position and other necessary criteria, the Division of Human Resource Management may require evidence of United States citizenship, alien status, discharge under honorable circumstances from the Armed Forces of the United States, possession of valid licenses for various purposes, educational transcripts or other evidence of identification and qualification. Except as otherwise provided in, NAC 284.325 with respect for a veteran's preference, any required information which is not received by the time of certification will be cause for the Director to decline to certify the applicant.
2. A reasonable minimum age requirement may be established for any position that involves public safety, supervision or care of wards of the State of Nevada, hazardous working conditions or other unusual circumstances. If such a minimum age requirement is established, it must be specified in the approved class specification or the publicized job announcement and an applicant shall, upon request, submit appropriate proof of age to the Division of Human Resource Management.
3. The Division of Human Resource Management or employing agency may investigate an applicant's character, past employment, education, and experience and, as allowed by specific statute, criminal background. [Personnel Div., Rule IV part § A, eff. 8-11-73; Rule IV § B, eff. 8-11-73]—(NAC A by Dep't of Personnel, 10-26-84; 7-6-92; A by Personnel Comm'n by R183-03, 1-27-2004)



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- D. All agencies will comply with existing state and federal laws, and regulations that impose significant responsibilities on employees for the security of information.
- E. Employees shall sign a Letter of Agreement and/or Non-disclosure Agreement before access is allowed to information or information systems indicating that they understand their role and responsibilities for securing information and protecting information technology. These requirements shall normally be accomplished through the New Employee Orientation and/or Information Security Awareness Training.
- F. Sensitive positions shall have critical functions divided among different individuals (separation of duties), whenever possible, to ensure that no individual has all necessary authority or information access that could result in fraudulent activities and misuse of confidential/privileged information.

6.0.1 BACKGROUND CHECKS

- A. Background checks shall be conducted on all positions determined to be sensitive and is supported by NRS 239B, Disclosure of Personal Information to Governmental Agencies.
- B. Fingerprint checks shall be submitted to the Department of Public Safety. The agency may absorb the applicable fees for fingerprinting and background checks. Fingerprinting must be done by a law enforcement agency.
- C. Unfavorable results from a background check are not an automatic cause to refuse employment or cause termination. The agency head after consult with the State Chief Information Security Officer (CISO) has the final decision on action to be taken or not taken based on any unfavorable results. The agency head after consult with the CISO shall consider a conviction in any jurisdiction of any crime involving moral turpitude or indicating a lack of business integrity or honesty, whether denominated a felony or misdemeanor, to be an unfavorable result of a background check.
- D. A list of agency employees/contractors holding sensitive positions as provided in Section 6.0 shall be maintained by the agency ISO. The list shall be updated within 30 days of any change in status (e.g. new hire appointment completion date, termination, functional responsibility change, etc.). The list shall include: name of employee/contractor; functional IT responsibility; status of background investigation; and date of completed appointment.

6.0.2 TERMINATION

- A. Agencies will establish, implement and maintain procedures for processing terminations, both voluntary and involuntary, of employees. The procedures for processing termination involving sensitive positions or access to sensitive information shall be more restrictive than those in non-sensitive positions.
- B. When an employee is involuntarily terminated from employment, all system access privileges will be immediately revoked and the employee is to be prevented from having any opportunity to access information or equipment.



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7.0 DEFINITIONS

State Agency – The use of the term “State agency” in this document means every public agency, bureau, board, commission, department, division or any other unit of the Executive Branch of the government of the State of Nevada.

8.0 EXCEPTIONS/OTHER ISSUES

Requests for exception to the requirements of this Information Security Standard must be documented, provided to the Office of Information Security (OIS), and approved by the State Chief Information Security Officer (CISO).

Approved By		
Title	Signature	Date
State Information Security Committee	Approved by Committee	10/03/2016
State Chief Information Security Officer (CISO)	Signature on File	1/30/2017
State Chief Information Officer (CIO)	Signature on File	2/03/2017

Document History		
Revision	Date	Change
A	02/14/02	Initial release.
B	12/12/02	Revision to incorporate background checks
C	12/11/03	Revision to maintain sensitive position information, change to Section 6.0.1 paragraph B
D	10/03/06	Reviewed by ITSPC. One Change (6.0. paragraph C.1) Corrected reference to NRS to NAC.
E	06/30/11	Revision to update background check requirements, Section 6.0.1
F	01/22/15	Office of Information Security biennial review, replaces standard 4.04
G	9/29/16	Changes to Section 6.0.1 (A) and (D)



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106	D	Enterprise Physical Security and Environmental Controls	02/22/2018	1 of 6

PURPOSE

This standard establishes the minimum physical and environmental controls required for State information and information technology.

2.0 SCOPE

This standard applies to all state entities, state employees, contractors and all other authorized users, including outsourced third parties, who manage facilities to include IT data centers, offices or facilities that house telephone networks, data networks, servers, workstations, and other IT-related systems within or for the Executive Branch of Nevada State Government.

3.0 EFFECTIVE DATES

This standard becomes effective at the time of approval of the State Chief Information Officer (CIO).

4.0 RESPONSIBILITIES

The agency head and appointed Information Security Officer (ISO) have the responsibility to ensure the implementation of and compliance with this standard.

5.0 RELATED DOCUMENTS

State Information Security Consolidated Policy, 100
Information Security Officer (ISO) Roles and Responsibilities, 102

6.0 STANDARD

6.1 Physical Security Defined

- A. The following are the essential elements of physical security:
 - a. List or definition of assets to be protected
 - b. List or definition of persons authorized for unescorted access
 - c. List of threats determined to pose a significant risk
 - d. Statement of an intended method for keeping the assets secured, allowing unescorted access only to authorized persons
- B. All security decision should be based on an assessment of risk. The benefits of any security measure should be balanced against the direct costs as well as the indirect costs (e.g. inconvenience and extra tasks) of security measures. ISOs are responsible for identifying and presenting risks and the value of mitigations and security enhancements to management. The business decision to accept or mitigate risk should be made at the highest level of the business when sensitive information or valuable assets are involved.



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- C. The minimum standard for any physical security method or implementation is that a breach of security will be immediately, easily, and directly observable. Preventing unauthorized access is the ideal, but detecting unauthorized access is paramount.
- a. There are unusual methods and equipment that can breach many physical security implementations without leaving obvious traces. For the purposes of establishing a minimum security standard, consider only the skills of an ordinary person, with a high degree of motivation, and the tools commonly and locally available.
 - b. Security measures chosen to protect assets should match the level of the threat to those assets. For instance, if a bad actor could be motivated to use lock pick skills and tools to obtain a high value asset, an agency should use RFID to secure the entrances, or use mitigating tools such as motion detectors and digital video recorders to ensure the agency is reasonably protected or at least aware of unauthorized access to secure sites.

6.2 Common Controls

- A. Each agency site will have a written plan that addresses each of the essential elements of physical security listed in 6.1 (A), at a minimum. The plan will be reviewed at least annually, and the review will be documented.
- B. The agency Information Security Officer (ISO) or his/her appointed representative shall, in accordance with the Information Security Policy Section 4.1, perform an on-site review of physical security and environmental control procedures annually, or whenever facilities, environment, and/or security procedures are significantly modified, and document review results.
- C. Agencies planning for new, remodeled or leased office construction shall include the agency ISO during design phase requirements discussions and planning. Agencies will ensure all appropriate physical security controls and requirements are incorporated in the design.
- D. The agency ISO or designee will verify the secure operation of controls at each entry point, for each site, annually. This includes all entry points, whether they are controlled by physical, electronic/technology, human, or other means. This review will be documented.
- E. Visitors to secure areas will be escorted by an authorized person and a record of visits will be maintained for one year, at a minimum.
- F. IT Infrastructure will not be directly accessible from public areas. This includes servers, communications equipment, plus low voltage and fiber optic data and voice cabling, and power and environmental infrastructure that serve the IT infrastructure. Infrastructure specifically built to interact with the public, such as a kiosk, is exempt from this requirement.



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- G. Computers, monitors, and other related equipment will not be placed so that active, usable data ports are within reach of members of the public. This includes USB, Ethernet, SCSI, serial, and any other ports capable of carrying data. The ports will be protected through physical placement of the device, measures that block port access such as port plugs or device cages, or software or other measures that prevent unauthorized use of the ports.
- H. Monitors that are used to display controlled or confidential information will not be viewable from public areas. Covers that distort the screen image may be acceptable mitigations provided public spaces allow only angled views to the computer screen.
 - a. There is no distance limitation to this requirement since current technology can be used to successfully read a computer screen from hundreds of feet away.
 - b. Agency ISOs or designee will conduct annual audits of what can be viewed from public areas and through building windows.

6.3 IT Data Center Controls

- A. Mainframe computers, network servers, voice and network relays, telecommunications equipment, desktop computers, and support peripheral devices shall be installed in physically secure and environmentally sound facilities or locations in accordance with industry and manufacturers standards.
- B. Electrical considerations in respect to the location of IT equipment shall be considered, including but not limited to: avoidance of multiple systems on one electrical circuit, appropriate grounding, uninterruptible power supply units attached to critical systems, and surge protectors on computer and peripheral equipment.
- C. Appropriate fire suppression devices shall be available and strategically located throughout the building and controlled computer areas and maintained in accordance with industry and manufacturers standards
- D. Water damage precautions shall be considered with respect to computer facilities and equipment including installation of leak detection devices (water).
- E. Environmental controls shall be installed to ensure that the facility and equipment are maintained within optimum operating conditions including, but not limited to temperature, humidity, and dust prevention.
- F. Environmental controls shall also provide for the safety of personnel.
- G. Controlled computer areas and related spaces, including but not limited to media and/or data storage and software libraries shall not be used as temporary storage rooms, lunch areas or



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warehouses. All equipment, floors and work surfaces shall be cleaned regularly and maintained in accordance with industry and manufacturers standards.

H. Agency management or appointed ISO shall ensure backups of agency applications comply with State Security Standard 132.

6.4 Communications Room Controls

- A. All computers, peripheral, media, data storage, mobile devices and network components outside the central computer room shall receive the level of security, based on the criticality of the equipment and the data processed, necessary to avoid damage, theft, and/or unauthorized access, and in accordance with industry and manufacturers standards.
- B. Electrical considerations in respect to the location of IT equipment in the facility's designated communication room shall be considered, including but not limited to: avoidance of multiple systems on one electrical circuit, appropriate grounding, uninterruptible power supply units attached to critical systems when possible, and surge protectors on computer and peripheral equipment.
- C. Appropriate fire suppression devices shall be available and strategically located in the communications room, and maintained in accordance with industry and manufacturers standards
- D. Water damage precautions shall be considered with respect to the designated communications room and its associate equipment-
- E. The buildings environmental controls shall be monitored to ensure that the equipment in the communications room is maintained within acceptable operating conditions including, but not limited to, temperature, humidity and dust prevention.
- F. A facilities designated communications rooms shall not be used as temporary storage rooms, lunch areas or warehouses. All equipment, floors and work surfaces shall be cleaned regularly and maintained in accordance with industry and manufacturers standards.
- G. Agency management or appointed ISO shall ensure agency applications and data comply with State Security Standard 132.

7.0 DEFINITIONS



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Communications Room: A communications room is a small room that contains network and telecommunications systems and devices, and physical or virtual servers. It generally provides localized network and data services for the office or building in which it resides, as well as a connection into SilverNet or the agency's Wide Area Network. Communications Rooms are sometimes called Wiring Closets or Telecom Closets.

Data Center: A data center is the principal location that stores, processes and serves large amounts of mission-critical data. The location can including physical and virtual servers, storage subsystems, networking switches, routers and firewalls, as well as the cabling and physical racks used to organize and interconnect the IT equipment. The location must also contain an adequate infrastructure, such as power distribution and supplemental power subsystems, including electrical switching; uninterruptable power supplies; backup generators to include ventilation and cooling systems.

8.0 REFERENCES

National Institute of Standards and Technology (NIST), Special Publications:
 800-12, An Introduction to Computer Security; the NIST Handbook, October 1995
 800-14, Generally Accepted Principles and Practices for Securing IT Systems, September 1996
 800-53, Security and Privacy Controls for Federal Information Systems and Organizations, February 28, 2012

9.0 EXCEPTIONS/OTHER ISSUES

Requests for exception to the requirements of this Information Security Standard must be documented, provided to the Office of Information Security (OIS), and approved by the State Chief Information Security Officer (CISO).

Approved By		
Title	Signature	Date
State Information Security Committee	Approved by committee	02/22/2018
State Chief Information Security Officer (CISO)	Signature on File	03/19/2018
State Chief Information Officer (CIO)	Signature on File	04/05/2018

Document History		
Revision	Date	Change
A	7/11/02	Initial release.
B	3/14/12	Renumbering and minor revisions.



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C	1/21/15	Office of Information Security biennial review, replaces standard 4.11
D	2/22/18	Update to include Data Center controls, revision of basic physical security

ATTACHMENT D - Change Order Policy and Process for NSRS Radio Replacement Project

Change Order Policy

Change Order refers to a formal process for the issuance of Change Orders to the Nevada Shared Radio Replacement Project. The goal of Change Order document is to increase awareness, manage the cost of the Project, understand the proposed changes to the NSRS members, the SERVICE PROVIDER, and team members, and ensure that all changes are made in a thoughtful manner that minimize negative impacts to services and customers.

All changes to the Nevada Shared Radio Replacement Project must follow a structured process to ensure appropriate financial oversight, planning, and execution.

The DEPARTMENT will not issue a Change Order unless:

- A change to the scope is specifically requested by the DEPARTMENT; or
- The change is to the advantage of the DEPARTMENT; or
- The change is a result of something unforeseen at the time of Agreement execution.

NDOT does not expect to make changes except under the circumstances listed above. However, the intent is to allow value engineering recommendations to be proposed.

An effective Change Order process defines the process used to request, review, approve, and enact a change and minimize the resulting impact on the Project. By managing the issuance of Change Orders, the following are intended to be accomplished:

- Reduce the negative impact of changes to the Project
- Identify issues and risks related to proposed changes
- Ensure that changes do not affect the Project's ability to achieve its desired objectives and maintain the Project scope
- Control the cost of changes within the Project.
- Regulate the schedule of the Project.
- Communicate the changes to the DEPARTMENT, the SERVICE PROVIDER, the stakeholders, and the Project Team.

Only those changes to the baseline management of the Project will be subject of Change Orders. That is, changes that affect Project scope, budget, system configuration, design, schedule, and deliverables.

Levels of Change

Limited Change

Limited changes require a completed Change Order and invoke a simple Change Order process. For such changes, planning and approval will be handled entirely by the DEPARTMENT and SERVICE PROVIDER Project managers; and will not involve the Change Advisory Board (CAB).

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Limited changes have most or all of the following characteristics:

- A limited or no potential impact on the Project schedule; or
- A limited or no potential impact on the Project budget; or
- A limited or no potential impact on the Project quality; or
- There is a reasonable balance between the level of risk and the cost and resources to implement the change; or
- The Change does not affect other NSRS members.

Moderate Change

Moderate changes require a completed Change Order, approval by the DEPARTMENT and SERVICE PROVIDER Project managers, the implementation rescheduled, if necessary, and will be included in the Post Implementation Review (PIR). Moderate changes will not involve the CAB.

Moderate changes have most or all the following characteristics:

- Has moderate potential impact on the Project schedule; and
- Has a cost impact of less than ten thousand dollars (<\$10,000) on the Project budget; and
- Without the change there may be some impact on the Project quality; and
- There is some risk to the Project if the change is/is not implemented; and
- Will require additional NDOT staffing resources; and
- The change will affect other NSRS members.

Major Change

Major changes require a completed Change Order, approval by the DEPARTMENT and SERVICE PROVIDER Project managers and the CAB. The implementation will be scheduled and will be included in the PIR.

Major changes have most or all the following characteristics:

- Has significant potential impact on the Project schedule; and
- Has a cost impact of greater than ten thousand dollars (>\$10,000) on the Project budget; and
- Without the change there will be an impact on the Project quality; and
- There is a significant risk to the Project if the change is/is not implemented; and
- Will require additional NDOT staffing resources; and

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- The change will affect other NSRS members; and

Roles and Responsibilities

Change Requestor

The change requestor is responsible for identifying the need for a change and completing the Request for Change form (refer to *Addendum A Sample Request for Change Form*), with the relevant information needed for the Project Manager(s) and the Change Advisory Board, to determine if the change should be implemented.

Change Manager

The change manager is responsible for recording the submitted Change Orders on the Change Register (refer to *Addendum B Sample Change Register*), determining the risk classification of each change, updating the status of the Change Orders on the Change Register, scheduling CAB meetings, and updating the Register as necessary.

SERVICE PROVIDER Project Manager

The SERVICE PROVIDER Project Manager is accountable for providing cost estimates, communication to the stakeholders and Project Team regarding change status, risks, impacts, and scheduling, and ensuring that the Change Order process is managed efficiently. The SERVICE PROVIDER will coordinate the implementation of the changes, review implemented changes, produce monthly Change Order Status Reports, perform a post implementation review, and implement improvements to the SERVICE PROVIDER's management of the Change Order process.

The SERVICE PROVIDER Project Manager shall be responsible for maintaining a Budget Sheet (refer to *Addendum C Sample Budget Sheet*), separate from the budget sheets maintained by the DEPARTMENT. The Budget Sheet will maintain current, total expenditures of the project, including change orders.

DEPARTMENT Project Manager

The DEPARTMENT Project manager is responsible for the general oversight of the Change Order process, evaluation of each Change Order for accuracy, receiving and reviewing monthly status reports on Change Orders, and facilitating weekly meetings with the Change Manager and SERVICE PROVIDER Project Manager to review status of Change Orders.

The DEPARTMENT Project Manager shall be responsible for maintaining a Budget Sheet (refer to *Addendum C Sample Budget Sheet*), separate from the budget sheets maintained by the SERVICE PROVIDER. The Budget Sheet will maintain current total expenditures of the project, including change orders.

Change Advisory Board

It is the Change Advisory Board's (CAB) responsibility to assess each Change Order from a business, technical, and financial viewpoint and to make recommendations on the impact, planning, and approval of each Change Order. The CAB membership draws its members from the NSRS Technical Advisory Committee (TAC). CAB meetings for individual changes may be in a teleconference or web-meeting environment; however, a core CAB Team will also meet periodically to review policies and procedures, on-going changes, and the change order backlog.

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Role	Name
Change Requestor	NSRS members, SERVICE PROVIDER, Project Managers, and Project Team Members.
Change Manager	Richard Martin Federal Engineering
DEPARTMENT Project Manager	Richard Martin Federal Engineering
SERVICE PROVIDER Project Manager	Phil Roland Harris Project Manager
Change Advisory Board	Jim Whalen, NDOT Shawn Tayler, Washoe County Lee Onsager, NV Energy

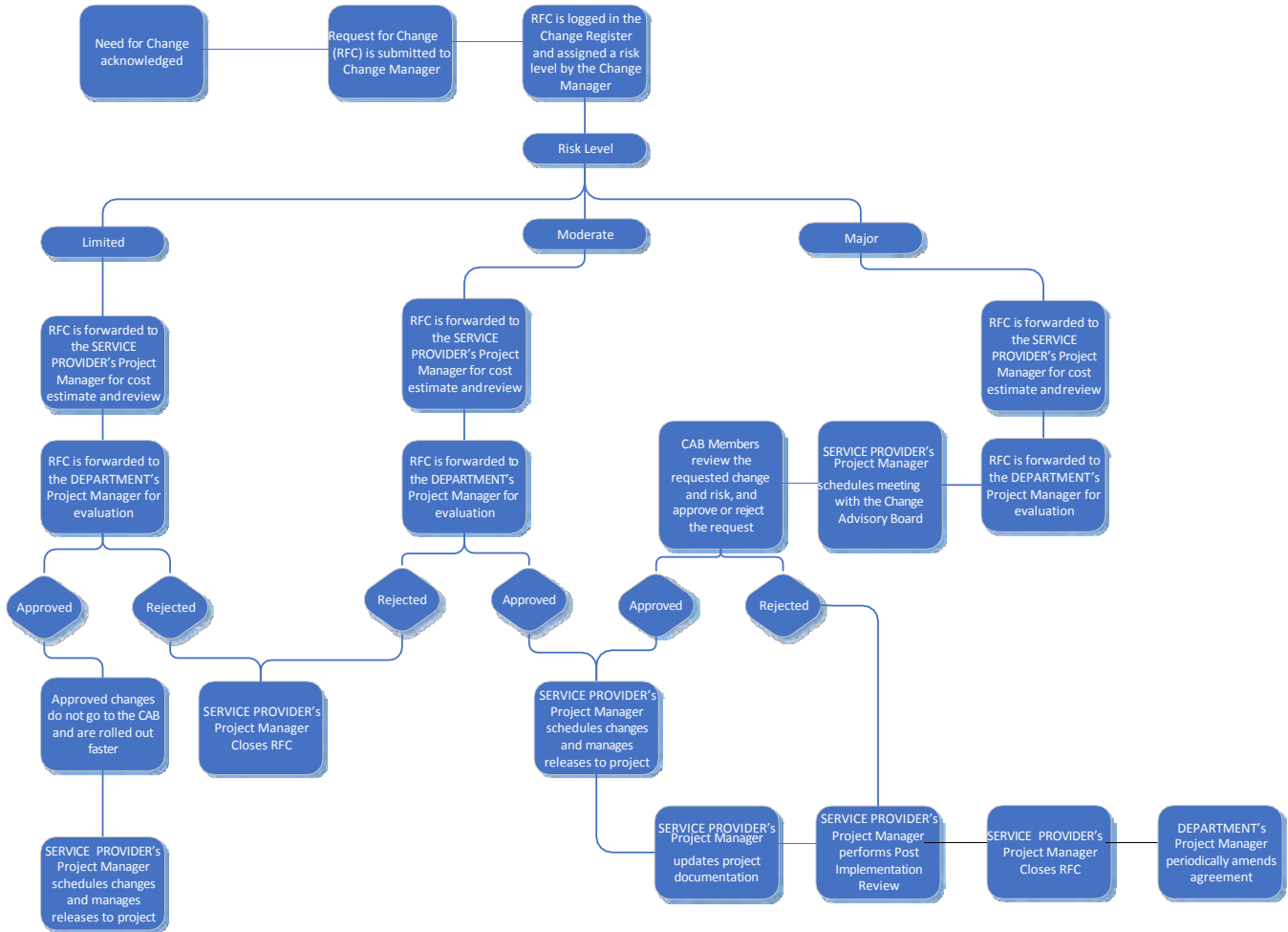
Change Order Process

The Change Order Process is made up of the following steps:

1. Identify Need for Change
2. Create and record the Request for Change Form
3. Review the Request for Change Form
4. Evaluate the requested Change Order
5. Approve/authorize the Change Order
6. Coordinate Implementation of the Change Order
7. Update the associated Project documentation
8. Review and close the Change Order

ATTACHMENT D - Change Order Policy and Process for NSRS Radio Replacement Project

The figure below depicts the work flow required to identify, document, review, evaluate, approve, and implement Change Order for the Project.



Identify Need for Change

The first step in the Change Order process is to identify the need for a change. NSRS members, Project Managers, team members, SERVICE PROVIDER and others working on the Project may suggest a change.

After identifying a need for change, the requestor records relevant information on a Request for Change Form. This relevant information is made up of the change description along with identifying impetus, benefits, potential cost benefits, if known, and the potential impact of the change on the Project. The requestor then forwards the Change Order to the Change Manager for review.

Create and Record the Request for Change

A Request for Change is created by any individual involved in the Project by completing a Request for Change Form.

The Request for Change Form will contain the relevant information necessary to make informed decisions concerning the authorization and implementation of a Change Order, including identifying

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information, a description, configuration item incurring the change, a reason for the change, type of change, scheduling, costs, back-out plan, risks, benefits, and justification. The Request for Change Form is submitted to the Change Manager.

The Change Manager will record the Change Order on a Change Register and track the Change Order throughout the Project. The Change Register will be updated by the Change Manager for each Change Order as it moves through the Change Order Process.

Each Change Order will be reviewed and prioritized by the Change Manager for business practicality. The Change Order may be rejected and returned to the submitter as notification of its acceptance or rejection; or return the Change Order to the submitter to request more detail. These unapproved Change Orders must be monitored and closed, as needed.

The Change Manager will forward the Change Order to the SERVICE PROVIDER's Project Manager.

Review and Estimate the Change

The SERVICE PROVIDER's Project manager reviews all Change Orders for validity, provides a cost estimate, assesses the impact, checks for implementation and back out plans, and ensures collaboration with the team that the change can occur. Upon completion of the Change Order, a Post Implementation Review (PIR), is performed for moderate and major changes. The PIR will be submitted to the DEPARTMENT Project Manager and the Change Manager within thirty (30) days of the Change Order being closed.

Evaluate the Change

The DEPARTMENT's Project Manager evaluates the presented Change Order to determine the basis for the requested change, the impact of the requested change to the Project, and the importance of the requested change to the successful delivery of the Project. Changes which are not critical to Project delivery are to be avoided whenever possible to prevent scope creep. A decision determining that the scope must be changed can only be made if the Change Order posed is that of a Major Change and must go to the Change Advisory Board for approval.

Evaluating the change to assess the impact, risk, and benefits to the Project is critical to avoid unnecessary disruption to business operations. Impact assessment will consider the impact on the business, infrastructure, customer service, other services, implementation resources, and currently scheduled changes in the Change Register. For major risks, the Change Advisory Board (CAB) will also evaluate changes. The SERVICE PROVIDER will offer its insight into the effects of the change to the Project.

Approve Change

If the change is deemed critical to Project success, the DEPARTMENT Project Manager approves the request for the Change Order and, when necessary, forwards the Change Order to the Change Advisory Board for approval. Based on the level of risk, impact, benefits, and cost to the Project, the decision may be to decline, delay or approve the change request.

Cost of the Change

The cost of the Change Order will be recorded on Change Register by the Change Manager.

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Coordinate Implementation

If the change is approved, the SERVICE PROVIDER's Project Manager will schedule and coordinate the implementation accordingly. After implementing the change, the SERVICE PROVIDER's Project Manager reviews the effects of the change on the Project to assure that it achieved the desired outcome and reports the results of his/her review to the Change Manager. The Change Manager will close the Change Order in the Change Register.

The SERVICE PROVIDER's Project Manager will schedule each Change Order based on the business risk and any implementation requirements. The SERVICE PROVIDER's Project Manager will communicate to the NSRS members and Project team members of upcoming changes, regardless of the severity of the change's impact to the Project. The change communication, along with Projected service outages, or expected deviations in service availability, will be taken into consideration when coordinating Change Order implementation. The SERVICE PROVIDER will be responsible for coordinating the implementation and coordination of the necessary training associated with the Change Order.

The SERVICE PROVIDER's Project Manager is responsible to update all Project documentation that is affected by the Change Order and assure that the update documents are available to the Project team members.

Review and Close the Request for Change

Upon completion of the Change Order, a Post Implementation Review (PIR) will be conducted, which provides a review of the detailed implementation results, and confirms the change has successfully achieved its objective. The PIR is performed for moderate and major changes and will be submitted to the DEPARTMENT Project Manager and the Change Manager within thirty (30) days of the Change Order being closed.

If successfully implemented, and the Change Order was associated with correcting an error in service, all associated problems and known errors shall be closed. If not successful, a remediation plan will be activated appropriately.

Definitions

Baseline – The approved version of a work product that can be changed only through the formal Change Order procedures and is used as a basis for comparison and the starting point of a Project.

Budget Sheet - Auditable spreadsheet of project costs.

Change - The addition, modification or removal of approved, supported or baselined hardware, network, software, application, environment, system, infrastructure, or associated documentation.

Change Advisory Board - One staff member from each of the three (3) NSRS membership agencies that support the assessment, prioritization, authorization, and scheduling of Change Orders.

Change Register - Auditable log of who, what, why, when, and how for all changes.

Change Order - Process of controlling changes to the infrastructure or any aspect of services to enable completion of approved changes with minimum disruption.

Request for Change From - the document initiated by a RFC that is used to capture the details of an approved change to the Project.

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Impact – Determine, prior to implementing a change, the estimated amount of disruption to users, budget, quality and/or schedule that a requested Change Order will have on the Project.

NSRS members – Nevada Department of Transportation, NV Energy, and Washoe County and/or the staff which represents these entities.

Post Implementation Review (PIR) - Upon completion of the change, a Post Implementation Review, is performed for moderate and major changes. The PIR will be submitted to the DEPARTMENT Project Manager and the Change Manager within thirty (30) days of the Change Order being closed.

Request for Change Order – A formal proposal for a change to be made to the Project. It includes details for the proposed change.

Service – A means of delivering value to customers by facilitating those outcomes the customers want to achieve without the ownership of specific costs and risks.

Change Order Status Reports – A monthly report that includes the status of all Change Orders.

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ADDENDUM A

SAMPLE Request for Change

Change Order Number _____

Date _____

Risk Level:

Limited ☐

Moderate ☐

Major ☐

1. Overview of change order and justification:

To be completed by the submitter
2. Detail change description:

To be completed by the submitter
3. Estimated Cost and Schedule Impact of Change (including additions and deletions of work):

To be completed by the SERVICE PROVIDER
4. Risks:

To be completed by the SERVICE PROVIDER
5. Approvers:

Name	Signature	Title
		SERVICE PROVIDER Program Manager
		DEPARTMENT Program Manager
		Change Authority Board Member
		Change Authority Board Member
		Change Authority Board Member

Prepared by: _____

Date Submitted _____

Notes:

SAMPLE Change Register

Project Manager: _____

[illegible]

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ADDENDUM C
SAMPLE **Budget Sheet**

7/13/2018

Sample Budget Sheet

Nevada Shared Radio Replacement Project

Total Agreement Cost: \$1,000,000
Contingency Fund: \$100,000
Agreement Cost + \$1,100,000
Contingency:

Remaining Project Budget: \$964,000
Remaining Contingency Fund: \$64,000
Total Spent-to-Date: \$46,500

Deliverable	Invoice Number	Invoice Date	Budgeted Amount	Invoice Amount
Complete Design Plan	1234	6/3/2018	\$16,000	\$16,000
Complete Site Plans	1245	7/1/2018	\$12,400	\$12,400
Preliminary Site Visits	1303	7/12/2018	\$7,600	\$7,600
Region 0 Build			\$150,000	
Region 0 Testing			\$50,000	
Region 0 Deployment			\$41,000	
Region 1 Build			\$150,000	
Region 1 Testing			\$50,000	
Region 1 Deployment			\$41,000	
Region 2 Build			\$150,000	
Region 2 Testing			\$50,000	
Region 2 Deployment			\$41,000	
Region 3 Build			\$150,000	
Region 3 Testing			\$50,000	
Region 3 Deployment			\$41,000	
			\$1,000,000	\$36,000

Change Order Number and Description	Invoice Number	Invoice Date	Estimate Amount	Invoice Amount
001 Change location of undeveloped site #43 - update Design Plan and drawings	1310	7/4/2018	\$500.00	\$500.00
002 Change color of paint on buildings from brown to blue	1315	7/5/2018	no charge	no charge

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003	Add additional generator to 5 sites	1387	7/12/2018	\$10,000.00	\$10,000.00
004	Increase training to include 2 additional 8-hour sessions			\$8,000.00	
005					
				\$18,500.00	\$10,500.00