

R&S[®]DSA

DOCSIS Signal Analyzer

Release Notes

Firmware Version 2.2.1

© Rohde & Schwarz GmbH & Co. KG
Muehldorfstr. 15, 81671 Munich, Germany
Phone: +49 89 41 29 - 0
Fax: +49 89 41 29 12 164
E-mail: <mailto:info@rohde-schwarz.com>
Internet: <http://www.rohde-schwarz.com>

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The following abbreviations are used throughout this document: R&S[®] is abbreviated as R&S.

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1 Information on the Current Version and History

1.1 Version 2.2.1

Firmware Package Contents

- Software Version (git) v2.2.1-6e3efb6

New Functionality

- SFD Static Upstream Analysis mode.
 - Use of a SFD with firmware v1.3.1 is required.
 - Upstream analysis with the SFD: no additional reference or trigger cable is required.
- DOCSIS 3.1 CM ranging.
 - Use of an SFD with firmware v1.3.1 is required to range a cable modem.
 - Verified with cable modem models: Arris CM8200A, firmware: D31CM-PEREGRINE-1.1.1.0-GA-11-NOSH (DOCSIS 3.1); Motorola MB8600, firmware: 8600-6.1.1.13 (DOCSIS 3.1); Technicolor TC4400-EU, firmware: SR70.12.33-180327.
- CCDF plots for downstream OFDM and upstream OFDMA.
- Downstream OFDM Payload export.
- Adjacent Channel Power mode.
- List of constellation orders for selected downstream OFDM profile, Pilot, PLC and NCP.
- Alarm thresholds for MER and BER.
- Alarm tab showing MER, BER and spectrum mask violations.
- Peak to peak values on downstream OFDM channel analysis plots.
- License support for external application “TVSCAN 2.0”.
- Carrier level vs time and BER vs. time plots.
- Allow output of complete downstream OFDM channel via SFP+.
- Phase noise markers.
- Optimize MER functionality.
- ATDMA IQ Imbalance functionality.

Modified Functionality

- Upstream ATDMA & OFDMA receivers now support streaming of received data via SFP+.
- Semi-automatic BER mode removed from J.83 BER measurement.
- OFDM & OFDMA partial equalization is now implemented.

Fixed Issues

- On power up the DSA will now start measuring signals without the need to press any button in the GUI beforehand.
- A delay is no longer required when issuing back to back MMEM:SCAP SCPI commands to save multiple screenshots.
- Network output button now allows enabling / disabling.
- J.83/x: The MER measurement for an unimpaired signal will now provide good repeatability.

Known Issues

- For CM Ranging: Channel analysis & MER vs time (with IUC filter set to ALL) plots are not available.
- SCPI commands to set parameters for Cable modem ranging and Static upstream analysis are not yet available, the commands to read values must include the MODE token.
- Autolevel may set attenuation too high to receive ATDMA initial ranging bursts, workaround is to manually reduce attenuation by 5dB.
- ATDMA: Support for only one preamble.
- DSA can connect to the SFD using the IP address, connection via hostname is not supported.
- OFDMA Bandwidth Request power measurement may be off by 2dB in 4K mode.
- J.83/B 256QAM Receiver Mode: Uncorrectable BER in the presence of high AWGN is higher than expected.

1.2 Version 2.0.0 / 2.0.1

Firmware Package Contents

- Software Version (git) v2.0.0 – e8ba5cd / v2.0.1 – 58379d7
- Installation of v2.0.0 and higher will not allow FW versions below v2.0.0 to be installed later.
- Installation to v2.0.0 from all previous versions requires that no special characters (ie. spaces) are present in the filename or folder path of the update file.

New Functionality

- Remote desktop operation via web browser.
- IQ density plots.
- Upstream ATDMA & OFDMA receivers and measurements (requires reference and trigger cable).
 - Note: Future modes “Dynamic upstream analysis” and “SFD static upstream analysis” will be provided in a later release that do not require a reference or trigger cable.
- DOCSIS 3.0 & EuroDOCSIS 3.0 CM ranging.
 - Use of an SFD with FW v1.2.0 is required to range a CM.
 - Verified with CM models: Arris SURFboard SB6141, Linksys DPC3008, Motorola MB7220, Motorola SB5102 & FRITZ!Box 6430.
- SNMP support.
- DOCSIS 3.1 digital filtering:
 - Improved filter characteristics when bandwidth is < 192 MHz,
 - Automatically tuned notch filter for excluded subcarriers,
 - Filtering can be switched on or off.

Fixed Issues

- Correct level is displayed after a manual attenuation change.
- Improved auto attenuation functionality.
- Use of static IP address to connect with SFD now functional. (Version 2.0.1)

Known Issues

- On power up the DSA will not start receiving signals until any button on the GUI is pressed.
- Upstream receiver SFP+ output is not yet implemented.
- ATDMA: Support for only one preamble.
- IQ Imbalance functionality is not yet implemented.
- DSA can connect to the SFD by using the IP address. Connecting by hostname is not yet supported.
- DOCSIS 3.1 CM ranging is not yet supported.
- Certain brands of DOCSIS 3.0 and earlier Cable Modems may not receive TOD message and after a few minutes restart the ranging process.
- OFDMA partial equalization is not yet implemented.
- OFDMA Bandwidth Request power measurement may be off by 2dB in 4K mode.
- OFDMA echo pattern shows aliasing when a sparse pilot pattern is chosen.
- OFDMA receiver can get into a state where configuration changes are not accepted, cycling power to unit will resolve issue.
- J.83/B 256QAM Receiver Mode: Uncorrectable BER in the presence of high AWGN is higher than expected.
- A 2 minute delay is required when issuing back to back MMEM:SCAP SCPI commands to save multiple screenshots.
- Sometimes, applying an unimpaired J83 signal may result in lower measured MER (~50dB); a work around is to toggle the parameter "Phase Trk Loop BW" in the "Config" menu (e.g. 6 kHz => 60 kHz => 6 kHz).

1.3 Version 1.1.2

Firmware Package Contents

- Software Version (git) v1.1.2-1253965

Modified Functionality

- The upper tuning range for SC-QAM has been increased to 1,794 MHz.

Fixed Issues

- Improved the Option license system stability.
- Digital filtering added to improve MER of OFDM channels in presence of adjacent channels.

Known Issues

- Remote Desktop functionality not yet available.
- J.83/B 256QAM Receiver Mode: Uncorrectable BER in the presence of high AWGN is higher than expected.
- IQ density plot functionality is not yet available.
- A 2 minute delay is required when issuing back to back MMEM:SCAP SCPI commands to save multiple screenshots.

1.4 Version 1.1.0

Firmware Package Contents

- Software Version (git) v1.1.0- b35240d

New Functionality

- Support for Downstream only hardware.
- Auto Y-axis function added to Channel Analysis plots.

Fixed Issues

- Downstream DOCSIS 3.0 Receiver performance in presence of impairments meets requirements.
- Generic J.83 QAM Receiver Mode now supports QPSK, 32QAM & 128QAM.
- J.83/B QAM Receiver Mode: BER pre Reed Solomon meets requirements.
- DOCSIS 3.1 channels with high rates of PLC MAC messages can now be successfully demodulated.

Known Issues

- Remote Desktop functionality not yet available.
- J.83/B 256QAM Receiver Mode: Uncorrectable BER in the presence of high AWGN is higher than expected.
- IQ density plot functionality is not yet available.
- A 2 minute delay is required when issuing back to back MMEM:SCAP SCPI commands to save multiple screenshots.

1.5 Version 1.0.6

Firmware Package Contents

- Software Version (git) v1.0.6-15290ba

Initial Functionality

- Downstream Spectrum Analyzer Mode.
- Upstream Spectrum Analyzer Mode.
- Downstream DOCSIS 3.0 (SQ-QAM J.83 Annex B) Receiver Mode.
- Downstream EuroDOCSIS 3.0 (SQ-QAM J.83 Annex A) Receiver Mode.
- Downstream DOCSIS 3.0 SC-QAM J.83C (SQ-QAM J.83 Annex C) Receiver Mode.
- Downstream J.83 QAM Receiver Mode.
- Downstream DOCSIS 3.1 OFDM Receiver Mode.

Known Issues

- Downstream DOCSIS 3.0 Receiver susceptible to degraded performance under presence of impairments.
- Remote Desktop functionality not yet available.
- Generic J.83 QAM Receiver Mode does not yet support QPSK, 32QAM or 128QAM.
- J.83/B QAM Receiver Mode: BER pre Reed Solomon is higher than expected.
- IQ density plots functionality is not yet available.
- A 2 minute delay is required when issuing back to back MMEM:SCAP SCPI commands to save multiple screenshots.

2 Modifications to the Documentation

Modification of the user documentation from previous versions are detailed below.

2.1 User Manual Version 03

- Updated to reflect new functionality added

2.2 Getting Started Version 01

- No change

3 Firmware Update

NOTICE

This update contains a boot loader update. Do not power the unit off or unplug it while this upgrade is in progress. This upgrade will not perform the boot loader update unless required. The upgrade is complete after the DSA has restarted. After version 2.0.0 is installed there is no way to install previous versions of DSA firmware.

3.1 Updating the Firmware

The firmware update consists of one file. The version number in the file name varies with each update (symbolized by placeholder x).

- *DSASetup-vx.x.x.img*

Perform the update on a computer under control of the Windows operating system.

1. Copy the update file to a USB drive and insert it in the DSA.
1. Switch on the R&S DSA.
2. Wait until the R&S DSA firmware has booted and the application has started.
3. From the Home menu, select Setup > Software > Install Release. This will open a new dialog to select an upgrade image.
4. Double tap on the folders to navigate to the upgrade image on the USB drive.
5. Double tap on the file to begin the upgrade process. The DSA will check the file to ensure it is a valid upgrade image, then if successful the software will shutdown and the installation process will begin.
6. The installation process does not require user input and may take up to 10 minutes. After the installation, the DSA will require a restart. The DSA will be preset after the update.

4 Option Installation

4.1 Option Installation for R&S DSA Functionality

Users are able to upgrade the R&S DSA functionality by entering option keys. Please contact your distributor to arrange purchase and delivery of new features. Once you have the option key, simply use a USB key to install the option file to add each feature. Alternatively a key can be entered manually in the Install Option Key field and added by clicking on the Install button.

After verification the unit will reset and display the currently licensed features. After verification the unit will display the currently licensed features as "Available". Removal of option keys is also supported, by adding a "removal" key.

5 Customer Support

Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz equipment, contact one of our Customer Support Centers. A team of highly qualified engineers provides telephone support and will work with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz equipment.

Up-to-date information and upgrades

To keep your instrument up-to-date and to be informed about new application notes related to your instrument, please send an e-mail to the Customer Support Center stating your instrument and your wish. We will take care that you will get the right information.

Europe, Africa, Middle East

Phone +49 89 4129 12345

customersupport@rohde-schwarz.com

North America

Phone 1-888-TEST-RSA (1-888-837-8772)

customer.support@rsa.rohde-schwarz.com

Latin America

Phone +1-410-910-7988

customersupport.la@rohde-schwarz.com

Asia/Pacific

Phone +65 65 13 04 88

customersupport.asia@rohde-schwarz.com

China

Phone +86-800-810-8828 / +86-400-650-5896

customersupport.china@rohde-schwarz.com