



Customer Certificate of Acceptance Form

DCPPM006-f03

Project Name: WSDOT Region 4 – WA091

Customer Name: Washington State Department of Transportation

Harris Corporation Contract ID No.: 1600

This is to certify that, having taken part in the agreed upon acceptance test, we declare the following system as accepted under the terms of this Agreement.

See attachments (no. of pages 159)

Customer Representative

Signature: _____

Printed Name: Tim McDowell

Title: ITS Communications & Wireless Tech Mgr

Date: _____

Harris Corporation Representative

Signature: _____

Printed Name: Karl Ryan

Title: Program Manager

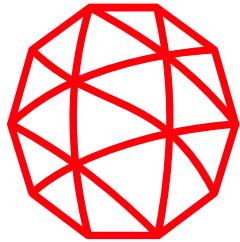
Date: _____



Customer Certificate of Acceptance Form
DCPPM006-f03

Revision History

Rev	ECO	Date	Revision History – Description of Changes	Change By / (Approved By)
F	C80205	11/17/11	Header and Footer formatting	David Bowen / Kevin Uhl
G	C-138366	2/8/17	Updated links to SharePoint	Avi Usgaonkar / Tom Ruck



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**DCN 59-6149
WSDOT Region 4
Coverage Testing Summary
Initial Release**

**Washington State Department of Transportation
Land Mobile Radio Project**

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: WSDOT LMR Project

Prepared By: Eric Wibbens, L3Harris Technologies

REVISION HISTORY

Date	Author	Action
12/7/2021	Eric Wibbens	Document Creation

REFERENCE DOCUMENTS

WSDOT R4 Coverage Testing Summary Report

Introduction

This document provides information regarding the performance of coverage testing for the Region 4 area of the Washington State Department of Transportation (WSDOT) Communication System. This document should be read in conjunction with the most recent version of WSDOT's Coverage Acceptance Test Plan (WSDOT CATP) DCN59-6007. The CATP document provides details of the types of tests to be performed, identifies areas to be tested, and describes test methodology and equipment setup. This and accompanying documents summarize the results achieved for this phase of coverage testing for the WSDOT communications project. Throughout this document, reference to R4 is meant to include only those roads driven to complete the testing of R4.

Background Information

Briefly, R4 coverage testing consists of evaluating the coverage provided by 24 RF sites located within (or near) WSDOT's Southwest Region. These sites include;

1. Minot Peak (W) 771.66875
2. Capitol Peak (W) 771.90625
3. Holy Cross (W) 771.31875
4. Naselle Ridge (W) 771.88125
5. Megler (W) 771.01875
6. Bawfaw (W, C-C) 774.58125
7. South Bradwood (W) 771.40625
8. Mineral Hill (C) 770.41875
9. Hopkins Hill (C) 774.88125
10. Dog Mountain (C) 772.84375
11. Packwood (C) 773.90625
12. White Pass (C) 771.89375
13. Cape Horn (E, C-C) 773.54375
14. Underwood Mountain (E) 771.16875
15. Stacker Butte (E) 769.26875
16. Haystack Butte (E) 770.06875
17. Bickleton Ridge (E) 773.48125
18. Roosevelt (E) 771.35625
19. Rainier Hill (C-C) 772.40625
20. Signal Peak (C-C) 773.08125
21. Davis Peak (C-C) 770.69375
22. Speelyai (C-C) 772.03125

23. Vancouver (C-C) 774.80625
24. Prune Hill (C-C) 770.31875

The parenthetical references shown alongside each site are to the association of a given site to be active during the data collection for that sub-region (West (W), Central (C), and East (E) & Cowlitz-Clark (C-C) of the full R4 Region. Additionally, each site's test frequency is listed alongside; this channel being the V1 frequency at each site. The Google Earth presentations will show how these sub-regions break down into roads driven, and the sites active for that drive run. Note that 8 sites is the full complement of sites that can be monitored by the drive test vehicle at any given time, a constraint that causes a region having more than eight sites to be sub-divided into multiple sub-regions – 4 in the case of Region 4. It is further noted that the sub-region configurations were modified from the original 3 – all having 8 sites – to the above 4 sub-region configuration; this to accommodate the timing of the installation/activation of the Rainier Hill site.

The full set of roads to be driven for this phase of testing are shown in Figures 1 & 2 below and are identified by the grid overlay shown. The grid overlay is related to an underlying boundary that has been defined by WSDOT as road corridors – specified as follows (from WSDOT's RFP) –

The bounded area coverage is limited to a zone around State roads within the six WSDOT Regions. A road coverage zone for each of the three classifications of State roads is created. The coverage zone extends a specified distance from each side of the road. The coverage zone for each of the roads is the following:

- Interstates, 175 feet
- US Routes, 110 feet
- State Routes, 40 feet

These closed boundaries have been created and established in L3Harris' (L3H) coverage-related suite of tools; these tools form the basis of L3H's coverage predictions (RAPTR) and provide the means by which coverage data, collected in accordance with the methodology and equipment described in the CATP, will be analyzed -- using a tool within the RAPTR tools set known as DataMASTR.

As described in the CATP document, coverage testing and ultimate acceptance of the WSDOT communications system related to coverage performance will be based upon the evaluation of Signal Strength (RSSI) and Bit Error Rate (BER) measurements collected along the drive routes (within the coverage corridors) and establishing that the Signal Strength and Bit Error Rate data exceeds that which has previously been guaranteed, and as is listed in Table 2 of the CATP. From the CATP document –

“The installed radio system will have met the coverage requirements if, for each bounded service area shown in Table 3, the ratio of the number of PASS data points to the total number of data points in each Regional service are equals or exceed the minimum Validated CPC Service Area Reliability acceptance criteria that is shown.”

Collected data will be shown to equal or exceed the percentage of the R4 bounded area as listed in Table 2. Similarly, BER data will also be collected along the same drive route over which Signal Strength

data was collected. Analysis of the BER data will be shown to equal or exceed that criteria listed in Table 3 of the CATP, per the above stated P/F methodology.

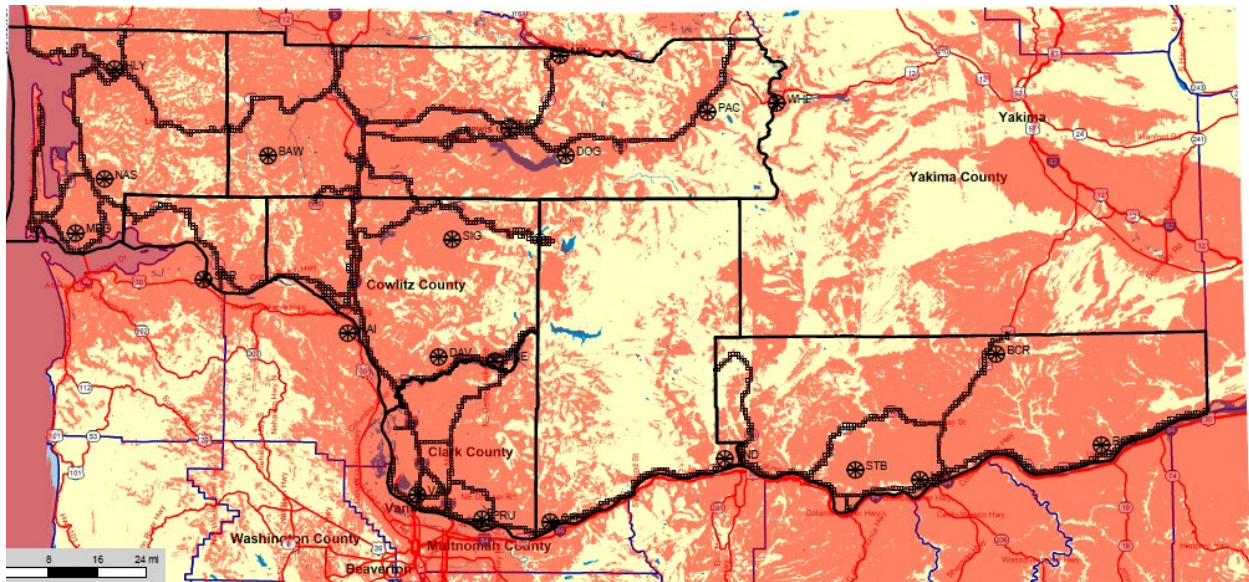


Figure 1 – R4 Roads Driven during coverage testing

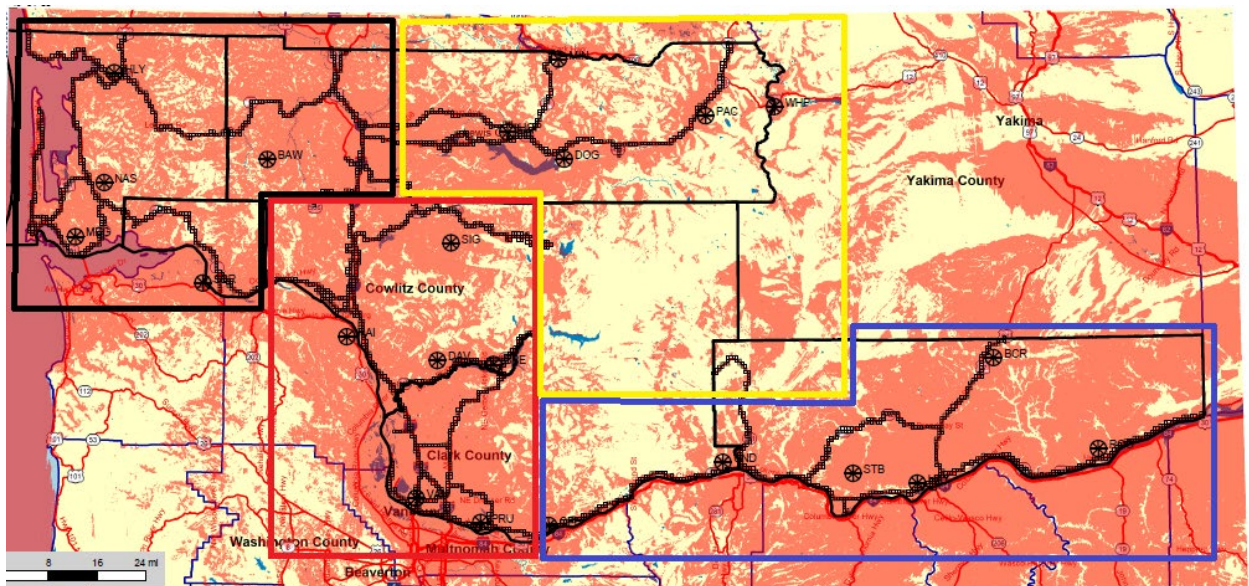


Figure 2 – R4 Roads Driven with predicted coverage and site overlay

Data Collection and Analysis

Data collection for both of these evaluations was performed in the August-October time frame of 2021; the results were accumulated and provided to L3H's RF Integrity group for processing and evaluation.

Data was collected both within and outside of the boundaries described above, resulting in more data points collected than have been used in the Signal Strength and BER area percentage calculations. Data collected outside of the bounded areas has not been considered in the calculation of area percentage.

The results of that data processing effort are provided for WSDOT's review in two ways.

1. L3H has processed 2 sets of data for each of BER and Signal Strength testing.
 - a. "Primary" Data set – all data resulting from a 0.1-mile sample processing interval was evaluated. This data set can be considered to be an uncorrelated data set. These data points can be reviewed in the attached .kml file by hovering over the appropriate view showing this 0.1-mile processing interval.
 - b. To eliminate "oversampled" data points, the collected data was post-processed using a DataMASTR function that allows the removal of data from overdriven routes (e.g.; having collected data from traveling in both directions of an interstate highway). Using this function, a DataMASTR option was set to accept the earlier-collected data for any such location; all other data collected within that data point's sampling interval was discarded. It is this "remove overdriven" (RO) data set that has been used as the basis for this regional coverage evaluation. These data points can be reviewed in the attached .kml files by hovering over the appropriate view showing this "overdriven-filtered" data.

The results of having analyzed collected data sets for both BER and Signal Strength acceptance are shown in the accompanying summary spreadsheet. The spreadsheet shows that for the 4 subregions of R4, both BER and Signal Strength data is well in excess of that predicted.

2. A second presentation of the collected data is shown in the form of a Google Earth depiction of these sets of drive data. Once the attached .kml files are loaded, the Google Earth presentations provide an interactive environment allowing a detailed examination of these various sub-regional sets of data – 8 views in all; 4 for BER and 4 for Signal Strength – .1 mile RO data processing intervals / all data and overdriven route data removed.
3. Each of the 8 layers includes a .5 x .5 mile grid structure that overlays the roads driven; this overlay will be useful in performing subsequent coverage evaluations related to alignment of WSDOT's DAQ scoring against collected data (as described in Section 6 of the CATP). Another useful feature of the Google Earth presentation allows the user to examine each data point by hovering the cursor over the point, causing the underlying data to appear. Further, one can get a sense of the terrain and other aspects of the environment in which the radio system is operating; the 3D view being particularly interesting – showing terrain or other obstructions that may be causing a section of road to have reduced coverage.

The collection of the 8 data sets is provided as individual Google Earth .kml files – facilitating the loading of the files into Google Earth for display and review.

4. To arrive at an overall coverage evaluation of the BER and RSSI performance along the roads of the entire R4 Region, the sub-regional data point totals were summed for the entire region, and the P/F criteria described earlier was applied to these totals. The spreadsheet provided shows that not only do each of the four sub-regions meet/exceed the acceptance criteria, but also show that R4 taken as a whole meets/exceeds the acceptance criteria determined by prediction for Region 4.

Summary

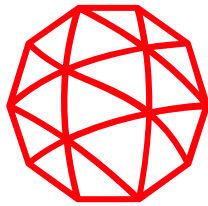
L3Harris has performed a coverage analysis of the data collected for the R4 portion of the coverage evaluation phase of the WSDOT project. This analysis has resulted in showing that for both Bit Error Rate and Signal Strength evaluations, the R4 Region exceeds the predicted coverage.

Attachments – XL Spreadsheet: *R4 Consolidated Drive Test Results – 110121.xlsx*

Google Earth Files: *R4 BER-RSSI Drive Data*

- R4 EAST BER 0.1 RO-E.kml
- R4 EAST RSSI 0.1 RO-E.kml
- R4 CENTRAL BER 0.1 RO-E.kml
- R4 CENTRAL RSSI 0.1 RO-E.kml
- R4 WEST BER 0.1 RO-E.kml
- R4 WEST RSSI 0.1 RO-E.kml
- R4 COWLITZ-CLARK BER 0.1 RO-E.kml
- R4 COWLITZ-CLARK RSSI 0.1 RO-E.kml

Region 4 Data Subset	Threshold	Number of 0.1 Data Points Collected (Raw)	Number of Passed Data Points	Percentage Passed Data Points	Sites Active	Region 4 Data Subset	Threshold	Number of 0.1 Data Points Collected (Remove Overdriven RO-E)	Number of Passed Data Points	Percentage Passed Data Points
East BER	2.4%	3229	3000	92.9%	Cape Horn, Underwood Mountain, Stacker Butte, Haystack Butte, Bickleton Ridge, Roosevelt	East BER	2.4%	2245	2088	93.0%
East RSSI	-110 dBm	3192	3099	97.1%	Cape Horn, Underwood Mountain, Stacker Butte, Haystack Butte, Bickleton Ridge, Roosevelt	East RSSI	-110 dBm	2215	2153	97.2%
Central BER	2.4%	2624	2409	91.8%	Mineral Hill, Hopkins Hill, Dog Mountain, Packwood, White Pass	Central BER	2.4%	1697	1571	92.6%
Central RSSI	-110 dBm	2630	2556	97.2%	Mineral Hill, Hopkins Hill, Dog Mountain, Packwood, White Pass	Central RSSI	-110 dBm	1702	1649	96.9%
West BER	2.4%	5258	5247	99.8%	Minot Peak, Capitol Peak, Holy Cross, Naselle Ridge, Megler, Bawfaw, South Bradwood	West BER	2.4%	3415	3408	99.8%
West RSSI	-110 dBm	3428	3421	99.8%	Minot Peak, Capitol Peak, Holy Cross, Naselle Ridge, Megler, Bawfaw, South Bradwood	West RSSI	-110 dBm	2894	2888	99.8%
Cowlitz-Clark BER	2.4%	28199	27776	98.5%	Rainier Hill, Signal Peak, Davis Peak, Speelyai, Vancouver, Prune Hill, Bawfaw, Cape Horn	Cowlitz-Clark BER	2.4%	4275	4219	98.7%
Cowlitz-Clark RSSI	-110 dBm	5893	5875	99.7%	Rainier Hill, Signal Peak, Davis Peak, Speelyai, Vancouver, Prune Hill, Bawfaw, Cape Horn	Cowlitz-Clark RSSI	-110 dBm	3322	3319	99.9%
Region 4 BER Total	2.4%	39310	38432	97.8%		Region 4 BER Total	2.4%	11632	11287	97.0%
Region 4 RSSI Total	-110 dBm	15143	14952	98.7%		Region 4 RSSI Total	-110 dBm	10133	10009	98.8%



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DCN 59-2005
Reliability Test (R4 & R6)
Rev 5
Washington State Department of
Transportation
Land Mobile Radio Project



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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: Washington State Department of Transportation
Prepared By: Pao Chung Torng, L3Harris Corporation

REVISION HISTORY

Date	Author	Action
5/4/2018	Keith Tinsley	Document Creation
6/11/2018	Keith Tinsley	Rev 1
7/26/2018	Keith Tinsley	Rev 2
1/12/2021	Pao Chung Torng	Rev 3
6/7/2021	Pao Chung Torng	Rev 4
12/5/2021	Pao Chung Torng	Rev 5

REFERENCE DOCUMENTS



Customer Certificate of Acceptance Form

Project Name: WSDOT LMR Project

Customer Name: Washington State Department of Transportation

L3Harris Technologies Contract ID No.: WA091

This is to certify that, having taken part in the agreed upon acceptance test, we declare the following system as accepted under the terms of this Agreement.

Reliability and Burn-In Test

Customer Representative

Signature: _____

Printed Name: _____

Title: _____

Date: _____

L3Harris Technologies Representative

Signature: _____

Printed Name: _____

Title: _____

Date: _____



30 Day Operational Reliability Test Report
Region 4 & 6
For Washington State Department of
Transportation
Land Mobile Radio Project
12/5/2021

Karl Ryan, Project Manager
Sandeep Gavara, Lead Systems Engineer
Pao Chung Torng, System Engineer

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Customer: Washington State Department of Transportation
Prepared By: Pao Chung Torng, L3Harris Technologies
Total Test Pages: **17**

REVISION HISTORY

Date	Author	Action
12/5/2021	Pao Chung Torng	Document Creation

REFERENCE DOCUMENTS

- [1] DCN 59-2005 Reliability Test "DCN 59-2005_Reliability_Test_Initial_Release_Rev2.pdf"
- [2] Region 63 RNM event capture "R64 rnm ExportAll 1022-1124.csv"
- [3] Region 65 RNM event capture "R66 rnm ExportAll 1022-1124.csv"
- [4] Activity Warehouse Site Call Activity report "Call Activity.pdf"
- [5] Activity Warehouse Site Summary report "Site Summary.pdf"

1 Document Summary

The 30-Day Operational Reliability Test for region 64 and 66 has successfully completed for Washington State LMR Project. The test started at 12:00 PM 10/22/2021 and ran through 2:00 PM 11/24/2021. The 30-Day Operational Test in the contract documentation outlines the parameters of this test, which has been completed successfully. For the traps report, the RNM data was pulled from 10/22/2021 through 11/24/2021 daily during the 30-day period.


This document serves as the final written report of the Operational Test.

2 System Call Statistics – 30 Day Total

The following tables provide some System Call Metrics for the **Total** 30-Day Test period:

Table 1: 30 Day Call Statistics Per Region

Region Summary



VIDA

Region64

All Sites

10/22/2021 12:00:00 PM - 11/24/2021 2:00:00 PM

Total Sites

5

Granted Calls

2980

Queued Calls

0

Total Calls

41207

Emergency Calls

0

Time Queued

00:00:00

Total Air Time

04:10:47

Telephone Calls

0

[Detail Call Type Breakdown](#)

Call Breakdown by Site

Site Name	Call Count	Air Duration	Queue Duration
Bawfaw	6829	03:47:55	00:00:00
Megler	34030	00:00:05	00:00:00
Roosevelt	55	00:00:50	00:00:00
Packwood	125	00:09:11	00:00:00
Transcoder	168	00:12:45	00:00:00
Total	41207	04:10:47	00:00:00

Region Summary

vida.local Region66 All Sites 10/22/2021 12:00:00 PM - 11/24/2021 2:00:00 PM

Total Sites	2	Granted Calls	4	Queued Calls	0
Total Calls	10	Emergency Calls	2	Time Queued	00:00:00
Total Air Time	00:01:40	Telephone Calls	0	Detail Call Type Breakdown	

Call Breakdown by Site

Site Name	Call Count	Air Duration	Queue Duration
Spokane_RHQ	1	00:00:00	00:00:00
Mica_Peak	9	00:01:40	00:00:00
Total	10	00:01:40	00:00:00



3 System Faults

3.1 Schedule Event

- Oct 27, 2021: Chewelah Peak NWS replacement work.
- Oct 28, 2021: GPS testing
- Nov 5, 2021: NWS new software testing.
- Nov 14, 2021 ~ Nov 18, 2021: R65/66 BER Test (R66, only Dusty Site channel 2 is in test mode).
- Nov 19, 2021: ASA IOS Upgrade.

3.2 Unscheduled Events:

3.2.1 Site Power interruption

Form Region 64 sites:

- Nov 22 2021. 09:07:58 -- Site 236 Stacker Butte site channels rebooted.
- Nov 22 2021. 07:16:37 -- Site 228 Naselle Ridge site channels rebooted.
- Nov 22 2021. 06:56:47 -- Site 228 Naselle Ridge site channels rebooted.
- Nov 22 2021. 06:24:37 -- Site 219 Bawfaw site channels rebooted.
- Nov 22 2021. 06:03:49 -- Site 219 Bawfaw site channels rebooted.
- Nov 21 2021. 10:41:46 -- Site 230 Prune Hill site channels rebooted.
- Nov 21 2021. 10:07:34 -- Site 230 Prune Hill site channels rebooted.
- Nov 17 2021. 09:55:13 -- Site 228 Naselle Ridge site channels rebooted.
- Nov 17 2021. 09:45:10 -- Site 228 Naselle Ridge site channels rebooted.
- Nov 16 2021. 14:44:42 -- Site 230 Prune Hill site channels rebooted.
- Nov 15 2021. 13:00:06 -- Site 231 Rainier Hill site channels rebooted.
- Nov 15 2021. 12:52:15 -- Site 231 Rainier Hill site channels rebooted.
- Nov 15 2021. 11:54:13 -- Site 231 Rainier Hill site channels rebooted.
- Nov 15 2021. 06:56:45 -- Site 228 Naselle Ridge site channels rebooted.
- Nov 15 2021. 06:24:48 -- Site 219 Bawfaw site channels rebooted.
- Nov 15 2021. 06:04:00 -- Site 219 Bawfaw site channels rebooted.
- Nov 10 2021. 22:59:52 -- Site 221 Cape Horn site channels rebooted.
- Nov 08 2021. 18:58:52 -- Site 223 Dog Mtn site channels rebooted.
- Nov 08 2021. 16:43:31 -- Site 222 Davis Peak site channels rebooted.
- Nov 08 2021. 16:38:58 -- Site 223 Dog Mtn site channels rebooted.
- Nov 08 2021. 16:02:04 -- Site 222 Davis Peak site channels rebooted.
- Nov 08 2021. 15:36:33 -- Site 222 Davis Peak site channels rebooted.
- Nov 08 2021. 15:29:47 -- Site 221 Cape Horn site channels rebooted.
- Nov 08 2021. 08:23:02 -- Site 236 Stacker Butte site channels rebooted.
- Nov 08 2021. 07:16:36 -- Site 228 Naselle Ridge site channels rebooted.
- Nov 08 2021. 06:56:47 -- Site 228 Naselle Ridge site channels rebooted.
- Nov 08 2021. 06:25:04 -- Site 219 Bawfaw site channels rebooted.

- Nov 08 2021. 06:04:15 -- Site 219 Bawfaw site channels rebooted.
- Nov 07 2021. 10:41:57 -- Site 230 Prune Hill site channels rebooted.
- Nov 04 2021. 15:46:52 -- Site 231 Rainier Hill site channels rebooted.
- Nov 01 2021. 11:35:22 -- Site 231 Rainier Hill site channels rebooted.
- Nov 01 2021. 11:05:15 -- Site 234 South Bradwood site channels rebooted.
- Nov 01 2021. 10:07:45 -- Site 236 Stacker Butte site channels rebooted.
- Nov 01 2021. 09:32:03 -- Site 234 South Bradwood site channels rebooted.
- Nov 01 2021. 09:23:00 -- Site 236 Stacker Butte site channels rebooted.
- Nov 01 2021. 08:16:37 -- Site 228 Naselle Ridge site channels rebooted.
- Nov 01 2021. 07:56:47 -- Site 228 Naselle Ridge site channels rebooted.
- Nov 01 2021. 07:25:16 -- Site 219 Bawfaw site channels rebooted.
- Nov 01 2021. 07:04:27 -- Site 219 Bawfaw site channels rebooted.
- Oct 28 2021. 14:31:18 -- Site 228 Naselle Ridge site channels rebooted.
- Oct 25 2021. 14:25:22 -- Site 234 South Bradwood site channels rebooted.
- Oct 25 2021. 10:02:53 -- Site 222 Davis Peak site channels rebooted.
- Oct 25 2021. 09:07:40 -- Site 236 Stacker Butte site channels rebooted.
- Oct 25 2021. 07:39:13 -- Site 231 Rainier Hill site channels rebooted.
- Oct 25 2021. 07:16:36 -- Site 228 Naselle Ridge site channels rebooted.
- Oct 25 2021. 06:56:47 -- Site 228 Naselle Ridge site channels rebooted.
- Oct 25 2021. 06:25:30 -- Site 219 Bawfaw site channels rebooted.
- Oct 25 2021. 06:04:42 -- Site 219 Bawfaw site channels rebooted.
- Oct 25 2021. 02:25:06 -- Site 219 Bawfaw site channels rebooted.
- Oct 24 2021. 23:29:34 -- Site 219 Bawfaw site channels rebooted.
- Oct 24 2021. 21:28:29 -- Site 233 Signal Peak site channels rebooted.
- Oct 24 2021. 17:31:09 -- Site 235 Speelyai site channels rebooted.
- Oct 24 2021. 13:30:08 -- Site 235 Speelyai site channels rebooted.
- Oct 24 2021. 13:24:15 -- Site 233 Signal Peak site channels rebooted.
- Oct 24 2021. 13:02:21 -- Site 231 Rainier Hill site channels rebooted.
- Oct 24 2021. 07:38:20 -- Site 226 Hopkins Hill site channels rebooted.
- Oct 24 2021. 03:53:20 -- Site 223 Dog Mtn site channels rebooted.
- Oct 24 2021. 00:13:02 -- Site 223 Dog Mtn site channels rebooted.
- Oct 22 2021. 12:23:23 -- Site 222 Davis Peak site channels rebooted.
- Oct 22 2021. 12:15:33 -- Site 222 Davis Peak site channels rebooted.
- Oct 22 2021. 12:02:37 -- Site 222 Davis Peak site channels rebooted.

Form Region 66 sites:

- Nov 23 2021. 10:33:47 -- Site 368 Ruby Mtn site channels rebooted.
- Nov 23 2021. 09:28:36 -- Site 368 Ruby Mtn site channels rebooted.
- Nov 22 2021. 07:13:57 -- Site 357 Kahlotus site channels rebooted.
- Nov 18 2021. 10:41:48 -- Site 112 Klondike site channels rebooted.
- Nov 18 2021. 09:09:26 -- Site 371 Spokane RHQ site channels rebooted.

- Nov 18 2021. 09:02:41 -- Site 371 Spokane RHQ site channels rebooted.
- Nov 17 2021. 20:18:21 -- Site 368 Ruby Mtn site channels rebooted.
- Nov 17 2021. 15:42:24 -- Site 371 Spokane RHQ site channels rebooted.
- Nov 17 2021. 10:06:59 -- Site 112 Klondike site channels rebooted.
- Nov 15 2021. 22:21:51 -- Site 368 Ruby Mtn site channels rebooted.
- Nov 15 2021. 21:13:19 -- Site 370 Scoop Mtn site channels rebooted.
- Nov 15 2021. 18:58:27 -- Site 112 Klondike site channels rebooted.
- Nov 15 2021. 18:40:40 -- Site 368 Ruby Mtn site channels rebooted.
- Nov 15 2021. 17:55:24 -- Site 370 Scoop Mtn site channels rebooted.
- Nov 15 2021. 16:41:42 -- Site 112 Klondike site channels rebooted.
- Nov 15 2021. 16:22:18 -- Site 370 Scoop Mtn site channels rebooted.
- Nov 15 2021. 13:53:26 -- Site 112 Klondike site channels rebooted.
- Nov 15 2021. 13:25:57 -- Site 348 Bald Butte site channels rebooted.
- Nov 15 2021. 12:44:53 -- Site 348 Bald Butte site channels rebooted.
- Nov 15 2021. 12:19:54 -- Site 348 Bald Butte site channels rebooted.
- Nov 15 2021. 12:11:01 -- Site 348 Bald Butte site channels rebooted.
- Nov 15 2021. 11:39:38 -- Site 348 Bald Butte site channels rebooted.
- Nov 15 2021. 07:38:35 -- Site 357 Kahlotus site channels rebooted.
- Nov 15 2021. 07:33:47 -- Site 371 Spokane RHQ site channels rebooted.
- Nov 14 2021. 07:59:53 -- Site 357 Kahlotus site channels rebooted.
- Nov 12 2021. 18:37:34 -- Site 357 Kahlotus site channels rebooted.
- Nov 10 2021. 21:02:27 -- Site 368 Ruby Mtn site channels rebooted.
- Nov 10 2021. 20:18:20 -- Site 368 Ruby Mtn site channels rebooted.
- Nov 09 2021. 13:57:20 -- Site 357 Kahlotus site channels rebooted.
- Nov 09 2021. 13:47:16 -- Site 357 Kahlotus site channels rebooted.
- Nov 09 2021. 13:45:39 -- Site 371 Spokane RHQ site channels rebooted.
- Nov 08 2021. 07:13:36 -- Site 357 Kahlotus site channels rebooted.
- Nov 06 2021. 05:56:59 -- Site 372 Steptoe Butte site channels rebooted.
- Nov 06 2021. 04:07:47 -- Site 372 Steptoe Butte site channels rebooted.
- Nov 05 2021. 17:15:08 -- Site 364 Mica Peak site channels rebooted.
- Nov 05 2021. 17:01:39 -- Site 348 Bald Butte site channels rebooted.
- Nov 05 2021. 15:12:10 -- Site 364 Mica Peak site channels rebooted.
- Nov 03 2021. 22:02:35 -- Site 368 Ruby Mtn site channels rebooted.
- Nov 03 2021. 21:18:18 -- Site 368 Ruby Mtn site channels rebooted.
- Nov 03 2021. 16:16:53 -- Site 357 Kahlotus site channels rebooted.
- Nov 01 2021. 10:59:14 -- Site 364 Mica Peak site channels rebooted.
- Nov 01 2021. 08:38:16 -- Site 357 Kahlotus site channels rebooted.
- Nov 01 2021. 08:13:26 -- Site 357 Kahlotus site channels rebooted.
- Nov 01 2021. 06:31:55 -- Site 112 Klondike site channels rebooted.
- Oct 31 2021. 06:46:09 -- Site 367 Ritzville site channels rebooted.
- Oct 28 2021. 14:37:34 -- Site 357 Kahlotus site channels rebooted.

- Oct 28 2021. 13:58:04 -- Site 368 Ruby Mtn site channels rebooted.
- Oct 28 2021. 08:41:22 -- Site 348 Bald Butte site channels rebooted.
- Oct 27 2021. 22:01:05 -- Site 368 Ruby Mtn site channels rebooted.
- Oct 27 2021. 21:18:20 -- Site 368 Ruby Mtn site channels rebooted.
- Oct 27 2021. 18:55:04 -- Site 112 Klondike site channels rebooted.
- Oct 27 2021. 11:50:49 -- Site 112 Klondike site channels rebooted.
- Oct 27 2021. 03:43:43 -- Site 363 Metaline Falls site channels rebooted.
- Oct 26 2021. 07:45:02 -- Site 364 Mica Peak site channels rebooted.
- Oct 26 2021. 07:10:21 -- Site 112 Klondike site channels rebooted.
- Oct 25 2021. 07:13:16 -- Site 357 Kahlotus site channels rebooted.
- Oct 24 2021. 04:18:51 -- Site 357 Kahlotus site channels rebooted.
- Oct 24 2021. 04:18:51 -- Site 367 Ritzville site channels rebooted.
- Oct 23 2021. 10:21:39 -- Site 365 Mt Spokane site channels rebooted.

Also, we see sites routers power cycled: as follow:

Event Level	Date/Time(ArrivalTime)	RID	Name	Message	Site Name
Warning	Nov 14 2021. 06:00:20	227	r64s227u1sar	coldStart	Site 227 Megler
Warning	Nov 14 2021. 06:00:19	227	r64s227u1sar	coldStart	Site 227 Megler
Warning	Nov 14 2021. 05:44:32	227	r64s227u1sar	coldStart	Site 227 Megler
Warning	Nov 14 2021. 05:44:31	227	r64s227u1sar	coldStart	Site 227 Megler
Warning	Nov 11 2021. 01:24:02	221	r64s221u1sas	coldStart	Site 221 Cape Horn
Warning	Nov 11 2021. 01:24:02	221	r64s221u1sas	coldStart	Site 221 Cape Horn
Warning	Nov 11 2021. 01:23:23	221	r64s221u1sar	coldStart	Site 221 Cape Horn
Warning	Nov 11 2021. 01:23:23	221	r64s221u1sar	coldStart	Site 221 Cape Horn
Warning	Oct 24 2021. 15:34:47	231	r64s231u1sas	coldStart	Site 231 Rainier Hill
Warning	Oct 24 2021. 15:34:47	231	r64s231u1sas	coldStart	Site 231 Rainier Hill
Warning	Oct 24 2021. 15:34:33	231	r64s231u1sar	coldStart	Site 231 Rainier Hill
Warning	Oct 24 2021. 15:34:33	231	r64s231u1sar	coldStart	Site 231 Rainier Hill

Event Level	Date/Time(ArrivalTime)	Site Id	Name	Message	Site Name
Warning	Nov 15 2021. 07:40:51	407	r66s407u1sas	coldStart	Site 372 Steptoe Butte
Warning	Nov 15 2021. 07:40:51	407	r66s407u1sas	coldStart	Site 372 Steptoe Butte
Warning	Nov 15 2021. 07:40:22	407	r66s407u1sar	coldStart	Site 372 Steptoe Butte
Warning	Nov 15 2021. 07:40:21	407	r66s407u1sar	coldStart	Site 372 Steptoe Butte
Warning	Nov 09 2021. 13:52:44	407	r66s407u1sas	coldStart	Site 372 Steptoe Butte
Warning	Nov 09 2021. 13:52:44	407	r66s407u1sas	coldStart	Site 372 Steptoe Butte

3.3.2 NSS (VNIC) active report:

From 64RNM:

Event Level	Date/Time(ArrivalTime)	Event Type	Region ID	Site Id	Name	Object Class	Message
-------------	------------------------	------------	-----------	---------	------	--------------	---------

There is no alarm from r64s217u1nss which is the primary VNIC and no alarm from r64s217u2nss. Primary VNIC start at [10/08 10:04:38.68]

From 66RNM:

Event Level	ArrivalTime	RID	SID	Name	Message
-------------	-------------	-----	-----	------	---------

There is no alarm from r66s345u1nss which is the primary VNIC and no alarm from r66s345u2nss. Primary VNIC start [10/05 18:09:12.67]

3.2.3 Site Carrier Alarm interruption

Pause to Burn-in test for the following period.

- Nov 22, 2021 06:24:35 ~ Nov 22, 2021 06:25:20
- Nov 18 2021. 09:00:52 ~ Nov 18 2021. 09:13:25
- Nov 01 2021. 11:01:56 ~ Nov 01 2021. 10:56:28
- Oct 26 2021. 10:43:36 ~ Oct 26 2021. 08:00:23

Form Region 64 sites:

Event Level	Date/Time(ArrivalTime)	RID	Name	Message	Site Name
Critical	Nov 22 2021. 06:25:20	219	r64s219u4chn	Critical Basestation Alarm `clear`	Site 219 Bawfaw
Critical	Nov 22 2021. 06:25:20	219	r64s219u3chn	Critical Basestation Alarm `clear`	Site 219 Bawfaw
Critical	Nov 22 2021. 06:24:36	219	r64s219u3chn	Critical Basestation Alarm `set`	Site 219 Bawfaw
Critical	Nov 22 2021. 06:24:36	219	r64s219u4chn	Critical Basestation Alarm `set`	Site 219 Bawfaw
Critical	Nov 16 2021. 14:44:46	230	r64s230u4chn	Critical Basestation Alarm `clear`	Site 230 Prune Hill
Critical	Nov 16 2021. 14:44:45	230	r64s230u4chn	Critical Basestation Alarm `set`	Site 230 Prune Hill
Critical	Nov 10 2021. 23:01:15	221	r64s221u3chn	Critical Basestation Alarm `clear`	Site 221 Cape Horn
Critical	Nov 10 2021. 22:59:51	221	r64s221u3chn	Critical Basestation Alarm `set`	Site 221 Cape Horn
Critical	Nov 07 2021. 10:42:01	230	r64s230u2chn	Critical Basestation Alarm `clear`	Site 230 Prune Hill
Critical	Nov 07 2021. 10:42:01	230	r64s230u2chn	Critical Basestation Alarm `set`	Site 230 Prune Hill
Critical	Nov 01 2021. 11:05:55	234	r64s234u3chn	Critical Basestation Alarm `clear`	Site 234 South Bradwood
Critical	Nov 01 2021. 11:05:14	234	r64s234u3chn	Critical Basestation Alarm `set`	Site 234 South Bradwood
Critical	Nov 01 2021. 09:32:45	234	r64s234u3chn	Critical Basestation Alarm `clear`	Site 234 South Bradwood
Critical	Nov 01 2021. 09:32:02	234	r64s234u3chn	Critical Basestation Alarm `set`	Site 234 South Bradwood
Critical	Oct 25 2021. 06:56:47	228	r64s228u3chn	Critical Basestation Alarm `clear`	Site 228 Naselle Ridge
Critical	Oct 25 2021. 06:56:47	228	r64s228u3chn	Critical Basestation Alarm `set`	Site 228 Naselle Ridge

Form Region 66 sites:

Event Level	Date/Time(ArrivalTime)	RID	Name	Message	Site Name
Critical	Nov 18 2021. 10:08:47	187	r66s371u4chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:58:24	187	r66s371u4chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:13:25	187	r66s371u3chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:13:25	187	r66s371u2chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ

Critical	Nov 18 2021. 09:13:25	187	r66s371u1chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:13:24	187	r66s371u4chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:13:16	187	r66s371u2chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:13:16	187	r66s371u1chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:13:16	187	r66s371u3chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:13:16	187	r66s371u4chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:12:19	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:12:17	187	r66s371u2chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:12:17	187	r66s371u1chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:12:17	187	r66s371u4chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:12:17	187	r66s371u3chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:12:09	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:12:08	187	r66s371u2chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:12:08	187	r66s371u1chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:12:08	187	r66s371u4chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:12:07	187	r66s371u3chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:08:25	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:08:24	187	r66s371u4chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:08:24	187	r66s371u3chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:08:24	187	r66s371u2chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:08:24	187	r66s371u1chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:08:17	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:08:16	187	r66s371u3chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:08:16	187	r66s371u4chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:08:16	187	r66s371u1chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:08:16	187	r66s371u2chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:06:54	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:06:09	187	r66s371u4chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:06:09	187	r66s371u3chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:06:08	187	r66s371u2chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:06:08	187	r66s371u1chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:05:17	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:05:14	187	r66s371u2chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:05:14	187	r66s371u1chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:05:13	187	r66s371u4chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:05:13	187	r66s371u3chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:03:59	187	r66s371u2chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:03:27	187	r66s371u3chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ



Critical	Nov 18 2021. 09:01:19	187	r66s371u4chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:01:16	187	r66s371u4chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:01:16	187	r66s371u4chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:01:13	187	r66s371u4chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:00:53	187	r66s371u2chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 09:00:52	187	r66s371u2chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 18 2021. 08:58:07	187	r66s371u4chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 17 2021. 21:01:03	184	r66s368u3chn	Critical Basestation Alarm `clear`	Site 368 Ruby Mtn
Critical	Nov 17 2021. 21:01:01	184	r66s368u3chn	Critical Basestation Alarm `set`	Site 368 Ruby Mtn
Critical	Nov 17 2021. 16:01:24	187	r66s371u4chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 15 2021. 07:51:09	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 15 2021. 07:50:56	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 15 2021. 02:37:06	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 15 2021. 02:36:55	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 14 2021. 23:47:11	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 14 2021. 23:46:58	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 14 2021. 18:29:13	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 14 2021. 18:29:02	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 14 2021. 03:08:18	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 14 2021. 03:08:06	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 13 2021. 19:44:16	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 13 2021. 19:44:04	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 13 2021. 09:46:46	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 13 2021. 09:46:33	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 11 2021. 18:40:31	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 11 2021. 18:40:19	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 11 2021. 08:37:32	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 11 2021. 08:37:19	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 10 2021. 17:44:01	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 10 2021. 17:43:48	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 10 2021. 11:47:42	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 10 2021. 11:47:30	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 10 2021. 08:41:18	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 10 2021. 08:41:07	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 10 2021. 03:50:47	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 10 2021. 03:50:35	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 09 2021. 23:16:41	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 09 2021. 23:16:29	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ

Critical	Nov 09 2021. 13:19:32	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 09 2021. 13:19:20	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 08 2021. 19:25:04	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 08 2021. 19:24:52	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 06 2021. 23:22:34	187	r66s371u5chn	Critical Basestation Alarm `clear`	Site 371 Spokane RHQ
Critical	Nov 06 2021. 23:22:21	187	r66s371u5chn	Critical Basestation Alarm `set`	Site 371 Spokane RHQ
Critical	Nov 03 2021. 21:19:01	184	r66s368u3chn	Critical Basestation Alarm `clear`	Site 368 Ruby Mtn
Critical	Nov 03 2021. 21:18:17	184	r66s368u3chn	Critical Basestation Alarm `set`	Site 368 Ruby Mtn
Critical	Nov 01 2021. 11:01:56	180	r66s364u4chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Nov 01 2021. 11:01:53	180	r66s364u4chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Nov 01 2021. 11:00:19	180	r66s364u4chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Nov 01 2021. 11:00:19	180	r66s364u3chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Nov 01 2021. 11:00:07	180	r66s364u4chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Nov 01 2021. 11:00:07	180	r66s364u3chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Nov 01 2021. 10:56:32	180	r66s364u4chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Nov 01 2021. 10:56:29	180	r66s364u4chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Nov 01 2021. 10:56:29	180	r66s364u4chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Nov 01 2021. 10:56:29	180	r66s364u4chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Nov 01 2021. 10:56:28	180	r66s364u4chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 31 2021. 06:46:53	183	r66s367u3chn	Critical Basestation Alarm `clear`	Site 367 Ritzville
Critical	Oct 31 2021. 06:46:08	183	r66s367u3chn	Critical Basestation Alarm `set`	Site 367 Ritzville
Critical	Oct 28 2021. 07:55:38	180	r66s364u4chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 28 2021. 07:55:37	180	r66s364u4chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:43:36	180	r66s364u4chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:43:36	180	r66s364u4chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:37:51	180	r66s364u4chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:37:51	180	r66s364u4chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:30:21	180	r66s364u2chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:30:21	180	r66s364u1chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:30:20	180	r66s364u3chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:30:18	180	r66s364u1chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:30:18	180	r66s364u2chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:30:17	180	r66s364u2chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:30:17	180	r66s364u1chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:24:48	180	r66s364u4chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:24:47	180	r66s364u4chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:24:46	180	r66s364u3chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:24:46	180	r66s364u2chn	Critical Basestation Alarm `set`	Site 364 Mica Peak



Critical	Oct 26 2021. 10:24:46	180	r66s364u1chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:24:46	180	r66s364u3chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:24:46	180	r66s364u1chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:24:46	180	r66s364u2chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:23:57	180	r66s364u2chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:23:57	180	r66s364u1chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:23:57	180	r66s364u3chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:01:06	180	r66s364u2chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:01:06	180	r66s364u1chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:01:06	180	r66s364u3chn	Critical Basestation Alarm `clear`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:00:58	180	r66s364u3chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:00:58	180	r66s364u2chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 26 2021. 10:00:58	180	r66s364u1chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 26 2021. 08:00:23	180	r66s364u4chn	Critical Basestation Alarm `set`	Site 364 Mica Peak
Critical	Oct 24 2021. 04:19:34	183	r66s367u3chn	Critical Basestation Alarm `clear`	Site 367 Ritzville
Critical	Oct 24 2021. 04:18:50	183	r66s367u3chn	Critical Basestation Alarm `set`	Site 367 Ritzville



3 Conclusion

The system performed as designed and successfully completed the 30-Day Reliability test period.





DCN 59-6006
Functional Acceptance Test Plan
Initial Release Rev 8 – R4 and R6 DDR
Amended

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: WSDOT LMR Project
Prepared By: System Engineering, Harris Corporation

REVISION HISTORY

Date	Author	Action
5/11/18	Brian Wilnecker	Document Creation
6/11/18	Brian Wilnecker	Rev 1
7/27/18	Keith Tinsley	Rev 2
8/30/18	Brian Wilnecker	Rev 3
10/24/18	Cameron Littke	Amendment
1/17/19	Keith Tinsley	Rev 4 – Amendment
02/16/2019	Sandeep Gavara	Rev 5
4/29/2019 05/02/2019	Richard Hauglie Sandeep Gavara	Rev 6
9/6/2019	Sandeep Gavara	Rev 7
05/06/2020	Sandeep Gavara	Rev 8

REFERENCE DOCUMENTS**Harris Product Documentation, including:**

MASTRV 14221-5555-3100 and 4120 Series Manuals

VIDA 14221-3100-4100 and 4130 Series Manuals

NSC 14221-3500-2020 and 14221-3100-2020 Series Manuals

SYMPHONY 14221-3100-2010 and 4100 Series Manuals

Various other manuals and documentation not necessarily noted above

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 or Tait subscriber units unless the test setup identifies another Vendor's subscriber unit to be used.

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 verifies 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.

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1. PHYSICAL TESTS**1.1 Facility Test – Physical Tests****1.1.1 Visual Inspection**

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:

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

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

1.1.2 Power Backup / UPS Verification

- 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 state's responsibility to provide. Any such failures of state 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 the state).

Execution:

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

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

1.2 SITE EQUIPMENT INSTALLATION – Physical Tests**1.2.1 Site Equipment**

Purpose: Site equipment installation checklist.

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

Execution:

1. Fill the site data sheet before testing the equipment. This procedure should be repeated at every site.

Customer Name:

Local Customer Phone:

Site Address:

Site Telephone Number:

Access Controlled by (Name, _____)

Site Latitude (Deg., Min., Sec.): _____

Site Longitude (Deg., Min., Sec.): _____

Site Equipment Type: MASTR V-P25T ☐

Number of Channels: _____

Check Installed Options:

SiteLink-25 #1 <input type="checkbox"/>	SiteLink-25 #2 <input type="checkbox"/>
SitePro-MME <input type="checkbox"/>	
SureCall P25 TU <input type="checkbox"/>	VIDA Network Sentry <input type="checkbox"/>
External Freq Std <input type="checkbox"/>	

Uplink Link Loss (dB)

Multi-site Link type: ☐ Leased Line ☐ Microwave ☐ Fiber
Optic ☐

Installation Date:

Installed By (Company Name):

Tower Information

Tower Type: Self Supporting ☐ Monopole ☐ Guyed ☐
Other (Explain): ☐ _____

Tower Height (HAAT – to Top of Tower): _____

Ground Elev. (HAAT – Base of Tower): _____

FCC/ULS Tower Registration #: _____ Exp. Date: ____/____/____

FAA Options: Painted ☐ Strobe ☐ Both ☐
Lights: 620W Top Beacon ☐ Side Markers ☐ Top ☐
Strobe

Antenna System:Single Array ☐ Multi Array ☐

If Multi-Antennas:

Number of Transmit: _____ Mounting Height(s) on Tower: _____

Number of Receive: _____ Mounting Height(s) on Tower: _____

Transmit Helix Type: _____ Transmit Antenna Azimuth: _____

Receive Helix Type: _____ Receive Antenna Azimuth: _____

Transmit Antenna Model: _____ Transmitter Combiner Model: _____

Receive Antenna Model: _____ Tower Top Amplifier: YES ☐ NO ☐

If Tower Top Amplifier, Model: _____

Receiver Multi-coupler Model: _____

(For details on each antenna system, refer to Antenna System Installation Checklists.)

2. Power system checklist

COMMERCIAL AC MAINS	<input type="checkbox"/> YES <input type="checkbox"/> NO	SITE	_____
BACKUP AC GENERATOR	<input type="checkbox"/> YES <input type="checkbox"/> NO		_____
BACKUP BATTERY PLANT	<input type="checkbox"/> YES <input type="checkbox"/> NO		
UPS SYSTEM	<input type="checkbox"/> YES <input type="checkbox"/> NO		

CHECKLIST: (One sheet per site)**AC SYSTEM**

- | | | | | |
|----|--|------------------------------|-----------------------------|------------------------------|
| 1. | Site isolation and protection is installed and operating? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 2. | Input AC power, (voltage and current) is as specified? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 3. | Input AC power breaker is correctly rated for the site power load? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 4. | Input AC power cabling is sufficient for site loading? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 5. | Customer's input AC power breaker operates correctly? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 6. | AC distribution, voltages and individual breaker operation to equipment? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |

GENERATOR SYSTEM

- | | | | | |
|----|--|------------------------------|-----------------------------|------------------------------|
| 7. | Generator, bypass switch, and automatic takeover operates correctly? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 8. | Generator output voltages are as specified? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |

AC / DC SYSTEM

- | | | | | |
|-----|---|------------------------------|-----------------------------|------------------------------|
| 9. | Rectifier output to converters is as specified? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 10. | Rectifier output breaker operates correctly? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 11. | Converter output breakers operate correctly? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 12. | Converter output voltages are as specified? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 13. | All DC connections thermally verified under load for overheating? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |

BATTERY SYSTEM

- | | | | | |
|-----|--|------------------------------|-----------------------------|------------------------------|
| 14. | Battery system connectivity is correct as per design document? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 15. | Battery system is electrically safe? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 16. | "Wet" cells prepared and adequate fume extraction provided? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 17. | Cabling is safely installed such that it is not a hazard? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 18. | Output voltage is as specified across all the cells? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 19. | Battery system will charge? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 20. | Battery power applied to power distribution equipment? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| 21. | Battery voltage applied to site equipment is as specified? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |

UPS SYSTEM

- | | | | | |
|-----|--|------------------------------|-----------------------------|------------------------------|
| 22. | UPS system installed to specifications and successfully completes all Vendor manual tests? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
|-----|--|------------------------------|-----------------------------|------------------------------|

3. Equipment installation checklist. One sheet to be filled for each site.

	SITE CABINET	_____	_____
1. Is this site installed per the standard floor plan? (If not, attach as built diagrams.)	<input type="checkbox"/> YES <input type="checkbox"/> NO		
2. Verify each cabinet/rack is correctly fastened to the floor in all four (4) corners?	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		
3. For cabinets, verify if optional cable ducts have been correctly installed.	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		
4. For racks, verify all racks are bolted to adjacent racks at the top and bottom.	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		
5. For cabinets, verify the top plate is correctly installed on the RF cabinet.	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		
6. Verify the RF equipment is correctly installed.	<input type="checkbox"/> YES <input type="checkbox"/> NO		
7. Ensure all special installation requirements, provided by system engineering, have been completed correctly.	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		
8. Verify protective grounds are installed at every cabinet/rack. (Ref.: AE/LZT 123 4618/1: Site Grounding and Lightning Protection Manual)	<input type="checkbox"/> YES <input type="checkbox"/> NO		
9. Systems with DC power plants are grounded per Site Grounding and Lightning Protection Guidelines Manual, AE/LZT 123 4618/1, Rev. D, Section 5.8, Figure 5-51 (may be different in later revisions)?	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		
10. Are all surge protectors grounded to the common ground point?	<input type="checkbox"/> YES <input type="checkbox"/> NO		
11. Verify all shelter grounds are connected to a common ground point. (Grounding plate or bulkhead panel)	<input type="checkbox"/> YES <input type="checkbox"/> NO		
12. Verify all ground connections meet the requirements outlined in the Site Grounding and Lightning Protection Manual?	<input type="checkbox"/> YES <input type="checkbox"/> NO		
13. Measure and record the primary entrance ground value. If multiple ground points, list each one separately.		_____	
14. Are Ethernet cables correctly installed between the Switch in RF cabinet 1 and other cabinets?	<input type="checkbox"/> YES <input type="checkbox"/> NO		
15. Is an Ethernet cable correctly installed between the Router and Telco (microwave) equipment?	<input type="checkbox"/> YES <input type="checkbox"/> NO		
16. Are all external alarm cables correctly connected to the VIDA Network Sentry?	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		
17. Are all power connections properly connected in each Cabinet?	<input type="checkbox"/> YES <input type="checkbox"/> NO		
18. Are cables to the External 10 MHz Frequency Standard properly connected?	<input type="checkbox"/> YES <input type="checkbox"/> NO		
19. Are all antenna connections properly connected and labeled?	<input type="checkbox"/> YES <input type="checkbox"/> NO		
20. At -48 VDC sites, verify that screw connections 1A, 1B, 3A, and 3B on DC Power Distribution panels EA-555019-001 and EA-555019- 002 are properly torque from 15 to 20 in-lbs. using an adjustable torque tool, UTICA TS-35 or equivalent?	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		

4. Antenna system checklist. One sheet to be filled for each antenna at a site.

SITE _____
ANTENNA _____

1. Is this antenna for Transmit or Receive? ☐ TX ☐ RX
2. What is the make and model of antenna? _____
3. What is the type of antenna? _____
4. What is the design gain of antenna? _____ dB
5. What is the bearing of antenna? _____ deg
6. What is the height of antenna above ground? _____ ft
7. What is the feedline make and type? _____
8. What is the installed feedline length from antenna to building entrance? _____ ft
9. Are hoisting grips installed as specified? ☐ YES ☐ NO ☐ N/A
10. Is the feedline secured to tower or supporting structure at specified intervals? ☐ YES ☐ NO
11. Is the feedline grounded at top of tower? ☐ YES ☐ NO
12. Is the feedline grounded at bottom of tower? ☐ YES ☐ NO
13. Is the feedline grounded at point where it enters building? ☐ YES ☐ NO
14. Is the feedline feed-through properly installed? ☐ YES ☐ NO
15. Are coaxial connectors weather-sealed? ☐ YES ☐ NO
16. Is the feedline entrance weather-sealed? ☐ YES ☐ NO
17. Is the feedline connected to a surge protector inside the building? ☐ YES ☐ NO

5. Verify the NWS punchblock installation is as per the personality.

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

2. FUNCTIONAL TESTS

2.1 VIDA UNIVERSAL ADMINISTRATION SERVER (UAS)

2.1.1 Active Directory Control of UAS User Accounts (SR10A.4 or later)

Purpose: SR10A.4 or later: Transition from managing UAS-user accounts in the UAS application to AD instead.

New systems will be shipped w/ AD control instead of UAS application user control.

Existing systems may choose to switch to AD control or continue to use the existing accounts in UAS.

Expected Results: Demonstrate for SR10A.4 or later UAS Login; the UAS uses Active Directory Configured User Login with AD Username & Password

Setup All users configured in Active Directory prior to UAS Login.

UAS Users are added to AD 'Active Directory Users & Computers' > within vida.local area > VIDA Users > VIDA Administrators > "each User defined here".

For "User X", within "Properties" > "Member of" Tab; User X needs appropriate "VIDA UAS access group".

Execution:

1. Login into UAS with AD User Login. Use AD Username and Password. with SR10A.4 or later, UAS web login interface will pass Username and Password to Active Directory for authentication.

☐ Verify user has logged into the UAS

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.1.2 Create an Agency Level Administrator Account in the UAS (SR10A.4 or later)

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

Expected Results: Test demonstrates that an Administrative User has the ability to create a new UAS User Account.

Setup: The user will need system level access to the UAS

Execution:

1. In Active Directory; select an existing Active Directory User account or create a new one.
2. Add the UAS user groups "**VIDA UAS System Users**" and "**UAS RSA Users**" to the Active Directory User account.
3. Verify the account is "**Unix Enabled**".
4. Browse to the UAS at the address of '**https://s0u1uas.vida.local:8443/nas**'.
5. Log into the UAS with the Account from Step 1 & 2.
6. You will receive an error stating that the User Account does not have a scope defined. This is normal.
7. Log out and Log into the UAS with an existing Administrator Account such as RootUser.
8. Navigate to Administration -> Admin Class and select the RSA class check box.
9. Once you select the Admin Class click Modify, this will open the Admin Class Detail window.
10. Select the user from Steps 1&2 on the left side and click the right pointing arrow to add the user.
11. Once the user has been added select OK.
12. Select save to download, and click 'OK'.

Create an Agency Level Administrator Account in the USA (SR10A.4 or later) cont.

13. Log out of the current session.
14. Log in with the newly created account.
15. The "scope defined error" should no longer be present, and you should have access to all RSA functions.

Results	(Pass/Fail) <u>PASS</u>
Tester: <u>J M</u>	Date: <u>6/22/21</u>
Comments: _____	

2.1.3 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

Provision Agency with Talk Groups and Subscriber Units in UAS cont.

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
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. Browse to the UAS at the address of 'https://s0u1uas.vida.local:8443/nas'
2. Log into the UAS with one of the default accounts.
3. Under agency 998 create a talk group by select 'R/W Talk Group' , select Agency/ "agency name"/ R/W Talk Group.
4. 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.
 - ☐ Verify the talk group has been added to the list of Talkgroups
5. Using Putty on an SMT log into one traffic controller at each control point for simulcast and each site for mulitsite and issue the command 'show gdb'
 - ☐ Verify that group 64454 exists in the traffic controllers data base.

Provision Agency with Talk Groups and Subscriber Units in the UAS cont.

6. 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

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		



2.1.4 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:

- From the UAS, select the 'Regroup' tab and select 'Regroup Profile'
- Click 'Add' to add the profile detail, name the group 'Regroup1' and use 'Regroup1 test' for the description. Define a regroup profile by adding a regroup description and select talk group TG64003 P25. Select 'OK' and then save the changes to the UAS
- Click 'End User Group' and click 'Add'. Name the group 'Regroup1' and enter the description of 'Regroup1 test'. Select the 998 agency from the 'Select a Scope' drop down box. Add Radio 1 and Radio 2 to the 'Selected' windows and select 'OK' to close the 'End User Group Detail'. Then click the 'Save' button to download the new regroup.
- Click 'Define Regroup' and click 'Add' Name the regroup 'Regroup1' and make the description 'Regroup1 test'. Change the 'Profile Name' to 'Regroup1' and change the 'End User Group id' to 'Regroup1'. Click 'OK' and save to click 'Save' the changes to the UAS.
- Click 'Manage Regroup' check the box for 'Regroup1' and select the button for 'Regroup' and click 'Save' to start the regroup.
 - ☐ Verify that Radio 1 and Radio 2 are forced to TG64003 P25.
- At Radio 1 and Radio 2, attempt to change talk groups away from TG64003 P25. Verify that both radios are forced to remain on TG64103 P25.
- PTT Radio 1 on TG64003 P25. Verify that Radio 3 hears audio on TG64003 P25 and can respond.
- Clear the dynamic regroup from the UAS client. Verify that both Radio 1 and Radio 2 are no longer forced to TG64003 P25 (i.e., they can select other predefined Talk-Groups).

Results Tester: <u></u> <u></u> Comments: _____	(Pass/Fail) <u>PASS</u> Date: <u>6/22/21</u>
--	---

2.1.5 Unit Deregistration

- Purpose:** Demonstrate that Subscriber units will automatically deregister after a period of inactivity. Simulate a radio vanishing from a site. Validate that the demand still persists on the site and measure how long will it take for the radio to disappear from the site.
- Expected Results:** This test will show that inactive radios will not create traffic load demand. Additionally it will test and confirm that a radio will be deactivated if it cannot reregister successfully.
- Setup:** Only the radio for this test should be on talk group TG64001 P25. All other radios should be on other talk groups or off. Program site with the radio registration age timer (in UAS under system> Protocol timer > radio re registration timer) set to 2 minutes.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9980001	TG64001 P25	64001
Console 9101	9989101	TG64001 P25	64001

Execution:

1. PTT Console 9101 on TG64001 and verify it communicates on the system to Radio 1. Return call from Radio 1 to Console 9101 on TG64001.
2. Turn off radio 1 and wait for expiration of the radio timeout period.
 - ☐ Verify that the radio stays registered until timeout period expires
 - ☐ Verify radio deregisters at the end of the timeout period.
3. PTT Console 9101 on talk group on TG64001
 - ☐ Verify no channels are brought up at the sites, because there is no demand for it at the sites.
 - ☐ Turn radio back on and reregister on site, PTT and verify communication
4. Remove antenna from radio 1 and move out of RF coverage from the site. This can be verified by seeing the radio in CC scan.
 - ☐ Using the RNM verify radio deregisters at the end of the timeout period.
5. PTT Console 9101 on talk group on TG64001
 - ☐ Verify no channels are brought up at the sites, because there is no demand for it at the sites.

Unit Deregistration cont.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.1.6 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 unencrypted group and note the IDs. Switch on the radios and ensure that they communicate. Verify all sites are connected to the NSC.
- Note:** The test will automatically delete the encryption key from the radio (if applicable). To restore unit encrypted functionality, the radio must have the key re-installed.

Execution:

1. Select TG64001 P25 on both radios
 - ☐ Verify that the radios can communicate.
2. From the UAS:
 - a. Click UNIT 9970001 ENABLE/DISABLE.
 - b. Under the UNIT Enable/Disable tab, enter the ID of radio 1 to be modified.
 - c. Select the DISABLE button and check the status.
 - ☐ Attempt to PTT Radio 9970001 and verify that it will not communicate with the other encrypted radios.
 - ☐ PTT radio 9970002 and verify that radio 9970001 cannot receive the call.
3. Enable the ID of radio 9870001
 - ☐ Verify that the Enable/Disable screen indicates that the Current State of the radio is Enabled.
 - ☐ Confirm that the radios can communicate in unencrypted mode.
4. Switch off radio 9880001 and disable it from the Enable/Disable screen.
 - ☐ Verify that the desired state is Disabled and the Current State is Enabled.
 - ☐ Switch on the radio and verify that, it becomes disabled.
 - ☐ Verify that the State settings change to Disabled and that the radios cannot communicate.
5. Enable the radios
 - ☐ Verify that radios can communicate in unencrypted mode.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>[Signature]</u>	Date:	<u>6/22/</u>
Comments: _____		

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

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.1.8 Radio Detach

Purpose: Confirms the site will send a radio detach command when its configured registration timer expires.

Expected Results: The radio reregisters on the site in response to the radio detach command.

Setup Program site with a radio registration age timer (in UAS under system> Protocol timer > radio re registration timer) set to 5 minutes and two radios programmed for operation on the site.

Execution:

1. Power up site
2. Power up one radio
 - ☐ Confirm the radio registers on the site.
3. After two minutes power up the second radio
 - ☐ Confirm the radio registers on the site.
4. Wait three minutes
 - ☐ Confirm the first radio registers on the site again.
5. Wait two minutes
 - ☐ Confirm the second radio registers on the site.
6. Reprogram the site for the default registration timer setting.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.1.9 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
010:997:9150	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	99799150	109989150	P25	Enabled Unit	Harris P5400	010:997:9105	AES	

UAS Site Access Control for Invalid User ID cont.**Execution:**

1. Login into a site traffic controller issue a "show udb 9979150"
 - ☐ Verify the radio is not present in the traffic controller database
2. Program a radio with the ID 9979150.
3. Attempt to PTT Radio 9150.
 - ☐ Verify access to the site is denied and audio is not heard on Radio 2.
 - ☐ Verify 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 9979150 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.
 - ☐ 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 9979150"
 - ☐ Verify the radio is now present in the traffic controller database
6. Key radio 9150
 - ☐ Verify access to the site is permitted and audio is heard on radio.
7. Restart radio 9150 and PTT the radio
 - ☐ Verify access to the site is permitted and audio is heard on radio 9012.
8. Delete 9979150 from the UAS database
9. Key radio 9150 from UAS
 - ☐ Verify access to the site is not permitted and audio is not heard.

Results	(Pass/Fail) <u>PASS</u>
Tester: <u></u>	Date: <u>6/22/21</u>
Comments: _____	

This concludes Section 2.1 UAS testing

2.2 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. Per Region1 and Region2 CFAT discussions, Harris will submit a "Site Summary" report for all the non-halo staged sites. Along with this report, Harris will also submit the factory site provisioning checklist (template shown below).

Task	Babcock	
	Factory Tech	Duke Grant
	Status	Notes
Router Configured	Yes	M.C.
Switch Configured	Yes	M.C.
Customer WAN IP Address set	Yes	Network Team
Site provisioning complete (UAS/RSM/NWS/BBM/TC)	Yes	K.K.
Control Channel limited to #1, 3, 5, 7.	Yes	D.G./M.B
Channels PA power level set per RAPTR values	Yes	D.G./M.B/S.E.
Site updated in RNM	Yes	K.K.
Site updated in DM	Yes	K.K.
Site DNS entries added to AD	Yes	K.K.
If applicable, Tait BS is configured	Yes	S.E.
SUMS patching complete	Yes	K.K.
Radio test calls made	Yes	D.G.
Radio test call timestamp (Date/Time)	6/13/2019 7:00	D.G.
PAT tool test (Date/Time)	6/15/2019 0710	S.E.

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://hostname of RSM/reports' and log in with active directory credentials.
3. Select 'Call Activity' enter the time to run the report for two hours before this test.
4. Enter additional report information required.
5. Click on "View Report"
 - ☐ Check to make sure that there is call activity. These reports can be up to 2 hours behind.

Site Activity using the Activity Warehouse Cont.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.3 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://r66s345u1rnm.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.
 - ☐ 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 Number.
7. Use Internet Explorer to browse to <https://r64s217u1rnm.vida.local/nmc> and repeat test steps 1-6 for the second RNM.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>VK</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4 P25 TRUNKED CALLS AND SITE FEATURES – Functional, Fault Tests

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.

2.4.1 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)	<u>PASS</u>
Tester: <u></u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4.2 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: Radio 1, 2, and 3 should be the only radios on the system.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9960001	TG64001 P25	64001
Radio 2	9960002	TG64001 P25	64001
Radio 3	9960003	TG64001 P25	64001

Execution:

1. PTT Radio 1 and talk.
 - ☐ The transmit (TX) indicators should turn on at Radio 1.
 - ☐ Verify the number of the channel assigned.
2. PTT Radio 2 and talk.
 - ☐ The transmit (TX) indicators should turn on at Radio 2.
 - ☐ Verify the next channel is assigned.
3. PTT Radio 3 and talk.
 - ☐ The transmit (TX) indicators should turn on at Radio 3.
 - ☐ Verify the next channel is assigned.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>Vik</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4.3 Message Trunking on Phase 2

Purpose: This test will demonstrate that the system can work as a message trunking system.

Expected Results: This test will verify that the system will assign the same working channel to a message trunking call as long as the next call happens within the message trunking timer. This allows the channel to be held for important messages. This test also confirms that in Phase 2 mode the radio stays on the working channel and is reassigned the same channel.

Setup: No other radios should be on the system. Each call needs to happen within 3 seconds of each other for this test to work. If there are no talk groups setup in the UAS that are Message Trunked this will need to be fixed before this test can be run.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9960001	TG64001 P25	64003
Radio 2	9960002	TG64001 P25	64003
Radio 3	9960003	TG64001 P25	64003

Execution:

1. PTT Radio 1 and talk.
 - ☐ The transmit (TX) indicators should turn on at Radio 1.
 - ☐ Verify the number of the channel assigned.
 - ☐ Verify the light on the radio is green indicating the radio is on the working channel
2. Un-PTT Radio 1
 - ☐ The transmit (TX) indicators should turn on at Radio 1.
 - ☐ Verify the light on the radio stays green indicating the radio is back on the control channel.
3. PTT Radio 2 and talk.
 - ☐ The transmit (TX) indicators should turn on at Radio 2.
 - ☐ Verify the same channel is assigned in step 1.
 - ☐ Verify the light on the radio is green indicating the radio is on the working channel.

Message Trunking on Phase 2 cont.

4. Un-PTT Radio 2

- ☐ The transmit (TX) indicators should turn on at Radio 2.
- ☐ Verify the light on the radio stays green indicating the radio is back on the control channel

5. PTT Radio 3 and talk.

- ☐ The transmit (TX) indicators should turn on at Radio 3.
- ☐ Verify the same channel is assigned in step 1, & 3.
- ☐ Verify the light on the radio is green indicating the radio is on the working channel

6. Un-PTT Radio 3

- ☐ The transmit (TX) indicators should turn on at Radio 3.
- ☐ Verify the number of the channel assigned.
- ☐ Verify the light on the radio stays green indicating the radio is back on the control channel

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: <u>WAWed</u>	

2.4.4 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	9960001	TG64001 P25	64001
Radio 2	9960002	TG64001 P25	64001
Radio 3	9960003	TG64001 P25	64001

Execution:

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

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4.5 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. The radios need to have their preferred vocoder set to ½ rate in the UAS Voice End User setting and in the BBM personality, the setting for Individual Call Hang Time was set to 5 seconds (default is 0)

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9970001	TG64001 P25	64001
Radio 2	9970002	TG64001 P25	64001
Radio 3	9970003	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.
 - ☐ 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.
 - ☐ Verify that Radio 1 receives the call and displays the ID of Radio 2.
 - ☐ 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.
 - ☐ Verify that Radio 3 receives the call and displays the ID of Radio 1.
 - ☐ Verify that Radio 6 remains idle.
4. 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.
5. Make the return call from Radio 3 back to Radio 1.
 - ☐ Verify that Radio 1 receives the call and displays the ID of Radio 3.
 - ☐ Verify Radio 2 remains idle.
6. Repeat steps 1-8 for encrypted mode.

Individual (Private Call cont.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4.6 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 CALL ALERT function from the MENU on Radio 1. Select Radio 2 from the preprogrammed list of radios and PTT Radio 1.
 - ☐ Verify Radio 1 displays "**TX PAGE" on the second line.
 - ☐ Verify Radio 2 displays the ID of Radio 1 on its first line and "**RX PAGE" on the second line.
 - ☐ Verify Radio 2 beeps multiple times to indicate a received page.
 - ☐ Verify Radio 1 beeps multiple times to indicate the page was successfully sent.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: <u>waived</u>		

2.4.7 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	9970001	TG64007 P25	64007
Radio 2	9970002	TG64001 P25	64001
Radio 3	9970003	TG64002 P25	64002

Execution:

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

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4.8 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 three Radios with the same emergency home group - 64001. Set the supervisor radio (Radio 1) and Radio 2 to the home group. Set Radio 3 to a different group (not home group). The radios must remain logged onto different sites.

Execution:

1. Press the Emergency call button on Radio 1 and talk within the pre-defined Emergency Auto-key time, and/or PTT Radio 1 during or just after that time.
 - ☐ Verify that Radio 1 indicates the "TX EMER" declaration and that it reverts to the home group.
 - ☐ 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.
2. Clear the emergency with the Supervisor Radio (Radio 1).
 - ☐ Verify the emergency clears in the radios.
3. Repeat the previous steps for encrypted voice.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4.9 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 systems ability to route a single call to all available radios on the system.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9970001	TG64000 P25	64000
Radio 2	9970002	TG64001 P25	64001
Radio 3	9970003	TG64002 P25	64002

Execution:

1. With Radio 1 place an Individual call to talk group 64000 (All Call Talk Group)
☐ Audio should be heard at Radios 2 and 3.
2. Repeat the previous steps for encrypted voice, if applicable.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: <u>Washed</u>	

2.4.10 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 system's 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
 - ☐ Verify the radio is prohibited access to system.
3. Reprogram the radio to the original personality.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u></u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4.11 Recent User Priority

Purpose: This test is set up to demonstrate the system's ability to allow users that have recently used the system to have a slightly higher priority than users that have not recently used the system.

Expected Results: This test will verify that a user that has recently used the system will get a half set higher priority over a user that has not recently used the system. This will allow the recent user to come out of the queue before the user that has not used the system. In this test the radio 1 should get the first available channel even though radio 2 entered 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 performed quickly.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9970001	TG64005 P25	64005
Radio 2	9970002	TG64004 P25	64004
Radio 3	9970003	TG64002 P25	64002
Radio 4	9970004	TG64001 P25	64001

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

Recent User Priority cont.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: <u>waived</u>		

2.4.12 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 entered 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	9970001	TG64005 P25	64005M
Radio 2	9970002	TG64002 P25	64002
Radio 3	9970003	TG64006 P25	64006
Radio 4	9970004	TG64004 P25	64004H

Execution:

1. PTT Radios 2 and 3 and hold on transmit to make both working channels busy.
2. PTT and release Radio 1 (medium priority entry into the queue).
3. PTT and release Radio 4 (high priority entry into the queue).
4. Un-key Radio 3
 - ☐ Verify that Radio 4 un-queues and keys.
5. Un-key Radio 2
 - ☐ Verify that Radio 1 un-queues and keys.
6. Un-key all radios.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: <u>waived</u>		

2.4.13 Emergency Call Priority for Group IDs

Purpose: This test is set up to demonstrate the system's ability to allow a user that declares an emergency to be assigned a channel before other users despite queue entry sequence or priority level.

Expected Results: This test will verify that radio 1 gets assigned a channel before radio 2 despite the fact that radio 2 has a higher priority and entered the queue first.

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

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
 - ☐ 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)	<u>PASS</u>
Tester: <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4.14 Group Scan

Purpose: This test will demonstrate the radios ability to scan different talk groups.

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	9970001	TG64001 P25	64001
Radio 2	9970002	TG64002 P25	64001
Radio 3	9970003	TG64002 P25	64002

Execution:

- Place a call from Radio 2 on talk TG64001 P25.
 - ☐ Verify the call is received and audio is heard on Radio 1.
- Place a call from Radio 2 on talk TG64002 P25.
 - ☐ Verify the call is not received by Radio 1.
- Register Radio 3 to Radio 1 site and set it to TG64002. This will create demand on the site for TG64002.
- Enable group scan on Radio 1.
- Place another call from Radio 2 on talk TG64002 P25.
 - ☐ Verify that the call is now received and audio is heard on Radio 1.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>JM</u>	Date:	<u>6/22/21</u>
Comments: <u>EACH RADIO IS DIFFERENT</u>		
<u>Need TO UPDATE THE SCAN ^{scan} zones ^{systems} FOR STATEWIDE</u>		
<u>CREATING CUSTOM SCAN LIST</u>		
<u>- ACTION FOR TEMPLATE DEVELOPMENT.</u>		

2.4.15 Priority Scan

Purpose: This test demonstrates radios can set up scan lists with different levels of priorities.

Expected Results: In this test the radio will play calls with a higher level of priority.

Setup: Set Radio 1 to priority 1 SCAN TG64001 P25 and priority 2 SCAN TG64002 P25. Set Radio 1 to Group 64003. Have scan enabled on Radio 1. If Radio 1 is required to have P1 priority on the selected talk group, set "P1 Programming" option to "Selected" under Radio 1 personality - Options > Scan > Universal Scan Options.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9970001	TG64003 P25	64003
Radio 2	9970002	TG64002 P25	64002
Radio 3	9970003	TG64003 P25	64001

Execution:

1. Place a call from Radio 2 on TG64002 P25, hold the call until the end of this test. Make sure to create demand for TG64002 on Radio 1 site.
☐ Verify Radio 1 scans to TG64002 P25 and hears audio from Radio 2.
2. Place a call from Radio 3 on TG64001 P25. Make sure to create demand for TG64001 on Radio 1 site.
☐ Verify Radio 1 priority scans to TG64001 P25 and hears audio from Radio 3.
3. If Radio 1 is programmed to have selected channel P1 preference then make a call on the selected TG while Radio 1 is scanning TG64002.
☐ Verify Radio 1 priority scans to selected TG.
4. Turn off scan on all radios.

Results	(Pass/Fail)	<u>P/F</u>
Tester: <u>Z km</u>	Date:	<u>5/22/21</u>
Comments: <u>TAIT P2 CALL Failed</u>		

2.4.16 Transmit Busy Lockout

- Purpose:** This test is setup to demonstrate that a radio can't transmit on a talk group while a different radio is transmitting on the same talk group.
- Expected Results:** This test will show that 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	9970001	TG64001 P25	64001
Radio 2	9970002	TG64001 P25	64001

Execution:

1. Place a call from Radio 1 on selected talk group by pressing and holding the PTT button.
 - ☐ 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.
 - ☐ Verify that Radio 2 does not transmit over (step on) the call in progress.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4.17 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	9970001	TG64001 P25	64001
Radio 2	9970002	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).
 - ☐ 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)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>[Signature]</u>	Date:	<u>6/22/24</u>
Comments: _____		

2.4.18 Convert To Callee

Purpose: This test will demonstrate that the site will only allow one radio to transmit on a talk group.

Expected Results: The test will verify that a site will only allow one radio to transmit on a talk group

Setup: Radio 1 and Radio 2 should be on the same site.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9970001	TG64001 P25	64001
Radio 2	9970002	TG64001 P25	64001

Execution:

1. Set two radios to the same site and group.
2. Key both radios at the same time.
 - ☐ Verify that one radio ends up transmitting and the other ends up receiving.
 - ☐ Verify that the call audio is routed.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

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

- Purpose:** This test will 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:** This test will verify that when the radio moves away from the 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	9970001	TG64001 P25	64001
Radio 2	9970002	TG64001 P25	64001

Execution:

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

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4.20 Unconfirmed Call (Multisite Late-Enter)

- Purpose:** To demonstrate the system's ability to track multi-site demand and assign resources in queuing situations.
- Expected Results:** Unit will late enter a group call that was initiated on another site when the local site was busy.
- 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	9970001	TG64001 P25	64001	1
Radio 2	9970002	TG64002 P25	64002	1
Radio 3	9970003	TG64001 P25	64001	2
Radio 4	9970004	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.
 - ☐ Verify that Radio 3 should get the grant tone and the call should go through to Radio 4 on Site 2.
 - ☐ Since Site 1 has no channels available, the call should not go through to Radio 1 on Site 1.
3. While Radio 2 is still keyed up, free up a channel on Site 1 by unkeying radio 2.
 - ☐ Verify that the call gets routed to Site 1 and that Radio 1 late-enters into the call on that site.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4.21 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 may be 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. Enable "Confirmed TX" parameter under radio personality Systems > P25 Trunked > Miscellaneous Options.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	9970001	TG64004 P25	64004	1
Radio 2	9970002	TG64054 P25	64054	1
Radio 3	9970003	TG64004 P25	64004	2
Radio 4	9970004	TG64004 P25	64004	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.
 - ☐ 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.
 - ☐ 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.
 - ☐ Verify that the call gets routed to Site 1 and that Radio 1 late-enters into the call.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: <u>waited</u>	

2.4.22 Roaming (ProRoam)

- 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
 - ☐ Radio 1 and Radio 2 will switch to the Site 2.
 - ☐ The radios will generate audible tones and will visually indicate that they have switched to Site 2 Cell.
 - ☐ After the radios have both switched to the Site 2 Cell, verify communications continue.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>WAK</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4.23 Priority System Scan (Preferred Site)

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

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: <u>WAIVED</u>		

2.4.24 Local Emergency Multisite on SR10A.4 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 an emergency in TDMA mode.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	9970001	TG640051 P25	64051	1
Radio 2	9970002	TG640052 P25	64052	1
Radio 3	9970003	TG640053 P25	64053	1
Radio 4	9970004	TG640051 P25	64051	2
Radio 5	9970005	TG640052 P25	64052	2
Radio 6	9970006	TG640053 P25	64053	2

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

Execution:

1. Disable channels at site 1 and 2 so that 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.
 - ☐ Verify call is dropped to Radio 1 and tone is heard
 - ☐ Verify Radio 3 is assigned a channel
 - ☐ 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)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>Wk</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.4.25 Remote Emergency Multisite on SR10A.4 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 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 are only two working talk paths on the site.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	9970001	TG64051 P25	64051	1
Radio 2	9970002	TG64052 P25	64052	1
Radio 3	9970003	TG64053 P25	64053	1
Radio 4	9970004	TG64051 P25	64051	2
Radio 5	9970005	TG64052 P25	64052	2
Radio 3	9970006	TG64053 P25	64053	2

Execution:

1. Disable channels at site 1 and 2 so that 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.
 - ☐ Verify audio is dropped to Radio 1
 - ☐ Verify calls from radio 4 and 5 continue
 - ☐ Verify Radio 3 is assigned a channel
 - ☐ 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 Tester: <u></u> Comments: _____	(Pass/Fail) <u>PASS</u> Date: <u>10/22/21</u>
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This concludes Section 2.4 P25 TRUNKED CALLS AND SITE FEATURES

2.5 TRANSCODER TEST – Functional, Fault Tests

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 r66s345u1xcda.vida.local, r66s345u2xcda.vida.local.

Transcoder	State
r66s345u1xcda.vida.local	Off
r66s345u2xcda.vida.local	Off

2. Register Radio 1 to a Region 62 site.
3. From the console place a call on talk group 64400OS
 - ☐ Verify that the call is not heard on a P25 radio on talk group 6400OS, this call failed because there is no working transcoder.
4. Restart r66s345u1xcda.vida.local.

Transcoder	State
r66s345u1xcda.vida.local	On
r66s345u2xcda.vida.local	Off

5. From the console place a call on talk group 64400OS
 - ☐ Verify that the call is heard on a P25 radio

TRANSCODER TEST – Functional , Fault Test cont.

6. Wait for 15 mins and shutdown r66s345u1xcda.vida.local.

Transcoder	State
r66s345u1xcda.vida.local	Off
r66s345u2xcda.vida.local	Off

7. Restart r66s345u2xcda.vida.local wait for 15 minutes for services to start

Transcoder	State
r66s345u1xcda.vida.local	Off
r66s345u2xcda.vida.local	On

8. From the console place a call on talk group 64400OS

☐ Verify that the call is heard on a P25 radio

9. Restart r66s345u1xcda.vida.local.

Transcoder	State
r66s345u1xcda.vida.local	On
r66s345u2xcda.vida.local	On

10. From the console place a call on talk group 64400OS verify that the call is heard on a P25 radio on talk group 6400OS

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: <u>waived</u>	

2.6 P25 PHASE 2 FUNCTIONALITY (Single Site/Simulcast Single Site) – Functional, Fault Tests

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 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

2.6.1 Phase 1 site Call

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 on Radios 1, 2, 3 and 4

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	System	Site	On/Off
Radio 1	997001	TG64051 P25	64051	PH 1	1	On
Radio 2	997002	TG64051 P25	64051	PH 1	2	On
Radio 3	997003	TG64051 P25	64051	PH 2	1	On
Radio 4	997004	TG64051 P25	64051	PH 2	2	On

Execution:

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

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: <i>univocal</i>		

2.6.2 Phase 2 site Call

Purpose: Demonstrates that a Phase 2 call work on a Phase 2 system


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

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

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

Execution:

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

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u></u>	Date:	<u>6/22/21</u>
Comments: _____		

2.7 SYMPHONY DISPATCH FEATURE SET – Functional, Fault Tests

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

2.7.1 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
 - ☐ that a channel access tone is heard, a
 - ☐ ripple effect on the 'TX' indicator is displayed
 - ☐ 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
 - ☐ that the module for TG64002 is highlighted indicating that it is the selected talk group
 - ☐ the module at the top center of the screen changes to 'TG64002'
4. Make a call on 64002TG by:
 - a. Pressing the PTT foot pedal.
 - ☐ verify that a channel access tone is heard,
 - ☐ the halo around the 'TX' indicator is displayed
 - ☐ that the call is heard on the radio
 - ☐ verify audio is heard at a radio on talk group 64002TG
 - i. Release the foot pedal to end the call
 - b. Pressing the headset button.
 - ☐ verify that a channel access tone is heard
 - ☐ the halo around the 'TX' indicator is displayed
 - ☐ that the call is heard on the radio
 - ☐ verify audio is heard at a radio on talk group 64002TG
 - i. Release the headset button to end the call.
 - c. Selecting the 64002TG button with the mouse.
 - ☐ verify that a channel access tone is heard
 - ☐ the halo around the 'TX' indicator is displayed
 - ☐ that the call is heard on the radio
 - ☐ verify audio is heard at a radio on talk group 64002TG
 - i. Release the mouse button to end the call.

Transmitting With A Microphone (Group Calls, I Calls) cont.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>YKC</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.7.2 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

2.7.2.1 Talk Group Call

Execution:


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

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>J</u> <u>WMC</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.7.2.2 Individual Call (Unit – Unit)

Execution:

1. Right click on the 'Harris' box on the top left-hand side of the console 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.
 - ☐ Verify the ripple effect on the 'TX' indicator is displayed
 - ☐ Verify a ringing tone will be heard at the console and the radio
 - ☐ Verify radio displays 'INDV' and consoles 'ID'
6. Respond to the console by PTting the radio
 - ☐ 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) <u>PASS</u>
Tester: <u></u>	Date: <u>6/22/21</u>
Comments: _____	

2.7.3 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	9970001	TG64001 P25	64001

Execution:

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

Emergency Call and Emergency Alarm cont.

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'.
 - ☐ 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)	<u>PASS</u>
Tester: <u>J</u> <u>VLL</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.7.4 Region 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	9970001	TG64051 P25	64051
Radio 2	9970002	TG64052 P25	64052
Radio 3	9970003	TG64001 P25	64001
Radio 4	9970004	TG64001 P25	64002

Execution:

1. Press INSTANT TX on the module with 'TG5010 P25' (All call in Region 62)
 - ☐ Verify that a channel access tone is heard,
 - ☐ Verify the ripple effect on the 'TX' indicator is displayed
 - ☐ Verify that the call is heard at all radios
2. Release the Instant TX key.
3. Press INSTANT TX on the module with 'TG64057 P25'.
 - ☐ Verify that a channel access tone is heard,
 - ☐ Verify the ripple effect is displayed
 - ☐ Verify the call is heard at Radios 1 and 2
 - ☐ Verify radios 3 and 4 did not hear the audio.
4. Release the Instant TX key.

Region Wide Call (All Call & Announcements) cont.

5. Press INSTANT TX on the module with 'TG64007 P25', then verify:
- ☐ That a channel access tone is heard,
 - ☐ The ripple effect is displayed,
 - ☐ The call is heard at Radios 3 and 4
 - ☐ That Radios 1 and 2 did not hear the audio
6. Release the Instant TX key.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u><i>[Signature]</i></u>	Date:	<u>6/22/21</u>
Comments: _____		

2.7.5 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 TG64052 and TG64051 selected.

Radio Description	Radio Lid	Talk Group Description	Talk Group ID
Radio 1	9970001	TG64051 P25	64051
Radio 2	9970002	TG64052 P25	64052

Execution:

1. Make TG64051 P25 the selected talk group.
2. Press the Alert tone button on the talk group module.
3. Radio 1 will receive the Alert tone

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>KR</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.7.6 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	9970001	TG64001 P25	64001
Radio 2	9970001	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 key while continuing to hold the call up on Radio 1
 - ☐ Verify the console pre-empts
 - ☐ Verify that the transmit indicator is displayed along with the pre-empted caller LID and CALL indicator
 - ☐ Verify that the second radio begins to hear the console audio and not the first radio call.
 - ☐ Verify that the pre-empted radio audio is still heard on the pre-empting console.
3. Un-key the first Radio.
 - ☐ Verify that the pre-empted caller LID and CALL indicators are removed and the pre-empted radio audio is no longer heard on the pre-empting console.
4. Un-key the console.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>VK</u>	Date:	<u>10/22/21</u>
Comments: _____		

2.7.7 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	9970001	TG64051 P25	64051
Radio 2	9970002	TG64052 P25	64052
Radio 3	9970003	TG64053 P25	64053
Radio 4	9970004	TG64054 P25	64054

Execution:

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

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>VK</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.7.8 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	9970001	TG64051 P25	64051
Radio 2	9970002	TG64052 P25	64052
Radio 3	9970003	TG64053 P25	64053
Radio 4	9970004	TG64054 P25	64054

Execution:

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

Results	(Pass/Fail)
Tester:  	<u>PASS</u>
Comments: _____	Date: <u>6/22/21</u>

2.7.9 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.
 - ☐ Verify that console B can hear console A.
2. Open the Symphony Configuration Utility for console B and 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
 - ☐ Verify the call can't be heard at console B.
5. Restore the desired cross mute setup.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>VH</u>	Date:	<u>6/22/21</u>
Comments: _____		

2.7.10 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.
 - ☐ Compare these calls with known activity.
2. Press the 'Scroll Up' and 'Scroll Down' buttons to scroll through the selected call history list.
 - ☐ Compare these calls with known activity.
3. Press the 'Esc' button to exit the history scroll mode.
4. To monitor call history on a single group, use the 'module history' button on the 'module modify' menu.
5. Use the 'scroll up' and 'scroll down' buttons to scroll through the calls for the picked module.
 - ☐ Compare these calls with known activity.

Results	(Pass/Fail)
Tester: <u></u>	<u>PASS</u>
	Date: <u>6/22/21</u>
Comments: _____	

This concludes Section 2.7 SYMPHONY DISPATCH FEATURE SET

2.8 VIDA INTER-OPERABILITY GATEWAY TEST – Functional, Fault Tests

2.8.1 Local Interoperability

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

Expected Results: Calls can be made to and from Inter Op talkgroups (across the Gateway)

Setup: The Interoperability Gateway should be connected via 4-wire audio connections on 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
 - ☐ 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
 - ☐ Verify that audio is heard on the radio.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: <u>Deferral FOR CUTOVER</u>	

3. FAULT TESTS

3.1 P25 SIMULCAST BYPASS OPERATION – Functional, Fault Tests

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.

3.1.1 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.
 - ☐ Verify transmit site is in BYPASS mode.
 - ☐ 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.
 - ☐ Verify there is no active control channel.
 - ☐ 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.
 - ☐ Verify transmit site is in normal simulcast mode. The Traffic Controller modules will indicate "TR(n)", where n is the channel number.

Site OFF - Final Configuration cont.

4. Repeat steps 1-3 for the remaining "OFF" bypass sites in the simulcast system under test.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: <u>waived</u>	

3.1.2 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.
 - ☐ 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".
 - ☐ 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".
 - ☐ Verify the station appearing as control channel is keyed, producing RF power and modulated with control channel data.
 - ☐ 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.
 - ☐ Verify a working channel assignment is made within the channel group allowed in the personality.
 - ☐ 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.
 - ☐ 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.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: <u>waived</u>		

3.1.3 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.
 - ☐ Verify TX site is in BYPASS mode.
 - ☐ Verify transmit site is in BYPASS mode. Traffic Controller module display indicates either "TC" or "CC" instead of "TR".
 - ☐ 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.
 - ☐ 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.
 - ☐ Verify the TX site Traffic Controller modules revert to normal Simulcast.
 - ☐ Verify the CP Traffic Controller modules associated with the site in BYPASS are returned to normal.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: <u>waived</u>		

3.1.4 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 4 and site minimum channels to 4.

Bypass Plan:

Newport - Ch 1,2

First Ave Bridge – Ch 3,4

520 Bridge/EFB - 5,6

Cougar Mtn, Holme & Roosevelt Way are Dark sites

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

Execution:

1. At TR site NEWPORT disable channels 5 - 6 using the TX disable switch on the PA (only channels 1-4 are still functioning).
 - ☐ Verify system and site still functioning in simulcast; the disabled channels 5-6 are in alarm state at the control point site.
 - ☐ At TR site NEWPORT 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 4 using the TX disable switch on the PA.
 - ☐ Verify system is still functioning in simulcast. Control Point ch 4, 5 and 6 in alarm state.
 - ☐ Verify TR site NEWPORT 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.

Bypass Site Minimum Channels cont.

3. At the same site restore all channels back to service (enable the PA using the TX disable switch on the PA).
- ☐ Verify transmit site NEWPORT is in normal simulcast mode. The Traffic Controller modules will indicate "TR(n)", where n is the channel number.
 - ☐ Verify all channels are in service at the control point.

Results	(Pass/Fail)	_____
Tester: _____	Date:	_____
Comments: <u>waived</u>		

3.1.5 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 sites in the system enter bypass mode.

Setup: Sites are configured with cluster minimum channels set to 4 and site minimum channels set to 4.

Execution:

1. At TR site **Newport** disable channels 9, 10 and 11 using the TX disable switch on the PA (8 channels are still functioning).
 - ☐ Verify system and site still functioning in simulcast.
 - ☐ 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 **First Ave Bridge** disable channels 6, 7 and 8 using the TX disable switch on the PA (5 channels are still functioning).
 - ☐ 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.
 - ☐ 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: <u>waived</u>	

3.1.6 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.

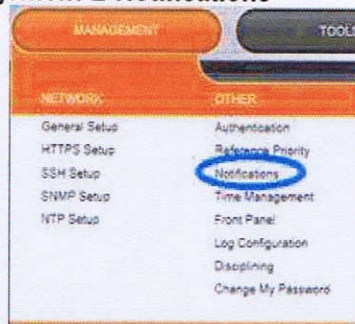
Expected Results: The "ON" site traffic controllers have a control channel and calls between terminal radios and dispatch can be made.

Setup:

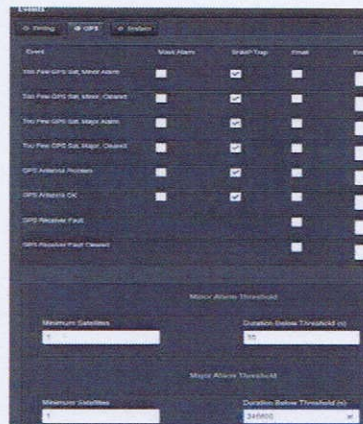
Execution:

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 OR HIGH (depending on the current count) 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

1. 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]**



Site ON (trunking) - Enhanced Bypass Final Configuration Cont.

3. Verify transmit site is in BYPASS mode. The Traffic Controller module display indicates either "TC" or "CC" instead of "TR".
 - ☐ 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".
 - ☐ Verify the station appearing as control channel is keyed, producing RF power and modulated with control channel data.
 - ☐ 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.
 - ☐ 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.
 - ☐ Verify transmit site is in normal simulcast mode. Traffic Controller modules indicate "TR(n)".

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: <u>waived</u>	

This concludes Section 3.1 P25 SIMULCAST BYPASS OPERATION

3.2 High Availability Wide Area Router Failure – Functional, Fault Tests

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: 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: 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.
 - o The call from Radio 3 to Radio 4 should not be dropped.
 - o The call from radio 1 to 2 will continue and the console will lose connectivity to the VNIC.
 - o Verify that after a short delay, the Backup server NSS2 automatically takes over as the primary server.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: <u>waited</u>	

3.3 Regional Network Manager 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://R66S345U1RNM.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.
 - ☐ Verify the Infrastructure is presented.
 - ☐ Select an object and right click to select properties to view information related to the object.
3. Substitute <https://r64s217U1RNM.VIDA.LOCAL/NMC> and repeat test steps 1-3 for the second RNM.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u></u> <u></u>	Date:	<u>6/22/21</u>
Comments: _____		

3.4 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. Internal Note: Harris should create a comprehensive table of specific system alarms to verify.

Execution:

1. On a client computer, open the windows Internet Explorer and browse to <https://R66S345U1RNM.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.
 - ☐ Verify that the RNM indicates a site alarm for the affected device.
5. Turn the device back ON.
 - ☐ 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://r64s217U1RNM.VIDA.LOCAL/NMC> and repeat test steps 1-5 for the second RNM.

RF System Alarms Indications are reported to the RNM Cont.

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

Tester:		Results:	Date:	
Alarm #	Name	Pass/Fail	Remarks	
		<i>Ex</i>	<i>Sub</i>	
1	Traffic Controller	P	P	
2	Router		P	
3	Switch	P	P	
4	Network Sentry	P	P	
5	DmO	P	P	

6 Multicaster P P

Results	(Pass/Fail) <u>PASS</u>
Tester: <u><i>[Signature]</i></u> <u><i>VAC</i></u>	Date: <u>6/22/21</u>
Comments: _____	

3.5 Site Trunking (Failsoft) Indication

Purpose: This test will demonstrate that the radio will display a symbol when the site it is logged into is not connected to the system.

Expected Results: This test will verify that the radio will display a Failsoft indication when the site it is logged into is not connected to the system.

Setup:

Radio Description	Radio Lid	Talk Group Description	Talk Group ID	Site #
Radio 1	9970001	TG640001 P25	64001	1
Radio 2	9970002	TG640001 P25	64001	1
Radio 3	9970003	TG640001 P25	64001	2

Execution:

1. PTT Radio 1
 - ☐ Verify that the Radio 1, Radio 2, and Radio 3 can communicate on the system.
2. 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.
 - ☐ Verify that Radio 1 and Radio 2 indicate a Failsoft icon on their displays this may take several minutes.
3. PTT Radio 1 on Talkgroup A. Verify audio is heard at Radio 2. Verify audio is not heard on Radio 3.
4. Re-connect the network from the Network Switching Center to the Site Router.
 - ☐ Verify the Failsoft alarm disappears on the radios and that communications with Radio 3 is reestablished.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

3.6 WSDOT Custom System-wide Tests – Fault Tests

WSDOT may define up to 25 FaultTests to perform as part of the acceptance test. Each test shall have a specific purpose with an expected result. Additional tests are intended to be non-destructive failure conditions.

3.6.1 WSDOT Test Description – Fault Test

See Section 9 BlueWing Additional Stress Tests for description of WSDOT tests

Purpose:

Expected Results:

Setup:

Execution:

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>VK</u>	Date:	<u>6/22/21</u>
Comments: <u>Section 9</u>		

3.7 WSDOT Custom Per Site Test – Fault Tests

WSDOT may define up to 10 Fault Tests to perform as part of the acceptance test. Each test shall have a specific purpose with an expected result. Additional tests are intended to be commercially reasonable and non-destructive failure conditions.

3.7.1.1 WSDOT Test Description – Fault Test

See Section 9 BlueWing Additional Stress Tests for description of WSDOT tests

Purpose:

Expected Results:

Setup:

Execution:

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature] VK</u>	Date:	<u>6/22/21</u>
Comments: <u>Section 9</u>		

4. STRESS TESTS

4.1 Single Site Call Queue Declaration Alert – Stress Test

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.

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
 - ☐ Verify that a Call Queued tone is heard at the radio.
3. Unkey (release PTT button) radio 2.
 - ☐ 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 radio type (approx. 2 seconds) to keep the assigned channel.
 - ☐ Verify that audio from Radio 3 is heard at Radio 4.
6. Unkey all radios.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u>	Date:	<u>6/22/21</u>
Comments: _____		

4.2 WSDOT Custom System-wide Test – Stress Tests

WSDOT may define up to 10 Stress Tests to perform as part of the acceptance test. Each test shall have a specific purpose with an expected result. Additional tests are intended to be non-destructive failure conditions.

4.2.1 WSDOT Test Description – Stress Test

See Section 9 BlueWing Additional Stress Tests for description of WSDOT tests

Purpose:

Expected Results:

Setup:

Execution:

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>VMK</u>	Date:	<u>6/22/21</u>
Comments: _____		

4.3 WSDOT Custom Per Location Test – Stress Tests

WSDOT may define up to 5 Stress Tests to perform as part of the acceptance test. Each test shall have a specific purpose with an expected result. Additional tests are intended to be commercially reasonable and non-destructive failure conditions.

4.3.1 WSDOT Test Description – Stress Test

See Section 9 BlueWing Additional Stress Tests for description of WSDOT tests

Purpose:

Expected Results:

Setup:

Execution:

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u>[Signature]</u> <u>[Signature]</u>	Date:	<u>6/22/20</u>
Comments: _____		

5. 30-Day Operational Verification Plan

5.1 Introduction

The Thirty (30) Calendar Day Operational Verification Test Plan is a standalone performance test designed to demonstrate successful operation of the Land Mobile Radio (LMR) System over a specified period of time.

5.2 Approach

The Operational Verification Test will be conducted in parallel with the Functional Acceptance Test and Coverage Tests. During the test, the system shall operate for a period of thirty (30) accumulated calendar days without a critical failure relating to hardware or software infrastructure. Neither WSDOT 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" or a "Minor Failure" (suggested definitions in 0). The test will be successfully completed upon the completion of a thirty (30) calendar day period without the occurrence of a "Critical System Failure".

Harris and the State shall assign a primary and secondary point of contact which will be available always during active testing of the system. 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.

5.3 Monitor and Control

The Enterprise Network Manager / Regional Network Manager (ENM / RNM) applications will be used to monitor system health status. The Harris project engineering team will require VPN Remote Access to the State radio network in order to perform remote monitoring and diagnosis of the LMR System.

Site and terminal configurations will be locked during the Operational Verification Test preparation. Any mutually agreed changes will be documented and become a part of the test report.

5.4 Failure Definitions and Samples

Suggested definitions of failure types are described in following table. Harris and WSDOT will mutually define critical and systemic failures during the System Design Review (SDR).

Suggested Failure Types

Failure Types	Description
Critical	Defined as Harris supplied hardware or software failure which INTERRUPTS the 30 Calendar Day Operational Verification Test and will STOP testing. This event compromises the system's ability to operate as a "simulcast" radio system. Harris and/or its authorized repair service will make the necessary repairs/adjustments. A NEW 30 Calendar Day Operational Verification Test will be initiated upon resolution of the failure.
Minor	Defined as Harris supplied hardware or software failure which INTERRUPTS the 30 Calendar Day Operational Verification 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 thirtieth day occurs without further interruptions. For example, if failure occurs on Day 15 of the operational test, repairs will be made, and the Operational Verification Test will restart and continue on Day 15. The Operational Verification Test will then be deemed successfully completed when Day 30 is completed without further interruptions of failures. If the two minor failures are of the same functionality, with the same root cause, the system will be considered to have experienced a Critical failure.
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, commercial power failures, customer staff/operator errors, previously agreed system maintenance downtime and/ or harsh environmental conditions or acts of God which cannot be prevented

Suggested system failure definitions are shown below:

Suggested System Failure Definitions

Item	Failure Description	Critical	Minor	Other
A	Any failure which causes a loss of 15% or more in capacity or coverage	X		
B	Any failure which causes a loss of simulcast capability	X		
C	Any failure which causes a loss of Core equipment	X		
D	Any system failure that causes the loss of two or more console positions	X		
E	Any failure that renders the logging recorder inoperable or causes the irretrievable loss of recorded audio	X		
F	The concurrent failure of two or more repeaters	X		
G	Concurrent failure of two or more switches and/or routers	X		
H	Failure of the receiver voting system	X		
I	Any non-critical failure that does not affect trunking operation		X	
J	Any user terminal equipment			X

5.5 Test Planning Procedures

Prior to the start of the 30 calendar day test, the following activities must take place:

- 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

5.6 Failure Reporting

Upon observing a system issue, the user will complete the Radio System Issue Report 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 critical failure, the test will be halted until the issue is 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 critical failure, the Harris Project Manager and State's 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 the State and Harris Project Managers. The Harris Project Manager will document and distribute meeting minutes and action items for each meeting.

WSDOT 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:	

5.6.1 Critical Failure

Should a critical 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.

5.6.2 Scheduled Maintenance or Minor Failure

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).

5.7 Resources and Designations

Harris and the State 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 State 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 operational test and performance of the task.

5.8 Acceptance

As identified on the project schedule, upon successful completion of the 30 Calendar Day Operational Verification 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 Operational Verification Test was successfully executed, completed, and approved.

6. 60-Day Operational Verification Plan

The Sixty (60) Calendar Day Operational Verification Test Plan is a standalone performance test designed to demonstrate successful operation of the Land Mobile Radio (LMR) System over a specified period of time. It would follow the exact same plan defined in sections 5.2 through 5.8 for a 30 day reliability test except for the duration. Refer to document DCN 59-2005 for detailed system failure definitions and test procedures.

Factory Acceptance Test Procedure Coverage Class Addendum

Prepared for:

Washington State
Department of Transportation

Prepared by:



RF Communications Division, PSPC
221 Jefferson Ridge Parkway
Lynchburg, Virginia, U.S.A. 24501

7. Test Case: Coverage Class Talk Group Lockout

Purpose: This test will demonstrate the system's ability to prevent affiliation with a specific Talk Group on a per site basis.

Expected Results: Coverage Classes (CC) affect which Talk Groups are usable at what sites. This test will have two unique coverage classes: NWR and SWR. The SWR Talk Group, will not be allowed to use Site 1, and will be allowed to use Site 2. However, statewide communications will always be present.

Setup:

Modify 3 Talkgroups with the following coverage classes in the UAS:

Talk Group Description	Talk Group ID	Coverage Class	Coverage Class ID
TG 64051TCL	64051	NWR (Site 1)	007
TG 64052TCM	64052	SWR (Site 2)	008
TG 64053TCM	64053	STATEWIDE (Site 1,2)	009

The three radios used for this test must be capable of either Phase 1 or Phase 2 communications-no encryption functionality is necessary. The radios must be valid on the two sites (Site 1 and Site 2) being used to conduct the tests. Transcoding shall be invoked for the TG via the UAS, if applicable


Radio Description	Radio Lid
Radio 1	9970001
Radio 2	9970002
Radio 3	9970003

Execution:

1. Set Radio 1, 2, 3 to TG 64153TCM
2. Power down Site 2 (No control channel) to force all radios to register on Site 1
3. Key Radio 1.

- ☐ Verify channel assignments occur on Site 1.
- ☐ Verify communications on Radio 2 and Radio 3.

4. Switch Radio 1 and Radio 2 to TG 64052TCM
 - ☐ PTT Radio 1 and verify communications are not successful.
5. Power on Site 2
6. Move Radio 1 and Radio 2 in to range of Site 2:
 - ☐ Verify Radio 2 is registered on Site 2
 - ☐ Verify Radio 1 is registered on Site 2
 - ☐ Verify communications on Radio 1 and 2
7. Switch all Radios to TG 64053TCM
 - ☐ Key Radio 1
 - ☐ Verify communications on Radio 1, 2 and 3.
8. In the UAS, reset all modified Talk Groups back to the original coverage class.

Results	(Pass/Fail)	<u>PASS</u>
Tester: <u></u>	Date:	<u>6/22/21</u>
Comments: _____		

8. Test Case: Coverage Class User Lockout

Purpose: This test will demonstrate the system's ability to prevent registration of users on a per site basis.

Expected Results: User Privileges affect which User IDs are allowed to use sites. This test will have a unique user privilege: NWR. A user with the NWR user privilege will not be allowed to use Site 1, and will scan to Site 2, when available.

Setup:



In the UAS, configure the user privileges as follows:

Radio Description	Radio Lid	User Privilege Coverage Class	Coverage Class ID
Radio 1	9970001	NWR (Site 1)	007
Radio 2	9970002	STATEWIDE (Site 1,2)	009
Radio 3	9970003	STATEWIDE (Site 1,2)	009

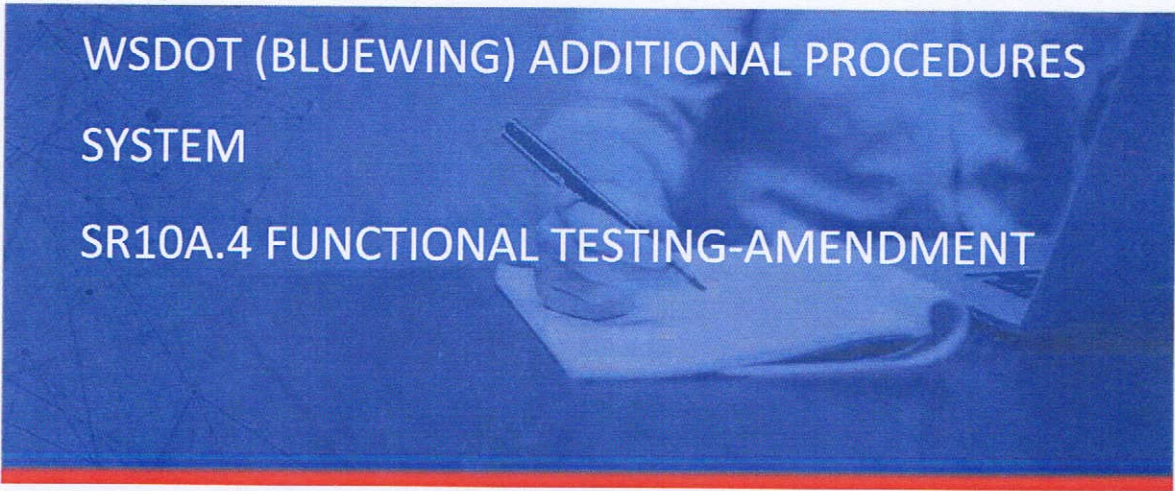
The radios used for this test must be capable of either Phase 1 or Phase 2 communications. No encryption functionality is necessary.

Execution:

1. Set Radio 1, 2, 3 to TG 64053TCM
2. Power down Site 2 (no control channel) to force all radios to register on Site 1
3. Key Radio 1.
 - ☐ Verify channel assignments occur on Site 1.
 - ☐ Verify communications on Radios 1, 2, and 3
4. Power on Site 2
5. Power Down Site 1.
 - ☐ Verify Radios 2 and 3 roam to Site 2. [SG: FACTORY ATP REQUIRES MANUAL ROAM]
6. Key Radio 2.
 - ☐ Verify communications on Radios 2, and 3.
 - ☐ Verify no communications on Radio 1.
7. In the UAS, reset all modified User Privileges back to the original coverage class.

Results	(Pass/Fail)	PASS
Tester:  	Date:	10/22/21
Comments: _____		

9. BlueWing Additional Stress Tests



WSDOT (BLUEWING) ADDITIONAL PROCEDURES
SYSTEM
SR10A.4 FUNCTIONAL TESTING-AMENDMENT

The additional tests proposed by WSDOT are as follows:

Test No.	Test Type	Name	Description
9.1	Fault - Site	Facility Test – Physical Test Site Power Supply Fail - A Side	Verify RNM shows condition and verify expected reaction
9.1	Fault - Site	Facility Test – Physical Test Site Power Supply Fail - A and B Side	Verify RNM shows condition and verify expected reaction
9.2	Fault - Site	Site GPS Fail - GPS#1	Verify RNM shows condition and verify expected reaction
9.2	Fault - Site	Site GPS Fail - GPS#1 and #2	Verify RNM shows condition and verify expected reaction
9.3	Fault - Site	Repeater 1 Fail - Control Channel	Verify RNM shows condition and verify expected reaction
9.3	Fault - Site	Repeater 1 and 3 Fail - Control Channel and Backup Control Channel	Verify RNM shows condition and verify expected reaction
9.4	Fault - Site	Sentry Monitoring	Verify RNM shows condition and verify expected reaction
9.5	Fault - Site	Base Station - Baseband Processor Module	Verify RNM shows condition and verify expected reaction

Test No.	Test Type	Name	Description
9.6	Fault - Site	Base Station - Traffic Controller Module	Verify RNM shows condition and verify expected reaction
9.7	Fault - Site	Base Station - TX Module/RX Module	Verify RNM shows condition and verify expected reaction
9.8	Fault - System	Premier Core Fail to Secondary Premier Core	Verify RNM shows condition and verify expected reaction and verify manual restoration back to Primary Premier Core
9.9	Fault - System	Connect Core 1 Fail	Verify RNM shows condition and verify expected reaction and verify manual restoration back to Primary Premier Core
9.9	Fault - System	Connect Core 1 and 2 Fail	Verify RNM shows condition and verify expected reaction and verify manual restoration back to Primary Premier Core
-	Fault - System	Connect Core 1 - Site Router	Verify RNM shows condition and verify expected reaction and verify manual restoration back to Primary Premier Core

Test No.	Test Type	Name	Description
-	Fault - System	By Pass Operation - Create Conditions for 8 Levels of Bypass Operation	Verify RNM shows condition and verify expected reaction
-	Fault - System	Dispatch Console - Loss of Connectivity to Core	Verify RNM shows condition and can operate from Control Station. Verify connectivity from other Consoles.
-	Fault - System	Simulcast Cast Voter Channel Failure	Verify RNM shows condition and verify expected reaction
-	Fault - System	Simulcast Cast Voter Total Fail	Verify RNM shows condition and verify expected reaction
9.10.1	Stress - Site	Single Site Emergency Group Call	Verify RNM shows condition and verify expected reaction
9.10.2	System - Stress	Multi Site Emergency Group Call	Verify RNM shows condition and verify expected reaction
9.10.3	System - Stress	Unconfirmed Call (Multisite Late-Enter)	Verify Radio operation with terminals
9.10.4	System - Stress	Confirmed Call	Verify Radio operation with terminals

9.1 Facility Test – Physical Tests

UPS Verification

- Purpose:** To verify operation of MASTR V site components given fuse failures/interruptions.
- Expected Results:** RF equipment is isolated from networking equipment. Regional Network Manger will indicate that site is down (red) when RF subsystem fails
- Setup:** Prior to the execution of this test, ensure WSDOT UPS systems are properly installed and electrical connections are made per drawing package details.
- Notes:** Harris will perform this test at select locations. Harris is not responsible for test failures due to inadequate backup power equipment that is under the state's responsibility to provide. Any such failures of state 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 the state).

Execution:

1. From the facility circuit breaker panel, disconnect main power from A side of MASTR V power strip.
☐ Verify communication is uninterrupted.
2. From the facility circuit breaker panel, disconnect main power from A and B side of MASTR V power strip.
☐ Verify communication is uninterrupted.

Results	(Pass/Fail)	<u>Pass</u>
Tester:		<u>6/21/2021</u>
Comments:		

9.2 GPS equipment

Purpose: To verify operation of MASTR V site components given fuse or power failures/interruptions.


Expected Results: RF equipment is isolated from networking equipment. Regional Network Manager will indicate that site is down (red) when RF subsystem fails

Setup: Prior to the execution of this test, ensure WSDOT UPS systems are properly installed and electrical connections are made per drawing package details.

Notes: Harris will perform this test at select locations. Harris is not responsible for test failures due to inadequate backup power equipment that is under the state's responsibility to provide. Any such failures of state 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 the state).

Execution:

1. From the GPS unit power button, disconnect main power from GPS#1.
 - ☐ Verify communication is uninterrupted in Simulcast cell.
2. From the GPS unit power button, disconnect main power from both GPS #1 and GPS #2.
 - ☐ Verify communication is interrupted and RNM displays failure of both GPS units, and non-simulcasting of Simulcast system.

Results	(Pass/Fail)
Tester: <u></u>	Date: <u>6/22/2021</u>
Comments: <u>Waived</u>	

9.3 Repeater Failure-Control Channel Failure

- Purpose:** To verify operation of MASTR V site components given failure of predetermined Control Channel.
- Expected Results:** The control channel will switch.
- Setup:** Prior to the execution of this test, ensure WSDOT UPS systems are properly installed and electrical connections are made per drawing package details.
- Notes:** Harris will perform this test at select locations. Harris is not responsible for test failures due to inadequate backup power equipment that is under the state's responsibility to provide. Any such failures of state 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 the state).

Execution:

1. From the MASTR V unit power button for Control Channel, turn off main power.
 - ☐ Verify communication is uninterrupted at site.
2. From the MASTR V unit power button for CC and backup CC, turn off main power.
 - ☐ Verify communication is interrupted and RNM displays failure at site under test.

Results	(Pass/Fail)	<u>Pass</u>
Tester:		<u>6/22/2021</u>
Comments:		

9.4 Sentry Monitoring Failure

Purpose: To verify operation of MASTR V Network Sentry site components given fuse failures/interruptions.

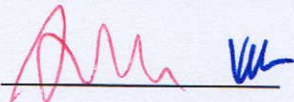
Expected Results: With network Sentry disabled, site alarms will not be present nor database provisioning not present

Setup: Prior to the execution of this test, ensure WSDOT UPS systems are properly installed and electrical connections are made per drawing package details.

Notes: Harris will perform this test at select locations. Harris is not responsible for test failures due to inadequate backup power equipment that is under the state's responsibility to provide. Any such failures of state 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 the state).

Execution:

1. From the Network Sentry (NWS), disable power
 - ☐ Verify alarm state on RNM says NWS is down.
2. Add a radio to the database via the UAS, giving permissions to operate on site under test
3. Invoke systemwide database provisioning
 - ☐ Verify user is not present on the site
 - ☐ Verify user is not present through telnet session to any traffic controller on the site, and search user database
4. Turn on NWS (wait 15mins)
 - ☐ Verify user is present through telnet session to any traffic controller on the site, and search user database

Results		(Pass/Fail)	<u>Pass</u>
Tester:	<u></u>	Date:	<u>4/22/2021</u>
Comments:	<u></u>		



9.5 Repeater Failure-Baseband Failure

- Purpose:** To verify operation of MASTR V site components given failure of independent baseband processor.
- Expected Results:** The control channel will switch to V2, and secondary Baseband controller will become active.
- Setup:** Prior to the execution of this test, ensure WSDOT UPS systems are properly installed and electrical connections are made per drawing package details.
- Notes:** Harris will perform this test at select locations. Harris is not responsible for test failures due to inadequate backup power equipment that is under the state's responsibility to provide. Any such failures of state 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 the state).

Execution:

1. From telnet session, reset Baseband controller.
 - ☐ Verify communication is uninterrupted at site.
2. From telnet session, login to both Baseband controllers, and execute reset AT THE SAME TIME.
 - ☐ Verify communication is interrupted and RNM displays failure at site under test.

Results	(Pass/Fail)	<u>Pass</u>
Tester: <u>[Signature]</u>	Date:	<u>6/22/2020</u>
Comments: _____		

9.6 Repeater Failure-Traffic Controller Failure

- Purpose:** To verify operation of MASTR V site components given failure of independent baseband processor.
- Expected Results:** The control channel will switch to V2, and secondary Baseband controller will become active.
- Setup:** Prior to the execution of this test, ensure WSDOT UPS systems are properly installed and electrical connections are made per drawing package details.
- Notes:** Harris will perform this test at select locations. Harris is not responsible for test failures due to inadequate backup power equipment that is under the state's responsibility to provide. Any such failures of state 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 the state).

Execution:

1. From telnet session, reset Traffic controller.
 - ☐ Verify communication is uninterrupted at site.
2. From telnet session, login to both Traffic controllers, and execute reset AT THE SAME TIME.
 - ☐ Verify communication is interrupted and RNM displays failure at site under test.

Results	(Pass/Fail)	<u>Pass</u>
Tester: <u>AM VL</u>	Date:	<u>6/22/2021</u>
Comments: <u>Waived</u>		

9.7 Repeater Failure-Transmit or Receive Card Failure

Purpose: To verify operation of MASTR V site components given failure of independent RF channel components: TX card or RX card.

Expected Results: The channel in question will fail operation.

Setup: Prior to the execution of this test, ensure WSDOT UPS systems are properly installed and electrical connections are made per drawing package details.

Notes: Harris will perform this test at select locations. Harris is not responsible for damage to traffic cards during this test.

Execution:

1. While channel is active, physically remove the channel from the chassis.
 - ☐ Verify communication on said channel is uninterrupted at site.
2. While first channel is disconnected, remove second channel in alternate chassis.
 - ☐ Verify communication is interrupted and RNM displays failure at site under test.

Results	(Pass/Fail)	<u> </u>
Tester: <u> </u>	Date:	<u>6/22/2021</u>
Comments: <u> </u>		

9.8 High Availability Premier Core Failure – Functional, Fault Tests

- 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. Radio 1 and 2 in one region same site. Radio 3 and 4 or console is in Region 60.

1. Use Radio 1 to initiate a call: 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: 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.
 - o The call from Radio 3 to Radio 4 will be dropped.
 - o The call from radio 1 to 2 will continue and the console will lose connectivity to the VNIC.
 - o Verify that after a short delay, the Backup server NSS2 automatically takes over as the primary server.

High Availability Premier Core Failure – Functional, Fault Tests cont.

Results	(Pass/Fail)	<u> </u>
Tester:	<u> </u>	Date: <u>6/22/2021</u>
Comments:	<u> Waived </u>	

9.9 Regional HA Connect Core Server Failure – Functional, Fault Tests



Purpose: Demonstrate the capabilities of the system to work after a Regional Core failure

Expected Results: System components that are set-up with Mesh networking will continue to work after a Connect Core server failure.

Setup: These tests will simulate a Connect core server failure by disconnecting it from the Wide Area Network, so the WAR to server connection will need to be known.

Execution:

1. Use Radio 1 to initiate a call: Verify that the call is heard on the Radio 2. Keep the call active during fail-over.
2. Remove WAN ethernet cable from the primary connect core SAR router.
3. Verify that the call gets dropped during the failover time and Radio 2 late enters the call after VNIC failover.

Results	(Pass/Fail)	<u>Pass</u>
Tester: <u> </u>	Date:	<u>4/22/2021</u>
Comments: _____		

9.10 Stress Tests (Busy Sites)

9.10.1 Single Site Emergency Group Call

Purpose: Demonstrate the capability of the system to process two emergency group calls, single site.

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, or console.

Setup: Program five (5) Radios with the following emergency home group:

Radio 1	TG 64001 P25
Radio 2	TG 64002 P25
Radio 3	TG 64001 P25
Radio 4	TG 64001 P25
Radio 5	TG 64002 P25

Set the supervisor (Radio 1& Radio 2) to the home group. Set Radio 3-5 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 64002 P25	64002	1
Radio 3	9980003	TG 64003 P25	64003	1
Radio 4	9980004	TG 64001 P25	64001	1
Radio 5	9980005	TG 64002 P25	64002	1

Single Site Emergency Group Call cont.**Execution:**

1. Press the Emergency call button on Radio 1 and talk within the pre-defined Emergency Auto-key time, and/or PTT Radio 1 during or just after that time.
 - ☐ Verify that Radio 1 indicates the "TX EMER" declaration and that it reverts to the home group.
 - ☐ Verify Radio 1 (on Site 1) and Radio 4 (on Site 1), indicate a "RX EMER" and hear audio on the emergency home group.
 - ☐ Verify Radio 2,3 and 5 does not display the emergency
 - ☐ Keep the emergency up on TG 64001 P25
2. Press the Emergency call button on Radio 2 and talk within the pre-defined Emergency Auto-key time, and/or PTT Radio 1 during or just after that time.
 - ☐ Verify that Radio 2 indicates the "TX EMER" declaration and that it reverts to home group.
 - ☐ Verify Radio 2 (on Site 1) and Radio 5 (on Site 1), indicate a "RX EMER" and hear audio on the emergency home group.
 - ☐ Verify Radio 1, 3 and 4 does not hear the 2nd Emergency & Radios 3 does not display the emergency

Keep the emergency up on TG 64002 P25
4. Clear all emergency with the console.
 - ☐ Verify the emergency clears in the radios.

Results	(Pass/Fail)
Tester: <u>Me</u> <u>W</u>	Date: <u>6/21/2021</u>
Comments: <u>Duplicate</u>	

9.10.2 Multisite Emergency Group Call

Purpose: Demonstrate the capability of the system to process two emergency group calls- multisite.

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, or console.

Setup: Program five (5) Radios with the following emergency home group:

Radio 1	TG 64001 P25
Radio 2	TG 64002 P25
Radio 3	TG 64001 P25
Radio 4	TG 64001 P25
Radio 5	TG 64002 P25

Set the supervisor (Radio 1& Radio 2) to the home group. Set Radio 3-5 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 64002 P25	64002	2
Radio 3	9980003	TG 64003 P25	64003	1
Radio 4	9980004	TG 64001 P25	64001	2
Radio 5	9980005	TG 64002 P25	64002	3

Execution:

4. Press the Emergency call button on Radio 1 and talk within the pre-defined Emergency Auto-key time, and/or PTT Radio 1 during or just after that time.
 - o Verify that Radio 1 indicates the "TX EMER" declaration and that it reverts to the home group.
 - o Verify Radio 1 (on Site 1) and Radio 4 (on Site 2), indicate a "RX EMER" and hear audio on the emergency home group.
 - o Verify Radio 2,3 and 5 does not display the emergency.
 - o Keep the emergency up on TG 64001 P25
5. Press the Emergency call button on Radio 2 and talk within the pre-defined Emergency Auto-key time, and/or PTT Radio 1 during or just after that time.
 - o Verify that Radio 2 indicates the "TX EMER" declaration and that it reverts to the home group.
 - o Verify Radio 2 (on Site 2) and Radio 5 (on Site 3), indicate a "RX EMER" and hear audio on the emergency home group.
 - o Verify Radio 1, 3 and 4 does not hear the 2nd Emergency & Radios 3 does not display the emergency
 - o Keep the emergency up on TG 64002 P25
6. Clear all emergency with the console.
 - o Verify the emergency clears in the radios.

Results	(Pass/Fail)
Tester: <u><i>[Signature]</i></u>	Date: <u><i>6/21/2021</i></u>
Comments: <u><i>Duplicate</i></u>	

9.10.3 Unconfirmed Call (Multisite Late-Enter)

Purpose: This test will demonstrate that if two user demand talk group access the user that has an available channel will get the channel access first.

Expected Results: The test will verify the system's ability to grant talk group access to the user that has an available channel.

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
Radio 5	998005	TG64001 P25	64001	3
Radio 6	998006	TG64003 P25	64003	3

Execution:

1. Key up radio 2 on site 1, and Key up radio 6 on site 3, and hold the call up.
2. Key up Radio 3 on TG64001 on Site 2, and hold the call up.
 - o Verify that Radio 3 should get the grant tone and the call should go through to Radio 4 on Site 2.
 - o Since Site 1 & Site 3 have no channels available, the call should not go through to Radio 1 on Site 1, or Radio 5 on Site 3.
3. While Radio 2 is still keyed up, free up a channel on Site 1 by unkeying Radio 2 & Radio 6.
 - o Verify that the call gets routed to Site 1 and that Radio 1 & Radio 5 late-enters into the call on their sites.

Unconfirmed Call (Multisite Late-Enter) Cont.

Results	(Pass/Fail)
Tester: <u>AM</u> <u>W</u>	Date: <u>6/21/2021</u>
Comments: <u>Duplicate</u>	

9.10.4 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. For Confirmed Call with 3 or more sites, required setting in the BBM personality: Confirmed Call – Enabled; Hang Time – 10s; and Remote Audio Timeout: 125

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
Radio 5	998005	TG64001 P25	64001	3
Radio 6	998006	TG64002 P25	64002	3

Execution:

1. Key up Radio 2 on site 1, and Key up Radio 6 on site 3, and hold the call up.
2. Key up Radio 3 on TG64001 on Site 2, and hold the call up.
The call will not be granted because there are no available channels on site 1 or site 3.
3. Hold the call up until the confirmed call timer expires.
Once the timer expires the call will go through but only to site 2 and site 3 only
4. While Radio 2 is still keyed up, free up a channel on Site 1 by unkeying radio 2.
Verify that the call gets routed to Site 1 and that Radio 1 late-enters into the call. Keep call going
5. While Radio 6 is still keyed up, free up a channel on Site 3 by unkeying radio 6.
Verify that the call gets routed to Site3 and that Radio 5 late-enters into the call.

Confirmed Call Cont.

Results		(Pass/Fail)	<u> </u>
Tester:	<u> MM </u>	Date:	<u>6/21/2021</u>
Comments:	<u> waived </u>		

Test #	Page #	Action/Issue
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This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. On the left side, there is a vertical margin line, creating a narrow left margin. The paper appears to be from a notebook or a standard ruled sheet of paper.

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. On the left side, there is a vertical margin line, creating a narrow left margin. The paper appears to be from a notebook or a standard ruled sheet of paper.

REVISION 6 CHANGES

<u>Test #</u>	<u>Notes</u>
2.1.1	Removed invalid test and added new SR10A.4 System release test
2.1.2	Removed invalid test and added new SR10A.4 System release test (this caused the test numbering in Section 2.1 UAS to increment by one)
2.1.5	Test updated for radio vanish case. Changes are highlighted in Red. (This was previously test 2.1.4)
2.4.14	Group Scan test updated to create demand on Radio 1 site.
2.4.15	Priority Scan test updated to include selected TG to take P1 Priority
2.4.21	Confirmed Call test updated to enable "Confirmed TX" parameter on the radio personality.
5.4	Bluewing Test on Confirmed call also updated for "Confirmed TX" parameter to be enabled.
2.5	Transcoder Test updated to reflect region 62 u1XCDA and u1XCDA
2.6.1	Phase 1 site Call on Phase 2 System
2.7.4	Changed System Wide Call (All Call & Announcements) to Region Wide
2.0	Bluewing Test - High Availability Premier Core Failure – Functional, Fault Test to include radios in Region 60.
4.	Bluewing Test - Regional HA Connect Core Server Failure – Functional, Fault Test. Corrected for expected results.

REVISION 7 CHANGES

<u>Test #</u>	<u>Notes</u>
N/A	Updated entire document for numbering consistency and updated TOC.
9.0	Updated Bluewing Section to 9.0 numbering
9.3	Updated the test to align with the second test scenario - Repeater 1 and 3 Fail - Control Channel and Backup Control Channel
-	Removed Test "High Availability Connect Core Failure – Functional, Fault Tests" since the current 9.9 section captures the same test.
-	Page 109, Section 9.10 descriptions updated to match the original tests
2.2	Updated for non-halo sites
2.4.5	Updated test setup requirement
9.10.4	Updated test setup requirement

REVISION 8 CHANGES

Page 100/132 – Removed reference to "0" per DDR comment.

Page 100/132, Updated the term "Major" to "Critical" in the definition – "If the two minor failures are of the same functionality, with the same root cause, the system will be considered to have experienced a Critical failure."

Page 102/132, 60-Day Operational Verification Plan Section reference corrected to 5.2 through 5.8. Referenced document DCN 59-2005 for detailed system failure definitions and test procedures.

Updated RNM references to correct region and site numbers.