MPSCS Siren Weather Alert Controller Board Acceptance Test Script

05/09/2022
Revision 1

Table of Contents

1: Test Information

General Test Information

Tester/s Name   Tobechi Ogbonna

Test Talkgroups Used   PGTST1 & PGTST2

Test Start Date   05-09-2022

Test End Date   06-01-2022

Siren Weather Alert Controller Board Information

Board Manufacturer   Prism-IPX

Board Model   1.00

Firmware Version   V0.12.00

Board Serial Number

MPSCS Radio Information

Radio Manufacturer   Motorola

Radio Model/s   MCC-7500

Radio Serial Number   1001697-Lab

Notes:

2: Informational Tests

The following items are for information only and do not have an MPSCS requirement.

Talkgroup Capacity	
Number of Display Characters	NA
700 MHz Capable	YES
Multi-Trunked System Capable	YES
Site Preference Setting Capable	YES
P25 Conventional (digital) TX and RX	NA
Encryption of Voice – AES Capable	NA
Encryption of Voice - DES-OFB Capable	NA
Encryption of Voice - Proprietary/Other Capable	NA

Notes:

The SIREN WEATHER ALERT CONTROLLER BOARD does not have a display

3: Siren Weather Alert Controller Board Specification Verification

The following tests are to verify and document technical specifications of the Siren Weather Alert Controller Board.

3.1   Specification Verification

The purpose of this section is to verify that the basic specifications of the Siren Weather Alert Controller Board are reasonable before other testing is performed. Each of the following specifications should be obtained from the manufacturer's documentation and recorded below. The tester should then confirm that these values are reasonable and comparable to other previously accepted radios.

Receiver Sensitivity   Not Tested

Notes:

Do not have the equipment and procedure from the Manufacture to test the Receiver Sensitivity. No technical documentation has provided on the basic specification of the Siren Weather Alert Controller Board

4: Tests Required by MPSCS for Siren Weather Alert Controller Board Acceptance

The following tests are required for SIREN WEATHER ALERT CONTROLLER BOARD on the MPSCS.

4.1 Talkgroup Activation on Multicast Site

Test Description

This test demonstrates a Talkgroup call initiation on multicast (non-simulcast) site will activate SIREN WEATHER ALERT CONTROLLER BOARD.

Test Setup

TEST SIREN WEATHER ALERT CONTROLLER BOARD – Test Talkgroup

DISPATCH CONSOLE – Test Talkgroup

Test Procedure

Step 1.   Ensure that the multicast site for this test is included in the critical sites assigned for the Test Talkgroup via Talkgroup Access Profile. This is accomplished using the radio system Provisioning Manager (PM).

Step 2.   Ensure the Test Talkgroup and multiscast site are properly programmed into the TEST SIREN WEATHER ALERT CONTROLLER BOARD using the appropriate software for the programing.

Step 3.   On MPSCS DISPATCH CONSOLE, click on the Test Talkgroup to initiate a talkgroup call.

Step 4.   Verify that the TEST SIREN WEATHER ALERT CONTROLLER BOARD is activated by observing the clicking of the relays on the TEST SIREN WEATHER ALERT CONTROLLER BOARD

Pass __X___ **Fail** _____

Initial _TO_____ **Date** _05-9-2022_____

Notes:

4.2 Talkgroup Activation on Simulcast Site

Test Description

This test demonstrate a Talkgroup call initiation on simulcast will activate Siren Weather Alert Controller Board.

Test Setup

TEST SIREN WEATHER ALERT CONTROLLER BOARD – Test Talkgroup

DISPATCH CONSOLE – Test Talkgroup

Test Procedure

Step 1.   Ensure that the simulcast site for this test is included in the critical sites assigned for the Test Talkgroup via Talkgroup Access Profile. This is accomplished using the radio system Provisioning Manager (PM).

Step 2.   Ensure the Test Talkgroup and simulcast are properly programmed into the TEST SIREN WEATHER ALERT CONTROLLER BOARD using the appropriate software for the programing.

Step 3.   On MPSCS DISPATCH CONSOLE, click on the Test Talkgroup to initiate a talkgroup call.

Step 4.   Verify that the TEST SIREN WEATHER ALERT CONTROLLER BOARD is activated by observing the clicking of the relays on the TEST SIREN WEATHER ALERT CONTROLLER BOARD

Pass__X____ Fail_____

Initials_TO_____ Date_05-9-2022_____

Notes:

4.3   System Roaming/Switching Operation

Test Description

The Siren Weather Alert Controller Board is intended to be in a fixed location and therefore cannot roam from site to sites like the mobile and portable radios or the pagers. There are situations where the Siren Weather Alert Controller Board will be surrounded by multiples sites in its fixed location. Therefore, the possibility for the Siren Weather Alert Controller Board to switch from one site to another to remain in a wide area trunking when the initial site it is on goes to a site-off state. This scenario requires that the Siren Weather Alert Controller Board is surrounded by at least a minimum of two sites, and it is programmed to be (receive and decode the controller channel) on any of the site. This test demonstrates the Siren Weather Alert Controller Board switches from one site to another in the situation of site-off.

Test Setup

TEST SIREN WEATHER ALERT CONTROLLER BOARD – Test Talkgroup

MPSCS DISPATCH CONSOLE – Test Talkgroup

Test Procedure

Step 1.   Ensure the TEST SIREN WEATHER ALERT CONTROLLER BOARD is programmed with the required information that allows it to be on (receive and decode the controller channel) the Lab site or 1102

Step 2.   Ensure the sites for this test are included in the critical site assigned to the Test Talkgroup via Talkgroup Access Profile. This is accomplished using the radio system Provisioning Manager (PM).

Step 3.   Verify and ensure the TEST SIREN WEATHER ALERT CONTROLLER BOARD is on Lab site (listening to Lab Site controller channel and not 1102) using the appropriate software.

Step 4.   On MPSCS DISPATCH CONSOLE, click on the Test Talkgroup to initiate talkgroup call.

Step 5.   Verify that the TEST SIREN WEATHER ALERT CONTROLLER BOARD was activated by observing the clicking of the relays on the TEST SIREN WEATHER ALERT CONTROLLER BOARD.

Step 6.   Put the Lab site into site off mode. This can be accomplished through NCC or using the CSS software.

Step 7.   Repeat Step 4 and 5.

Pass__ X __ Fail_____

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Notes:

When the Siren Weather Alert Controller Board switches to another site due to site-off situation and the site on site-off returns to wide area, it does not switch back to it even when the site has the optimal RSL. It sticks to its current

site if the site does not have the optimal RSL. The only way to force it back to the initial site is by totally shutting it down and restarting it. **The vendor needs to improve its algorithm for site switching so that the site with the optimal RSL should be selected**. **This test situation does not apply to site trunking. When a site goes to a site trunking, it does not switch to another site. It remains on the site that is on site trunking even as it is programmed with other sites that are wide area trunking.**

4.4   Site Trunking Operation

Test Description

If a site goes into a site trunking, the site loses its link to the radio system and therefore, will not repeat any wide area talkgroup call. This implies, if the siren weather alert controller board is on a site in site trunking, it will receive talkgroup call initiated directly from the site and not through the network. This test demonstrates talkgroup call initiated from a site trunking site will activate the Siren Weather Alert Controller Board

Test Setup

TEST SIREN WEATHER ALERT CONTROLLER BOARD – Test Talkgroup

MPSCS RADIO – Test Talkgroup

MPSCS DISPATCH CONSOLE - Test Talkgroup

Test Procedure

Step 1.   Ensure the lab site is included in the critical site list of the Test Talkgroup Access Profile. This can be accomplished through PM

Step 2.   Ensure the TEST SIREN WEATHER ALERT CONTROLLER BOARD is programed with the required information for the Test Talkgroup and the Lab site.

Step 3.   Ensure the TEST SIREN WEATHER ALERT CONTROLLER BOARD is on the Lab site and MPSCS RADIO is on different site that is a critical site assigned to the Test Talkgroup.

Step 4.   Place the Lab site into a Site Trunking condition. This can be done through the NCC or pulling out the site link cable from the site router, or a laptop with the CSS software.

Step 5.   On MPSCS DISPATCH CONSOLE, initiate talk group call on the Test Talkgroup.

Step 6.   Observe the MPSCS RADIO received the call and TEST SIREN WEATHER ALERT CONTROLLER BOARD was not activated.

Step 7.   Remove the MPSCS RADIO antenna and force it to the Lab Site. Lock the MPSCS RADIO on the Lab site lock if it is site lock capable.

Step 8.   Initiate a Talkgroup Call with MSPSCS RADIO on Test Talkgroup.

Step 9.   Verify that the TEST SIREN WEATHER ALERT CONTROLLER BOARD was activated by observing the clicking of the relays on the TEST SIREN WEATHER ALERT CONTROLLER BOARD.

Pass X Fail_____

Initials TO   **Date** 05-09-2022

Notes:

The Siren Weather Alert Controller Board cannot differentiate between the wide area and site trunking. Both states seem the same to it and therefore, the reason why it cannot switch from a site trunking site to a wide area site when multiple sites are programmed into it. A site in a wide area trunking is preferred to a site on a site trunking. In site trunking, the site loses its connection to the wide area network. If the Siren Weather Alert Controller Board is on the site that is on site trunking, it cannot be activated directly from the network but through a talkgroup call initiated from mobile, portable or consolette that is affiliated to the site that is on a site trunking. Currently, the Siren Weather Alert Controller Board is designed to remain on the site when the site goes into site trunking. The situation of a site trunking when the Controller Board is programmed with a single site can be easily worked into and handled by the Dispatch Storm Plan. Since the Siren Weather Alert Controller Board is programmed with a particular site, it has no other site to switch. When the site goes into site trunking and the Siren Weather Alert Controller Board has to be activated during this time, the Dispatch have no option but to implement its Storm Plan for site trunking scenario to activate it. **When multiple sites are programmed into the Siren Weather Alert Controller Board, implementing the Dispatch Storm Plan for site trunking scenario to activate the Siren Weather Alert Controller Board will be a bit challenging and confusing. When the Dispatch wants to activate it and one of the sites programmed into it is on site trunking, Dispatch has to figure out if it is on the site that is on site trunking or not (remember that site-off forces the Siren Weather Alert Controller Board to switch from one site to another and does not return back to its initial site unless through another site-off or restarting it). This action is necessary and has to be performed for the Dispatch to determine if the Storm Plan for site trunking scenario has to be activated and implemented. This, therefore, adds complexity and headache to the Dispatch. This entails that the Dispatch shall have a reporting system that informs the Dispatch what site the Siren Weather Alert Controller Board is on. It is of my opinion that this situation forces the needs to implement wide area trunking preference when multiple sites are involved**.

4.6   Control Channel List

Test Description

Unlike the mobile and portable radios or the pagers that uses three different methods to find a valid control channels on the MPSCS – Adjacent site list transmitted by the system, Control Channel list programed into the radios and pagers and Full Spectrum Scan performed by the radios and pagers, The Siren Weather Alert Controller Board uses the control channel list programmed into it. This test verifies The Siren Weather Alert Controller Board is able to find a valid control channel via the preprogrammed list of frequencies.

Test Setup

TEST SIREN WEATHER ALERT CONTROLLER BOARD – Test Talkgroup

MPSCS RADIO/DISPATCH CONSOLE – Test Talkgroup

Test Procedure

Step 1.   On TEST SIREN WEATHER ALERT CONTROLLER BOARD using the appropriate software, program it with valid control channel frequencies of the critical site assigned to the Test Talkgroup.

Step 2.   Once the TEST SIREN WEATHER ALERT CONTROLLER BOARD is full booted up, verifies the TEST SIREN WEATHER ALERT CONTROLLER BOARD is on or receiving on the desired site

Step 3.   On MPSCS DISPATCH CONSOLE, initiate a talk group call on the Test Talkgroup

Step 4.   Verify that the TEST SIREN WEATHER ALERT CONTROLLER BOARD was activated by observing the clicking of the relays on the SIREN WEATHER ALERT CONTROLLER BOARD.

Pass X   **Fail**

Initials TO   **Date** 05-09-2022

Notes:

5: MPSCS Optional/Informational Radio Acceptance Tests

The following tests are not required for Siren Weather Alert Controller Board acceptance on the MPSCS but need to be performed for documentation and informational reasons.

5.1   Multi-Select Talkgroup Activation

Test Description

This test demonstrates multi-select Talkgroup feature will activate SIREN WEATHER ALERT CONTROLLER BOARD. This test can be performed on a multicast or simulcast.

Test Setup

SIREN WEATHER ALERT CONTROLLER BOARD – Test Talkgroup 1

DISPATCH CONSOLE – Test Talkgroup 1 and Test Talkgroup 2

Test Procedure

Step 1. Ensure the site for the test is included in the critical sites assigned to Test Talkgroup 1 and Test Talkgroup 2 via Talkgroup Access Profile. Both talkgroup may have the same or different critical site. This is accomplished using the radio system Provisioning Manager (PM).

Step 2. On the SIREN WEATHER ALERT CONTROLLER BOARD, program it with the information for Test Talkgroup 1. Ensure and verify with the appropriate software that the SIREN WEATHER ALERT CONTROLLER BOARD is (listening) on the site assigned as a critical site to Test Talkgroup 1.

Step 3. On MPSCS DISPATCH CONSOLE, initiate a multi-select on Test Talkgroup 1 and Test Talkgroup 2.

Step 4. Verify that the SIREN WEATHER ALERT CONTROLLER BOARD is activated by observing the clicking of the relays on the SIREN WEATHER ALERT CONTROLLER BOARD.

Step 5. Reprogram the SIREN WEATHER ALERT CONTROLLER BOARD with the information for Test Talkgroup 2. Ensure and very with the appropriate software that the SIREN WEATHER ALERT CONTROLLER BOARD is (listening) on the site assigned as a critical site to Test Talkgroup 2.

Step 6. Repeat Steps 3 and 4.

Pass_____ Fail_____

Initials_____   Date_____

Notes:
The current firmware version for the ATP does not support this feature.

5.2   Full Spectrum Scan

Test Description

Site retuning, frequency rearrangement, reshuffling or replacement on a site can change the initial control channel frequency to another frequency. This, therefore, invalidate the control channel frequency programmed into the Siren Weather Alert Controller Board. One method of finding a valid control channel for a site apart from the programmed control channel is to perform a spectrum scan. This test verifies the Siren Weather Alert Controller Board is capable of finding a valid control channel via the full spectrum scan.

Test Setup

TEST SIREN WEATHER ALERT CONTROLLER BOARD – Test Talkgroup

MPSCS RADIO/DISPATCH CONSOLE – Test Talkgroup

Test Procedure

Step 1. Ensure the sites for this test are included in the critical site assigned to the Test Talkgroup via Talkgroup Access Profile. This is accomplished using the radio system Provisioning Manager (PM).

Step 2. Ensure that the TEST SIREN WEATHER ALERT CONTROLLER BOARD is capable of full spectrum scan and the option is enabled using the appropriate software. Remove all the control channel frequencies programmed into the TEST SIREN WEATHER ALERT CONTROLLER BOARD. If the programming software requires a control channel to be entered, enter an invalid frequency.

Step 3. Ensure that the TEST SIREN WEATHER ALERT CONTROLLER BOARD is programmed with the accurate required information for the site use for this test except for the control channel frequencies.

Step 4. Reboot the TEST SIREN WEATHER ALERT CONTROLLER BOARD (expects the Board to reboot after the programming).

Step 5. Verify using the appropriate software that the TEST SIREN WEATHER ALERT CONTROLLER BOARD was able to find the control channel for the site use for the test and it is on the site.

Step 6. Using MPSCS DISPATCH CONSOLE/RADIO, initiate talk group call on the Test Talkgroup

Step 7. Verify that the TEST SIREN WEATHER ALERT CONTROLLER BOARD was activated by observing the clicking of the relays on the SIREN WEATHER ALERT CONTROLLER BOARD.

Pass_____ **Fail**_____

Initials__TO___ **Date**_05-09-2020____

Notes:
This test was not performed because it has not been implemented by the vendor. Although, this test is in the optional section, in my opinion, it should be a required feature of the Siren Weather Alert Controller Board. Control channel

frequency change due to Site retuning, frequency rearrangement, reshuffling or replacement does not occur often. MPSCS does not track and announce when a site control channel frequency changes. The radios and pagers on the system can easily recover from this situation since they use three different methods (control channel list, adjacent channel list and full spectrum scan) to find a valid control channel on the system. The Siren Weather Alert Controller Board uses the control channel list but not as extensive as it is done on the radios. It has only the control channel of the sites that is programmed into it. The issue of the control channel frequency change is more relevant especially when the Siren Weather Alert Controller Board is programmed with a single site. **When the site control channel's frequency is changed, the Siren Weather Alert Controller Board goes into limbo as it cannot receive the site's control channel transmission or communication, has no other site to switch and has no other method of recovering or finding the new control channel frequency of the site. This becomes a dire situation for the dispatch. Based on this situation, this forces the need to implement the full spectrum scan for the Siren Weather Alert Controller Board**. This can be implemented along with adjacent site list but will not be of any meaningful help when the Siren Weather Alert Controller Board is programmed with a single site. Adjacent site list implementation should be an option and not a requirement like the full spectrum scan

5.4   Encrypted Talkgroup Activation

Test Description

This test demonstrates the Siren Weather Alert Board will be activated from an encrypted talkgroup initiation.

Test Setup

SIREN WEATHER ALERT CONTROLLER BOARD – Test Encrypted Talkgroup

MPSCS RADIO – Test Encrypted Talkgroup with Encryption Key

Test Procedure

Step 1. Ensure that the site for this test is included in the critical site assigned for the Test Encrypted Talkgroup via Talkgroup Access Profile. This is accomplished using the radio system Provisioning Manager (PM).

Step 2. Ensure the Test Encrypted Talkgroup and the site information are properly programmed into the TEST SIREN WEATHER ALERT CONTROLLER BOARD using the appropriate software for the programing

Step 3. Ensure the TEST SIREN WEATHER ALERT CONTROLLER BOARD is on site assigned as critical site for the Test Encrypted Talkgroup.

Step 4. Disable the encryption on MPSCS RADIO and initiate a talkgroup page from the MPSCS RADIO.

Step 5. Verify that the TEST SIREN WEATHER ALERT CONTROLLER BOARD is activated by observing the clicking of the relays on the TEST SIREN WEATHER ALERT CONTROLLER BOARD.

Step 6. Enable the encryption on MPSCS RADIO and initiate an encrypted talkgroup call.

Step 7. Repeat Step 5.

Pass_____ Fail_____

Initials_____   Date_____

Notes:

This feature was not tested with the current firmware version for the ATP

6: MPSCS New Radio Field Testing

The following section describes the field-testing process.

6.1   Field Test Description

The purpose of the field test is to use the radio in a day-to-day environment to reveal potential issues that are not seen in brief defined tests. The field tester will be required to use good judgment and knowledge to determine how the radio performs from an end user perspective. The field tester will document these findings in the following form.

The field tester is required to use the radio in a variety of radio environments for a minimum of five working days that require regular use of the radio. Environments may include but are not limited to multicast and simulcast, intra and inter-zone, radio to dispatch and vice versa, in-building, interference intense areas, etc. The field tester is encouraged to take extensive notes detailing the radios behavior during this time. This will help track down any issues the radio may have and assist in filling out the required documentation.

Before starting the testing, the field tester is required to read through the following form so as to understand the desired information purpose of the test. Once the field testing is complete, the form should be completed and submitted to the project lead

6.2   Field Test 1

Name: Tobechi Ogbonna   **Date:**   05-09-2022

Description:

No Field Test was conducted for the Siren Weather Alert Controller Board. Only bench test was conducted on the Board.

Notes/Test Results:

7: Additional Notes and Tests

This section is for documenting any additional notes and/or tests for the Siren Weather Alert Controller Board

Name: Tobechi Ogbonna   **Date:** 05-09-2022

Description:

Required recommendation for future enhancements:

- **Need to improve site switching algorithm of the Siren Weather Alert Controller Board to switch to or prefer the site with the optimal RSL instead of sticking to a site without the optimal RSL where multiple sites are programmed into the Board.   .**

- **Need to implement wide area site preference. This is to avoid the situation where the Siren Weather Alert Controller Board is stuck on a site that is on site trunking when it can to switch to other wide area sites that are programmed into it.**

- **Need to implement full spectrum scan to counteract the impact of control channel frequency change. This can be implemented along with adjacent site list. Adjacent site list considered as an option not requirement.**

- **Need to add a display to the Siren Weather Alert Controller Board. This necessary to provide status information and for debugging and troubleshooting. This not necessary a requirement but an enhancement for the product**

Notes/Test Results:

Additional Note and Test

8: Test Summary

Tests Required by MPSCS for the Siren Weather Alert Controller Board Acceptance			
		Pass	**Fail**
4.1	Talkgroup Activation on Multicast Site	X	
4.2	Talkgroup Activation on Multicast Site	X	
4.3	System Roaming/Switching Operation	X	
4.4	Site Trunking Site Trunking Operation	X	
4.5	Control Channel List	X	

MPSCS Optional/Informational Siren Weather Alert Controller Board Acceptance Tests			
		Pass	**Fail**
5.1	Multi-Select Talkgroup Activation	NA	
5.2	Full Spectrum Scan	NA	
5.5	Encrypted Talkgroup Activation	NA	