

**Project 25 Compliance Assessment Program**  
**SDOC - Motorola Solutions Inc. - APX 4000**  
**December 7, 2020**

**SUBSCRIBER PRODUCT INFORMATION**

<b>Subscriber Info</b>	<b>Detail</b>
Model Name:	APX 4000
Tested Software Versions:	R21.60.00
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.

<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
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**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:	Matt Rumpfeldt
P25 CAP Contact Phone:	(954) 723-4328
P25 CAP Contact Email:	<a href="mailto:m.rumpfeldt@motorolasolutions.com">m.rumpfeldt@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'.

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**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 Unsquellch 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

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**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.

**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.

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**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.

**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.

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**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.

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**SIGNATURE AND DATE**

\_\_\_\_\_12-07-2020\_\_\_\_\_

Date Signed

*m. Rumpfeldt*

Vendor's Authorized Representative Signature

\_\_\_\_\_Matt Rumpfeldt\_\_\_\_\_

Vendor's Authorized Representative Printed Name

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