

**Project 25 Compliance Assessment Program**  
**SDOC - Motorola Solutions Inc. - APX 4500, APX 4500BN**  
**October 22, 2019**

**SUBSCRIBER PRODUCT INFORMATION**

<b>Subscriber Info</b>	<b>Detail</b>
Model Name:	APX 4500, APX 4500BN
Tested Software Versions:	R19.20.00
Hardware Capabilities/Options & Software Options:	Full Display; VHF (136-174MHz); UHF-R1 (380-470MHz); UHF-R2 (450-520MHz); 700MHz (764-776, 794-806 MHz); 800MHz (806-824, 851-870 MHz); 900MHz (896-902, 935-941 MHz) P25 Conventional, P25 Trunking, P25 TDMA Trunking, AES-256 Encryption

Test case results and updated software versions for this model can be found in the Summary Test Report identified below.

**TEST REQUIREMENTS CAB IDENTIFICATION**

This product was tested according to the P25 CAP Test Requirements Compliance Assessment Bulletin (CAB) indicated by the checked box.

<b>check one</b>	<b>P25 CAP Test Requirement CAB</b>	<b>Details</b>
	<b>P25-CAB-CAI_TEST_REQ – July 2017</b>	Includes August 2016 P25 CAP Test Requirements; Adds TDMA performance and interoperability testing and trunked supplementary data testing
✓	<b>P25-CAB-CAI_TEST_REQ - October 2018</b>	Includes all July 2017 P25 CAP Test Requirements; Adds minor updates to conventional interoperability testing due to TIA standard update

**SUMMARY TEST REPORT IDENTIFIER<sup>1</sup>**

Summary Test Report (STR) Identifier:	STR - Motorola Solutions - SUBSCRIBER
---------------------------------------	---------------------------------------

**CONTACT INFORMATION**

<b>Vendor Info</b>	<b>Details</b>
Vendor Name:	Motorola Solutions Inc.
Vendor Website URL:	<a href="http://www.motorolasolutions.com">www.motorolasolutions.com</a>
P25 CAP Contact Name:	Olga Derasmo
P25 CAP Contact Phone:	(954) 723-4054
P25 CAP Contact Email:	<a href="mailto:olgaderasmo@motorolasolutions.com">olgaderasmo@motorolasolutions.com</a>

<sup>1</sup> The Summary Test Report for this product is available upon request. Please send your STR request to [P25CAP@hq.dhs.gov](mailto:P25CAP@hq.dhs.gov) and please include the subscriber 'Motorola Solutions'.

**Project 25 Compliance Assessment Program**  
**SDOC - Motorola Solutions Inc. - APX 4500, APX 4500BN**  
**October 22, 2019**

**ENCRYPTION STATEMENT**

This product complies with the P25 CAP Encryption Requirements CAB (P25-CAB-ENC\_REQ). The checked box indicates how the product was tested.

✓	Tested with the AES 256 encryption algorithm and shall be available with AES 256 encryption at a minimum or without any encryption of any type.
	Tested without the AES 256 encryption algorithm and shall only be available without any encryption of any type.

**CONVENTIONAL PERFORMANCE**

The Subscriber product has been tested for Conventional Performance. All requirements were passed except for those requirements identified below under Unsupported or Failed Requirements.

P25 CAP Conventional Performance Testing Coverage

Receiver Tests: Reference Sensitivity, Faded Reference Sensitivity, Signal Delay Spread Capability, Adjacent Channel Rejection, Offset Adjacent Channel Rejection, Co-Channel Rejection, Spurious Response Rejection, Intermodulation Rejection, Signal Displacement Bandwidth, Late Entry Unsilence Delay, and Receiver Throughput Delay.

Transmitter Tests: Unwanted Emissions (Adjacent Channel Power Ratio), Transmitter Power and Encoder Attack Time, Transmitter Throughput Delay, Frequency Deviation for C4FM, and Modulation Fidelity, Transient Frequency Behavior.

Unsupported or Failed Requirements

1. None

**TRUNKING PERFORMANCE - FDMA**

The Subscriber product has been tested for Trunking Performance - FDMA. All requirements were passed except for those requirements identified below under Unsupported or Failed Requirements.

P25 CAP FDMA Trunking Performance Testing Coverage

Receiver Tests: Reference Sensitivity, Faded Reference Sensitivity, Signal Delay Spread Capability, Adjacent Channel Rejection, Offset Adjacent Channel Rejection, Co-Channel Rejection, Spurious Response Rejection, Intermodulation Rejection, and Signal Displacement Bandwidth.

Transmitter Tests: Unwanted Emissions (Adjacent Channel Power Ratio), Power Attack time, Encoder Attack Time, Transmitter Throughput Delay, Frequency Deviation for C4FM, and Modulation Fidelity, Transient Frequency Behavior.

Trunked Tests: Trunking Control Channel Slot Times, Trunking Request Time, and Transmitter Time to Key on a Traffic Channel.

Unsupported or Failed Requirements

1. None

**Project 25 Compliance Assessment Program**  
**SDOC - Motorola Solutions Inc. - APX 4500, APX 4500BN**  
**October 22, 2019**

**TRUNKING PERFORMANCE - TDMA**

The Subscriber product has been tested for Trunking Performance - TDMA. All requirements were passed except for those requirements identified below under Unsupported or Failed Requirements.

**P25 CAP TDMA Trunking Performance Testing Coverage**

**Receiver Tests:** Reference Sensitivity, Faded Reference Sensitivity, Signal Delay Spread Capability, Adjacent Channel Rejection, Offset Adjacent Channel Rejection, Co-Channel Rejection, Spurious Response Rejection, Intermodulation Rejection, and Signal Displacement Bandwidth.

**Transmitter Tests:** Unwanted Emissions (Adjacent Channel Power Ratio), Frequency Deviation for H-CPM, Modulation Fidelity, Symbol Rate Accuracy, H-CPM Logical Channel Power measurements, and H-CPM Channel Time Alignment.

**Unsupported or Failed Requirements**

1. None

**CONVENTIONAL DIRECT MODE INTEROPERABILITY**

The Subscriber product has been tested for Conventional Direct Mode Interoperability. All test cases were passed except for those test cases identified below under Unsupported or Failed Test Cases. Test cases that passed but require specific, sometimes optional, product capabilities are also identified below.

**P25 CAP Direct Mode Interoperability Testing Coverage**

Network Access Code (NAC) Operation, Group Voice Call, Emergency Call, Unit-to-Unit Voice Call, Encryption, Call Alert, Radio Check, Message Update, Status Update, Status Query, and Radio Unit Monitor.

**Unsupported or Failed Test Cases**

1. Radio Check (Test Cases 2.3.2.4.1, 2.3.2.4.2), Message Update (2.3.3.4.1, 2.3.3.4.2), Status Update (2.3.4.4.1, 2.3.4.4.2), Status Query (2.3.5.3.1, 2.3.5.3.2), Radio Unit Monitor (2.3.6.4.1, 2.3.6.4.2, 2.3.6.4.3, 2.3.6.4.4) are unsupported.

**Optional Product Capabilities Required to Pass Test Cases**

1. In order to pass the Unit-to-Unit Voice Call and Call Alert test cases, a subscriber with DTMF keypad and ID display capability is required.

**CONVENTIONAL REPEAT MODE INTEROPERABILITY**

The Subscriber product has been tested for Conventional Repeat Mode Interoperability. All test cases were passed except for those test cases identified below under Unsupported or Failed Test Cases. Test cases that passed but require specific, sometimes optional, product capabilities are also identified below.

**Project 25 Compliance Assessment Program**  
**SDOC - Motorola Solutions Inc. - APX 4500, APX 4500BN**  
**October 22, 2019**

P25 CAP Repeat Mode Interoperability Testing Coverage

Network Access Code (NAC) Operation, Group Voice Call, Emergency Call, Unit-to-Unit Voice Call, Encryption, Call Alert, Radio Check, Message Update, Status Update, Status Query, and Radio Unit Monitor.

Unsupported or Failed Test Cases

1. Radio Check (Test Case 2.5.2.4.1), Message Update (2.5.3.4.1, 2.5.3.4.3), Status Update (2.5.4.4.1, 2.5.4.4.3), Status Query (2.5.5.4.1), Radio Unit Monitor (2.5.6.4.1, 2.5.6.4.3) are unsupported.

Optional Product Capabilities Required to Pass Test Cases

1. In order to pass the Unit-to-Unit Voice Call and Call Alert test cases, a subscriber with DTMF keypad and ID display capability is required.

**CONVENTIONAL REPEAT MODE with DISPATCH MONITORING CONSOLE INTEROPERABILITY**

The Subscriber product has been tested for Conventional Repeat Mode with Dispatch Monitoring Console Interoperability. All test cases were passed except for those test cases identified below under Unsupported or Failed Test Cases. Test cases that passed but require specific, sometimes optional, product capabilities are also identified below.

P25 CAP Repeat Mode Interoperability Testing Coverage

Group Voice Call, Emergency Call, All Call, Unit-to-Unit Voice Call, Encryption, Emergency Alarm, Call Alert, Radio Check, Radio Unit Inhibit/Uninhibit, Message Update, Status Update, Status Query, and Radio Unit Monitor.

Unsupported or Failed Test Cases

1. Message Update (Test Cases 2.7.6.4.1, 2.7.6.4.2, 2.7.6.4.3), Status Update (2.7.7.4.1), Radio Unit Monitor (2.7.9.4.2) are unsupported.

Optional Product Capabilities Required to Pass Test Cases

1. In order to pass the Unit-to-Unit Voice Call, Call Alert and Status Update test case (2.7.7.4.2), a subscriber with DTMF keypad and ID display capability is required.

**TRUNKED SUBSCRIBER UNIT INTEROPERABILITY – FDMA**

The Subscriber product has been tested for Trunked Interoperability - FDMA. All test cases were passed except for those test cases identified below under Unsupported or Failed Test Cases. Test cases that passed but require specific, sometimes optional, product capabilities are also identified below.

P25 CAP FDMA Trunked Interoperability Testing Coverage

Full Registration, Group Voice Call, Unit to Unit Voice Call, Broadcast Voice Call, Affiliation, Announcement Group Call, Emergency Alarm, Emergency Group Call, Encryption, Intra-Location Registration Area Roaming, Deregistration, System Call, Call Alert, Short Message, Status Query, Status Update, Radio Unit Monitoring, Radio Unit Disable/Re-Enable, and Radio Check.

**Project 25 Compliance Assessment Program**  
**SDOC - Motorola Solutions Inc. - APX 4500, APX 4500BN**  
**October 22, 2019**

Unsupported or Failed Test Cases

1. Short Message (Test Case 2.2.16.4.1), Radio Unit Monitor Individual Silent/Non-Silent (2.2.19.4.1, 2.2.19.4.2), unit-to-unit calls for Inter-WACN roaming and Radio Unit Monitor Group (2.2.19.4.3, 2.2.19.4.4) for Inter-System and Inter-WACN, Unit-to-Unit Call Queued with Target Availability Check – Traffic Channel Assignment Before Target Availability Check (test case 2.2.3.4.4) are unsupported.

Optional Product Capabilities Required to Pass Test Cases

1. In order to pass the Unit-to-Unit Voice Call, Call Alert and Status Update test cases, a subscriber with DTMF keypad and ID display capability is required.

**TRUNKED SUBSCRIBER UNIT INTEROPERABILITY – TDMA**

The Subscriber product has been tested for Trunked Interoperability - TDMA. All test cases were passed except for those test cases identified below under Unsupported or Failed Test Cases. Test cases that passed but require specific, sometimes optional, product capabilities are also identified below.

P25 CAP TDMA Trunked Interoperability Testing Coverage

Registration, Group Voice Call, Unit-to-Unit Voice Call, Broadcast Call, Announcement Group Call, Emergency Group Call, Encryption Group Call, System Call, Radio Unit Monitoring, and Transmitting Subscriber Forced Preemption.

Unsupported or Failed Test Cases

1. Short Message, Radio Unit Monitor Individual (Test Cases 2.2.19.4.1, 2.2.19.4.2), Radio Unit Monitor Group (2.2.19.4.3, 2.2.19.4.4) Inter-WACN, SU Forced Audio Preemption (Test Case 2.2.26.4.1), Unit-to-Unit Test Cases 4, 5, 6, System Call for Inter-System and Inter-WACN, Unit-to-Unit Call Queued with Target Availability Check – Traffic Channel Assignment Before Target Availability Check (test case 2.2.3.4.4) are unsupported.

Optional Product Capabilities Required to Pass Test Cases

1. In order to pass the Unit-to-Unit Voice Call, Call Alert and Status Update test cases, a subscriber with DTMF keypad and ID display capability is required.

**Project 25 Compliance Assessment Program  
SDOC - Motorola Solutions Inc. - APX 4500, APX 4500BN  
October 22, 2019**

**SIGNATURE AND DATE**

10/22/2019 Olga Derasmo  
Date Signed Vendor's Authorized Representative Signature

Olga Derasmo  
Vendor's Authorized Representative Printed Name

**DISCLAIMER**

The information contained herein has been provided by the supplier of the product with permission to make the information publicly available. The U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T) is making this information available as a public service; however, DHS S&T IS PROVIDING THE INFORMATION "AS IS." DHS S&T MAKES NO EXPRESS OR IMPLIED WARRANTIES AND SPECIFICALLY, DHS S&T MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, REGARDING THE ACCURACY OR USE OF THIS INFORMATION. Reference to any specific commercial products, processes or services by trade name, trademark, supplier, or otherwise does not constitute an endorsement by or a recommendation from DHS S&T.