

Maintenance, repair and overhaul Intermediate level for R&S®M3AR radios



R&S®M3AR Service Intermediate level

The Rohde & Schwarz service partner program offers you a comprehensive range of support services that enable you to service your Rohde & Schwarz radios yourself.

The intermediate level (I-level) allows you to perform the following service tasks:

Incoming inspection/diagnosis

The incoming inspection evaluates the status of the radio:

- ▮ Optical and mechanical inspection
- ▮ Validation of radio hardware, software and firmware configuration
- ▮ Readout and analysis of error logs and built-in test (BIT) results

Scheduled maintenance

Scheduled maintenance covers the following activities:

- ▮ Replacement of internal radio batteries (applicable to radios with EPM capability)
- ▮ Recalibration of the internal reference oscillator
- ▮ Storage life test at scheduled maintenance intervals (operational test for stocked radios)

Radio troubleshooting and repair

Repair of the radio at the I-level covers all activities required to restore the full radio functionality, including the following:

- ▮ Troubleshooting based on the plug-and-play R&S®UCS-Base test system
- ▮ Module replacement
- ▮ Device reset to factory setting or customer setting
- ▮ Reinstallation of originally released version of firmware/software

Performance test

The performance test is based on the R&S®UCS-Base automated plug-and-play test system.

Test scope:

- ▮ Radio burn-in
- ▮ Radio benchmark temperature test
- ▮ Verification of radio specifications in accordance with the applicable test procedure

This test covers the performance functions of the radio and serves to verify functionality after I-level maintenance activities before reinstallation into the aircraft.



Intermediate level service solution for R&S®M3AR radios

The test equipment used for I-level servicing of R&S®M3AR radios consists of the R&S®UCS-Base radio test set and the radio's harness and connectors. The R&S®UCS-Base has been designed based on the R&S®UCS test system family, the platform used in Rohde&Schwarz production and repair facilities. It ensures high performance during testing and availability of up-to-date test software.

Key facts

- Easy to operate, fast and automatic test procedures
- Optimized for quick turn-around, to enhance operational availability
- Automatic guidance through the test process
- Detailed functional testing and reporting
- For verification of radio equipment functionality after I-level maintenance, including module replacement
- All radio-specific cabling included (quick and easy connection to the devices under test)
- Ready to test current and future Rohde&Schwarz radios (airborne, stationary/shipborne, tactical)
- Transportable and robust 19" aluminum rack (rugged, water-resistant transport case in line with IP66)
- Suitable for use in stationary racks
- The highly sophisticated R&S® FSV signal and spectrum analyzer as the heart of the R&S®UCS-Base is remotely controlled via IEC/IEEE bus interface
- The temperature chamber is part of the R&S®UCS-Base test setup



General data

Dimensions

R&S®UCS-Base system, mobile version (2 racks)	without cover (W x H x D)	20.94 in x 24.33 in x 31.96 in per rack (532 mm x 618 mm x 812 mm)
	with cover (W x H x D)	20.94 in x 24.33 in x 37.08 in per rack (532 mm x 618 mm x 942 mm)
R&S®UCS-Base system, stationary version	W x H x D	22.99 in x 78.74 in x 28.93 in (584 mm x 2000 mm x 735 mm)

Weight

Mobile version	system, rack 1	85 kg
	system, rack 2	75 kg
Stationary version		150 kg

Temperature range

operating	+5°C to +40°C
storage	-20°C to +60°C
best testing accuracy	+20°C to +30°C

Power supply

Fuse protection	115 V	16 A
	230 V	10 A

Other

Setup of test system		approx. 30 min
Dismantling of test system		approx. 30 min
Recommended calibration cycle for system devices		1 year

Comprehensive performance testing of radios

Detailed functional testing and reporting

The R&S®UCS-Base radio test equipment is designed to perform a wide range of different tests on radio equipment. The scope of tests for

All measurement results are stored and can be printed out in a clear and comprehensive test report. Reports can also be exported in different formats for further use.

Retrieved test results can be exported to standard tools such as Microsoft® Excel for further evaluation and investigation. Standard data export formats such as CSV, XLS, PDF and RTF are available.

Outgoing Results

Designation: Type: X14410A Serial No.: 999991
Type: Test System: UCSX0097_5005.5031.02_101040 Material No.: 6122.8055.31
 Temperature: +23/-3/+7°C Date: 2015-11-18
Material No.: File: 6122.8055.31_99999_10-MF
Serial No.: Page: 12/30

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8.5 RX: Multitone Distortion
 Test Document: 5.116
 measured at X25.3 'AF_RX2_NB' ; AF = 1 kHz ; FM ; Low Noise ; *6)

RF level	deviation	DL	actual	MU
-47 dBm	20 kHz	<= 2.0 %	% 0.1 %	
-70 dBm	20 kHz	<= 2.0 %	% 0.1 %	
-47 dBm	20 kHz	<= 2.0 %	% 0.1 %	
-70 dBm	20 kHz	<= 2.0 %	% 0.1 %	

8.6 RX: NB Voice Signal to noise ratio
 Test Document: 5.117
 AF = 1 kHz ; measured at X26 'AP_RX1_NB' weighted to ITU-T ; Low Noise

RF level	DL	actual	MU
-47 dBm with AM 30 %	>= 40.0 dB	54.5 dB	0.1 dB
-70 dBm with FM 3.5 kHz	>= 40.0 dB	58.9 dB	0.1 dB

8.7 RX: Report of RX-AF adjustments (part 1)
 Adjustment only at room temperature! MU: siehe comment (d)
 X26.3/4 'NB2RuLev' is set to -1.000 dB max. var. +- 4.0 dB
 X25.3/4 'NB2RuLev' is set to -1.000 dB max. var. +- 4.0 dB

9. RX: NARROWBAND Voice tests

9.1 RX: Frequency response spacing 25 kHz
 Test Document: 5.118
 - Freq = 130.023 MHz ; AM ; m = 0.3 ; RF level = -47 dBm ; AF = 1 kHz
 measured at X26 'AF_RX1_NB' / Low Noise

9.2 RX: Att. ref. to AF = 1 kHz ; spacing 25 kHz

AF	DL	actual	MU
150 Hz	>= 15.0 dB	19.2 dB	0.2 dB
5000 Hz	>= 20.0 dB	30.1 dB	0.2 dB

Date:

Predefined test sequences make it easy to switch between different test levels.

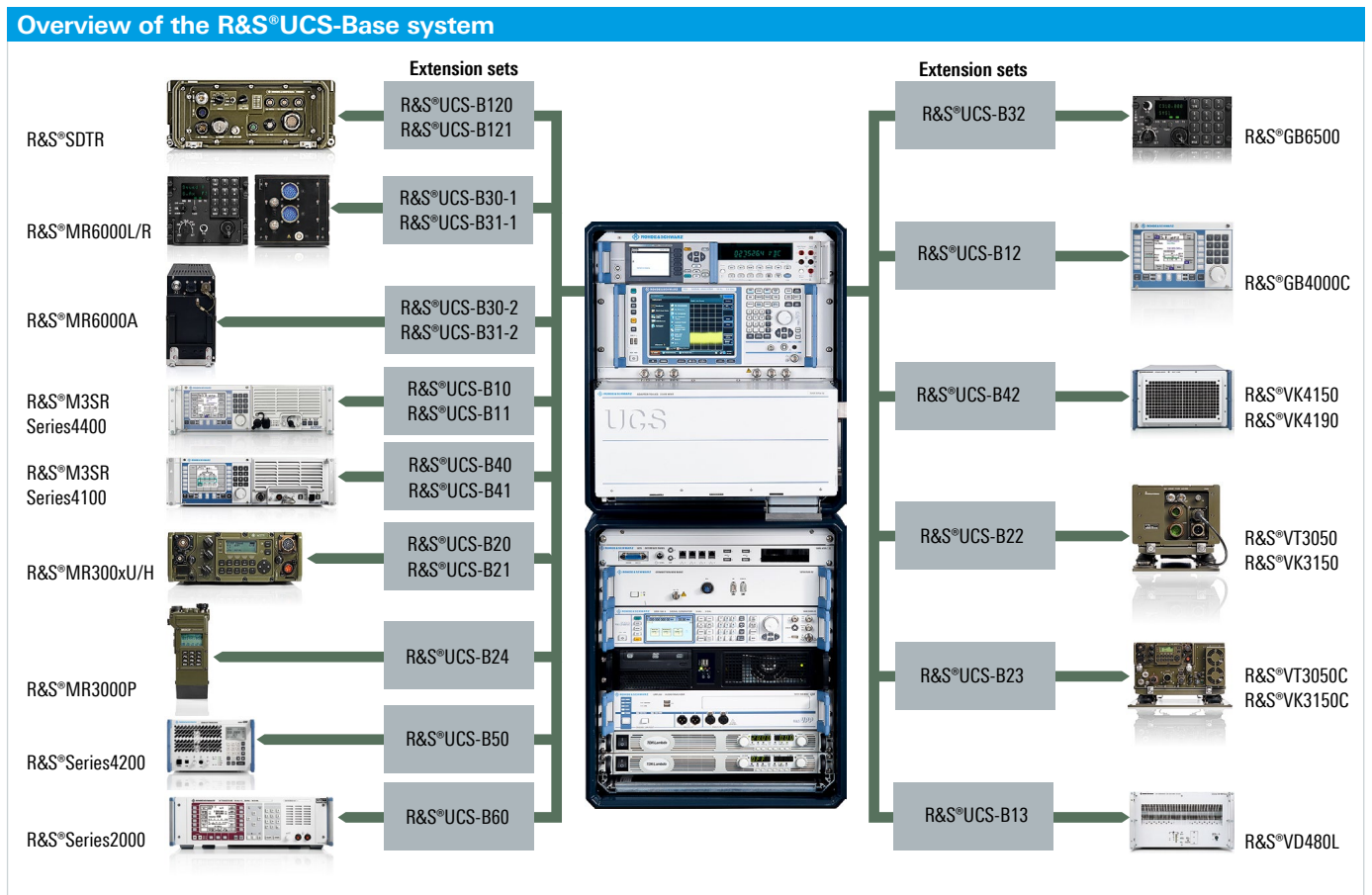
Comprehensive test reports are displayed on the screen or exported in different formats.

Overview of the R&S®UCS-Base radio test set

Thanks to the modular design, R&S®UCS-Base supports all other R&S®M3XR software defined radio products, such as the R&S®M3SR stationary/shipborne radios and the R&S®M3TR tactical radios.

The scope of testing is different for each Rohde&Schwarz product.

For details about service for your specific R&S®M3XR software defined radio product, simply contact us.



Your local Rohde&Schwarz expert will help you determine the optimum solution for your requirements. To find your nearest Rohde&Schwarz representative, visit www.sales.rohde-schwarz.com

Rohde & Schwarz Service Partner Program

A Rohde & Schwarz service level agreement provides an extensive range of support services to cover your service needs.

Maintenance, functional testing and spare parts

The Rohde & Schwarz Service Partner Program is a self-service program and qualifies you to service your R&S®M3xR software defined radio products in accordance with your specific requirements. You will have access to the spare parts for your R&S®M3AR radios.

Comprehensive training

Comprehensive training is available to enable you service your R&S®M3AR radios properly. You will learn how to operate your test system and perform the required maintenance work on your radios.

24/7 problem reporting and technical support during business hours

The Rohde & Schwarz Internet portal lets you submit a support request around the clock from anywhere in the world. Your support request will be answered by the Rohde & Schwarz support team during German business hours. You can check the status of your ticket at any time via the Rohde & Schwarz Internet portal.

First-class support from Rohde & Schwarz

As a service partner, you will receive first-class support from Rohde & Schwarz. Our experts compare your test system with the Rohde & Schwarz reference system in order to reproduce your situation and help you optimally troubleshoot your radio.

Access to software updates and documentation

As a service partner, you will have access to the latest software updates for your test system.

Recalibration services

This covers the calibration costs of all measuring instruments and accessories according to the requirements defined in the system documentation.

Repair services

This covers all repair costs (time and material costs) plus the cost of domestic shipping through Rohde & Schwarz logistics partners.

We would be happy to work with you to develop a customized solution that ideally meets your need. Simply contact us.

From pre-sale to service. At your doorstep.

The Rohde&Schwarz network in over 70 countries ensures optimum on-site support by highly qualified experts. User risks are reduced to a minimum at all stages of the project:

- ▮ Solution finding/purchase
- ▮ Technical startup/application development/integration
- ▮ Training
- ▮ Operation/calibration/repair



Service that adds value

- ▮ Worldwide
- ▮ Local and personalized
- ▮ Customized and flexible
- ▮ Uncompromising quality
- ▮ Long-term dependability

Rohde & Schwarz

The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, monitoring and network testing. Founded more than 80 years ago, the independent company which is headquartered in Munich, Germany, has an extensive sales and service network with locations in more than 70 countries.

Sustainable product design

- ▮ Environmental compatibility and eco-footprint
- ▮ Energy efficiency and low emissions
- ▮ Longevity and optimized total cost of ownership

Certified Quality Management

ISO 9001

Certified Environmental Management

ISO 14001

Certified Quality Management

AQAP-2110

Certified Quality Management

EN 9100

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