

Project 25 Compliance Assessment Program
SDOC - Motorola Solutions Inc. - APX 4000, APX 4000XE, APX 4000Li
November 30, 2022

SUBSCRIBER PRODUCT INFORMATION

Subscriber Info	Detail
Model Name:	APX 4000, APX 4000XE, APX 4000Li
Tested Software Versions:	R23.05.00
Hardware Capabilities/Options & Software Options:	Full Touch Display; Full Touch Display Keypad; VHF (136-174MHz); UHF-R1 (380-470MHz); UHF-R2 (450-520MHz); 700MHz (762-776, 792-806 MHz); 800MHz (806-825, 851-870 MHz); P25 Conventional, P25 Trunked, P25 TDMA Trunked, 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.

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

SUMMARY TEST REPORT IDENTIFIER¹

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

CONTACT INFORMATION

Vendor Info	Details
Vendor Name:	Motorola Solutions Inc.
Vendor Website URL:	www.motorolasolutions.com
P25 CAP Contact Name:	Matt Rumpfeldt
P25 CAP Contact Phone:	(954) 723-4328
P25 CAP Contact Email:	m.rumpfeldt@motorolasolutions.com

¹ The Summary Test Report for this product is available upon request. Please send your STR request to P25CAP@hq.dhs.gov and please include the subscriber 'Motorola Solutions'.

Project 25 Compliance Assessment Program
SDOC - Motorola Solutions Inc. - APX 4000, APX 4000XE, APX 4000Li
November 30, 2022

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.

<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	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 Unsquench 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 4000, APX 4000XE, APX 4000Li
November 30, 2022

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 4000, APX 4000XE, APX 4000Li
November 30, 2022

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 with Dispatch Monitoring Console 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 4000, APX 4000XE, APX 4000Li
November 30, 2022

Unsupported or Failed Test Cases

1. Short Message (Test Case 2.2.16.4.1), Status Query (Test Case 2.2.17.4.1), 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. 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 4000, APX 4000XE, APX 4000Li
November 30, 2022

SIGNATURE AND DATE

<u>11-30-2022</u>	
Date Signed	Vendor's Authorized Representative <u>Signature</u>
	<u>Matt Rumpfeldt</u>
	Vendor's Authorized Representative <u>Printed Name</u>

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.

DHS Privacy Notice - P25 Compliance Assessment Program (CAP)

Authority: The information requested is collected under 6 U.S.C. §§194, 195,195a and 44 U.S.C. 3101

Purpose: The Department of Homeland Security (DHS) is requesting this information from you as a designated point of contact for a vendor/supplier participating in DHS' P25 Compliance Assessment Program (CAP). P25 CAP provides public safety agencies with evidence that equipment they purchase is tested against and compliant with standards for performance, conformance, and interoperability. The contact information provided to DHS will be used by DHS to contact the vendor/supplier. The information will also be placed on the P25 CAP website as part of an equipment vendor/supplier's profile and will be available to public safety agencies and others who view that profile.

Disclosure: Furnishing point-of-contact information and participating in P25 CAP is voluntary. However, failure to provide point of contact information may be the basis for denying a vendor/supplier participation in P25 CAP.

Routine Uses: The information will be used by and disclosed to S&T personnel for the purpose stated above. DHS follows approved routine uses described in the associated published system of records notice [DHS/ALL-002 Department of Homeland Security (DHS) Mailing and Other Lists System] and the published privacy impact assessment [DHS/ALL/PIA-006 DHS General Contact Lists], which you can find at www.dhs.gov/privacy.