

Anritsu Advancing beyond

Auto Test and Alignment System

For Motorola P25 APX 6000, 6500, 7000, 8000, 8500 and NEXT Radios



Auto Test and Alignment System for Motorola P25 Radios Using the Anritsu S412E LMR Master™



First responders including fire, ambulance and police are reliant on their personal radios for uninterrupted communications between their teams and for coordination with supporting services. The communications technology of choice in The Americas is the TIA Project 25, also known as P25 or APCO-25. Maintaining the network and radios at peak performance is critical to reliable communications. Regular testing and tuning of the subscriber radios including vehicle mounted units and mobiles is a standard part of most first responders resilience program.

Testing can be part of a planned service program that tests and recalibrates radios on a defined time interval, or can be based on reports of poor call quality. The critical RF parametric measurements of frequency, power, modulation accuracy and receiver Bit Error Rate (BER) define the overall performance of the radio. Radio manufacturers define strict performance criteria for these specification that ensure reliable communications. These parameters can be validated manually with standard RF test instruments but this is a very slow and labor intensive process. Should the radio fail to meet published specifications, a manual testing process does not allow for realignment and calibration.

In partnership with Motorola, Anritsu has developed a fully automated solution for alignment and testing Motorola P25 radios in the APX 6000, 6500, 7000, 8000, 8500, and NEXT radios. The Auto Test and Alignment System includes all the elements necessary for full radio alignment and test. The output is a documented report that shows pass/fail status and measured values including deviation from optimum performance. When a planned service policy is in place, the full service and performance history of each radio is maintained allowing early insight into radios with performance issues.

The Auto Test and Alignment System



The Anritsu Auto Test and Alignment System

The Auto Test and Alignment System Comprises the Following:

- S412E LMR Master (with P25 options and firmware V4.72 or later)
- MX281000A Auto Test and Alignment Software
- MA25211A Auto Test and Alignment Kit
- A Windows PC (user supplied) that controls both the LMR Master S412E, the accessory system, and the radio under test
- Power Supply (user supplied)

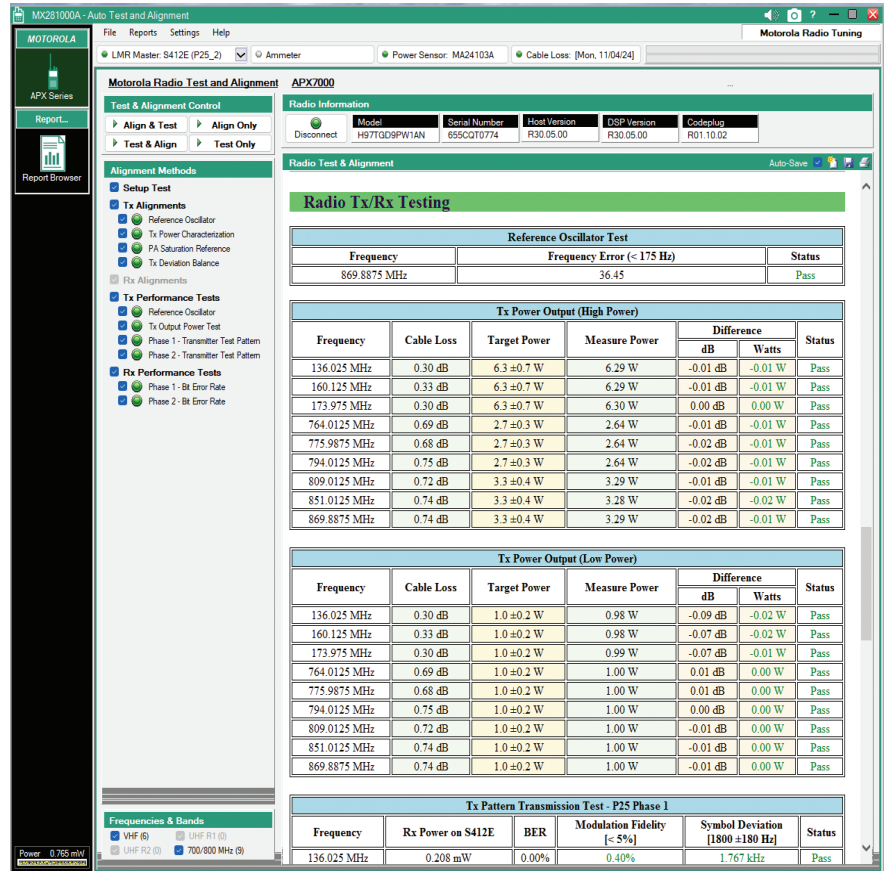
The MX281000A software, developed in partnership with Motorola, controls the radio under test through the radio test interface. This requires a dedicated interface cable and battery replacement power interface supplied by Motorola. For each radio family there are strictly defined tolerances for each RF specification. The software automatically identified the radio family and applies the appropriate Pass/Fail specifications. Prior to test a full radio alignment can be selected to optimize the radio performance against manufacturers specification.

A system calibration to correct for all power losses in test cables is automated using the vector network analyzer feature of the S412E. This system calibration is essential due to the very precise power specifications mandated for P25 radios.

Auto Test and Alignment System

Test Reports and Radio History

When the alignment and test process for each radio is completed a report is automatically created that summarizes the results. The report includes full details of the radio under test including model and serial number, a list of all channels tested and the power frequency and modulation quality results alongside Pass/Fail limits.



Example of a Radio Test Report

Anritsu Auto Test and Alignment Highlights

- **Approved by Motorola**
Testing and reporting validate radio meets Motorola specifications.
- **Infrastructure and Subscriber Radio Testing in a Single Instrument**
The only LMR tester approved by Motorola for both infrastructure and subscriber radio testing.
- **Fully Automated Testing and Alignment**
Enhances operational consistency across your radio fleet while reducing human error.
- **Advanced Report Generation**
Delivers detailed post-maintenance reports that provide insights into radio health, performance metrics, and necessary adjustments.
- **Comprehensive Test History**
Enables strategic maintenance planning and improved lifecycle management by tracking each radio's maintenance records.
- **PC Operation Comes with Large Display**
Using a PC mouse, keyboard and screen makes creating and viewing multiple reports much easier as more information is displayed data entry and manipulation is easy.
- **Enhanced Operational Efficiency**
Dramatically reduces downtime and streamline maintenance processes, increasing overall productivity.
- **Data-Driven Maintenance**
Empowers technicians with detailed reports and test histories for making informed decisions, optimizing radio performance and reliability.
- **Cost Savings**
Cuts maintenance costs by minimizing manual labor and reducing the likelihood of errors.

Size and Weight



MA25211A

The small foam-lined case accommodates all components of the kit.

Size: 391 mm x 307 mm x 173 mm
15.8 in x 12.1 in x 6.8 in

Weight: 5.36 kg or 11.80 lb (including accessories and cables)



760-300-R

The large foam-lined case can accommodate the LMR Master and retain all cable connections (not included) when packed up. The large case is available for purchase as an accessory.

Size: 579 mm x 465 mm x 297 mm
22.8 in x 18.3 in x 11.7 in

Weight: 7.7 kg or 17 lb (empty, foam-lined case)

Ordering Information

Model Number	Description
MA25211A	<p>Auto Test and Alignment (ATA) Kit (requires S412E LMR Master, sold separately) The ATA system consists of the components and accessories listed below:</p> <ul style="list-style-type: none"> • 760-301-R: MA25211A Small Foam-lined Case • MA24103A: Inline Power Sensor • MA25201A: High Power Input Protection Module • MA25202A: Ammeter Module • 2000-2157-R: 7-Port USB Hub and Charger • 3-2000-1498: USB Cable Type-A to Mini-B (10 ft/3.05 m) • 3-806-468: USB Cable Type-C to USB 3.0 Micro-B (3.33 ft/1.02 m) • 3-806-469: USB Cable Type-A to Type-C (6.56 ft/2.0 m) • 3-806-470: Cable Assembly N(m) to N(m) (right angle) (18 in/0.5 m) • 806-465-R: Test Cable N(m) (right angle) to N(m) (6.56 ft/2.0 m) • 806-466-R: Test Cable N(m) to N(m) (20 in/0.5 m) • 2000-2168-R: SAE Connector/Adapter to 4 mm Banana Plug (25 in/0.64 m) • 2000-2169-R: SAE Connector to 4 mm Banana Plug (24 in/0.61 m) • 1091-461-R: RF Adapter N(f) to N(f) • 1030-328-R: Low-Pass Filter, DC to 270 MHz, 50 Ω • 2000-2072-R: USB License Key (optional)
MX281000A	<p>Auto Test and Alignment Software (free download) Requires one or more licensing option:</p>
MX281000A-0100	Auto Test & Align for Motorola APX 6/7/8x00 Dongle
MX281000A-0110	Auto Test & Align for Motorola APX NEXT Dongle (requires MX281000A-0100)
MX281000A-0101 ^a	Auto Test & Align for Motorola APX 6/7/8x00 Radios (Node Locked)
MX281000A-0111 ^a	<p>Auto Test & Align for Motorola APX NEXT (Node Locked) (requires MX281000A-0101)</p> <p>^a Important: The end user's email address AND a generated PC registration code must be provided to enable the generation and delivery of the PC node locked license. A voucher will be shipped with the order so that the license can be redeemed once these details are available. Instructions for obtaining the PC registration code are available at the following Anritsu web page: https://www.anritsu.com/en-US/test-measurement/support/downloads/manuals/dw121313.</p> <p>For orders placed for node locked license keys, if the end-user's email address and the PC registration code are included at order placement, the license will be delivered via email vs. shipment of the voucher.</p>
S412E	LMR Master (requires Option S412E-0521)
S412E-0521	P25/P25p2 Analyzer Measurements



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