

R&S®ESW

Test Receiver

Release Notes

Firmware Version 2.00SP1

These Release Notes are for following models of the R&S® ESW EMI Test Receiver:

R&S® ESW8, order no. 1328.4100.08
R&S® ESW26, order no. 1328.4100.26
R&S® ESW44, order no. 1328.4100.44

R&S® ESW8, order no. 1328.4100.09
R&S® ESW26, order no. 1328.4100.27
R&S® ESW44, order no. 1328.4100.45

We highly recommend that you upgrade instruments with firmware 1.31 to 1.31 SP1 or higher

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

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1 Current Version and History

1.1 New Functions

The following table lists the new functions and indicates the version in which the new function was introduced:

New Functions in Firmware V2.00:

Version	Function
V2.00	Support for R&S® ESW8, order no. 1328.4100.09 R&S® ESW26, order no. 1328.4100.27 R&S® ESW44, order no. 1328.4100.45
V2.00	Self-alignment scheduler to perform self-alignments regularly at specific days and times.
V2.00	Support for multi-touch gestures (needs ESW with order no. 1328.4100.09/27/45): <ul style="list-style-type: none"> Pinching and spreading with two fingers to adjust the traces in a diagram is now possible. Support for dragging in x and y direction to adjust the traces in a diagram is now possible for all ESW order numbers: Traces can be comfortably shifted in a diagram in x- and y-axis by simply dragging to the new position. <p>Besides the “graphical zoom”, the new zoom mode “measurement zoom” is supported. In contrast to the graphical zoom, which is merely a visual tool, the measurement zoom adapts the measurement settings (e.g. reference level, level range, frequency span) such that the data is measured in the required detail. The “measurement zoom” is the default zoom mode for Receiver and Spectrum Mode, I/Q analyzer and K7. The context menu of the “measurement zoom” toolbar icon can be opened with a long touch. Level-Lock (default on), X-Lock and Y-Lock can be used to prevent changing specific settings by the zoom operations.</p>
V2.00	The toolbar is now configurable by the user.
V2.00	Support of 3D Spectrogram Display in Receiver Mode, Spectrum Mode, I/Q Analyzer and K7 AM/FM/PM Modulation Analysis.

New Functions in Firmware V1.72:

Version	Function
V1.72	Receiver mode now supports trace averaging.

New Functions in Firmware V1.70:

Version	Function
V1.70	R&S ESW-K58 supported
V1.70	Supports enhanced Fast Time Domain Scan
V1.70	Supports RBW up to 40 MHz with R&S FSW-B8E option.
V1.70	Adjustable recording interval for the IF spectrogram in receiver mode

New Functions in Firmware V1.61:

Version	Function
V1.61	New button to turn off the limit check without having to deselect the checked traces.
V1.61	Right click on the quick save button to activate a write protection.

Version	Function
V1.61	User definable storage path for the reporting data allows you to store raw data anywhere on a hard drive or removable storage device.
V1.61	New display to write user notes and add them to the report.
V1.61	File dialogs have a new button to open the Microsoft Windows File Explorer.
V1.61	Display lines in receiver and analog demodulation show the delta value between line 1 and 2 if both are active.
V1.61	Manual user port control is now available in the input/output menu.
V1.61	New button available in frequency dialog to activate coupling of the bargraph settings at the current frequency to the corresponding scan table settings.

New Functions in Firmware V1.51:

Version	Function
V1.51	In the time domain scan, the maximum resolution bandwidth for start frequencies below 100 kHz was limited to 5 kHz (3 dB) and 9 kHz (6 dB). This upper limit has been increased to 10 kHz resolution bandwidth.

New Functions in Firmware V1.50 SP2:

Version	Function
V1.50SP2	CISPR 16-1-1 Ed. 4 Ready. The Hardware Info dialog shows a "CISPR EDITION 4 READY" message if your device has the required calibration data. Otherwise, contact the Rohde & Schwarz service otherwise
V1.50SP2	New limit lines and transducers have been added to address the replacement of EN 55022 and EN 55013 by EN 55032, as well as for testing high voltage power supply systems in vehicles in accordance with latest EN 55025.

New Functions in Firmware V1.50:

Version	Function
V1.50	A warning message is displayed when a transducer is active and the measurement frequency is set to values outside of the transducer range.
V1.50	The fast access knobs can now be used to cycle through the peaks in a peak list and to adjust the positions of display lines. .
V1.50	The rotary wheel can now be locked in order to prevent accidental changing of the measurement frequency.
V1.50	New self-alignment features: "Await warm-up operation" and "Shutdown after Alignment" supported, which can also be selected from the ESWSetup.exe installation program. Display of remaining time for self-alignment and warning if alignment is started and the warming up message is still shown in the status bar.
V1.50	Supports transducer and limit line import and export using CSV (comma separated) files.
V1.50	Remote Mode: In order to prevent the screen from being switched on manually using the "Display Update On/Off" softkey, the remote command <code>SYSTEM:DISPlay:LOCK <on/off></code> can now be used to lock this softkey.
V1.50	Remote trace query and I/Q trace query now support 64 bit (more precise) or 16 bit (faster). Select the format with the commands <code>FORMat REAL,64</code> or <code>FORMat REAL,16</code> before querying the trace data.
V1.50	A touch on the LXI logo at the bottom right of the screen now opens the LXI Configuration Dialog which also shows the IP address and computer name of the device.

1.2 Modified Functions

The following table lists the modified functions and indicates the version in which the modification was carried out:

Modified functions of Firmware V2.00SP1:

Version	Function
V2.00SP1	Modified selection algorithm for preselection filters in analyzer sweep

Modified functions of Firmware V2.00:

Version	Function
V2.00	K7: Option renamed to AM/FM/PM Modulation Analysis.
V2.00	New, Windows10-like, user interface design (industrial design theme) for all ESW order numbers
V2.00	The RBW can be set to a maximum of 1 MHz for start frequencies ≥ 1 MHz in Time Domain Scan
V2.00	Modified self-alignment algorithm
V2.00	Modified hardware segmentation in spectrum analyzer mode

Modified functions of Firmware V1.72SP1:

Version	Function
V1.72SP1	For FFT sweeps with optimization = speed, preselector = off, and start frequency < 50 MHz, the maximum width of the FFT segments is reduced.

Modified functions of Firmware V1.70SP1:

Version	Function
V1.70SP1	Zero span: the same x-axis scaling algorithm is now used for traces and diagram graticule.

Modified functions of Firmware V1.70:

Version	Function
V1.70	The IF spectrogram display is no longer reset when changing the center frequency.

Modified functions of Firmware V1.61:

Version	Function
V1.61	Scrolling the scan trace when using the zoom function in the receiver mode now starts when getting close to the diagram border instead of exactly at the border
V1.61	Grid annotations displayed semi-transparent in front of traces to enhance the readability of the annotation values.
V1.61	Vertical display lines now show their current value in the diagram.
V1.61	Changing the preamplifier value via remote control will now automatically activate the preamplifier.
V1.61	CISPR 16-1-1 Ed. 4 Ready. The Hardware Info dialog shows now "CISPR 16-1-1 EDITION 4 READY", if your device has the required calibration data.

Modified functions of Firmware V1.51:

Version	Function
V1.51	The synthesizer setup algorithm was modified to increase the dynamic range at specific frequencies.
V1.51	The maximum resolution bandwidth was limited to 100 Hz for a receiver frequency of 100 Hz in both the receiver bargraph and the receiver scan. This limit has been increased to 200 Hz resolution bandwidth.
V1.51	Improved auto range algorithm in conjunction with EMC32.

Modified functions of Firmware V1.50SP3:

Version	Function
V1.50SP3	The synthesizer setup algorithm was modified to increase the dynamic range at specific frequencies.

Modified functions of Firmware V1.50:

Version	Function
V1.50	The synthesizer setup algorithm was modified to increase the dynamic range at specific frequencies.
V1.50	In Time Domain Scan, the average detector with 200 Hz RBW can now be used with a minimum measurement time of 20 ms.
V1.50	If a self-alignment is started in an aligned instrument state and this alignment is aborted upon user request, the previous alignment data is now restored.

1.3 Improvements

The following tables list the improvements and indicate since which version the issue could be observed:

Improvements of Firmware V2.00:

since	Function
V1.70	Activation of trace math could lead to incomplete traces. This issue is solved.
V1.10	Improved signal path settings for better S/N ratio in Spectrum Analyzer mode with preselector on and frequency > 8 GHz.
	Certain combinations of RBW, sweep time and sweep points could lead to an incomplete zero span measurement. This issue is solved.

Improvements of Firmware V1.72:

since	Function
V1.61	The alignment of hardware segments was optimized to improve measurements on wideband signals.

Improvements of Firmware V1.70SP1:

since	Function
V1.20	The Report Generation sometimes didn't include all channels in Multi View mode when using "Screen Colors". This issue is solved
V1.10	The AVG Detector showed some quantization effects when looking at noise in Time Domain Scan. This issue is solved

Improvements of Firmware V1.70:

since	Function
V1.61	Report Generation locked up in rare cases after loading a save set. This issue is solved.
V1.60	The IF spectrogram display could stop updating in rare cases. This issue is solved.
V1.60	The reporting toolbar button needed to be pressed twice to open the reporting menu. This issue is solved.
V1.60	Analog Modulation Analysis: The button "Current Focus" didn't switch the analog output to the corresponding modulation in case a spectrum display was selected. This issue is solved.
V1.50	Limit lines in receiver mode could not be switched off via SCPI. This issue is solved.
V1.50	The Trace export SCPI command (:MMEMory:STORe1:TRACe 0,...) in receiver mode used the wrong trace indexing, 0-5 instead of 1-6. This issue is solved
V1.10	"YIG filter limits bandwidth" message was shown in cases when this warning was not applicable. This issue is solved.
V1.10	Marker to Peak in the IF-Analysis Spectrum would lead to the wrong Center Frequency for center frequencies above 14 GHz. This issue is solved

Improvements of Firmware V1.61SP1:

since	Function
V1.61	Modification for production internal reasons only.

Improvements of Firmware V1.61:

since	Function
V1.50	Editing transducer values with an external keyboard: Using the shortcut "G" + "Enter" to enter the unit GHz didn't work. This issue is solved.
V1.50	The reporting functionality represented the unit μ as μ . This issue is solved
V1.50	Using the IF analysis display in receiver mode caused a firmware lockup. This issue is solved.
V1.30	The "Trigger" "Run Sgl" and "Run Cont" hardkeys were not always illuminated correctly. This issue is solved.
V1.10	When taking a screenshot with file name "ng", the extension was also set to ".ng", and the file was not recognized as a .png file. This issue is solved.
V1.40	"RF Disconnected" was not restored after instrument shutdown. This issue is solved.
V1.50	In some cases the application locked up, if the start- / stop- frequency of the receiver scan display was changed with previous data. This issue is solved.

Improvements of Firmware V1.50 SP2:

since	Function
V1.50	Loading a Fast Access configuration file from a version prior to 1.50 did not work. This issue is solved.
V1.50	External switch control via GPIB wasn't possible. This issue is solved.
V1.50	The report template configuration dialog could show empty buttons. This issue is solved.

Improvements of Firmware V1.50SP1:

since	Function
V1.50	ESW44 with B24 showed an increase in noise floor above 43.5 GHz after firmware upgrade. This issue is solved.

Improvements of Firmware V1.50:

since	Function
V1.40	Some diagrams were not included during report generation. This issue is solved.
V1.40	Under certain conditions, zero-span traces did not show all measured points. This issue is solved.
V1.40	When controlling the ESW from EMC32 while using an external mixer, a sweep sometimes did not finish. This issue is solved.
V1.40	There were sporadic issues with the printing of multiple graphs. These issues are solved.
V1.00	When using the quasi-peak detector in Spectrum Analyzer sweep mode, a glitch was displayed at 30 MHz. This issue is solved.

1.4 Known Issues

The following table lists the known issues and indicates since which version the issue could be observed:

since	Function
V1.10	When continuously measuring in Real Time mode, the message "Instrument warming up" remains on the display even after the device has warmed up.
V1.10	When using the RMS detector in time domain scan the noise floor may show small quantization effects. Note: the AVG, CISPR-AV and CISPR-RMS detectors do not show this behavior.

1.5 Modifications to the Documentation

2 Firmware Update

The firmware update file for the R&S ESW is one file including the main firmware version number e.g. ESWSSetup_V1.00.exe. It will be referred as ESWSSetup.exe later in the text. The file can be found on Rohde & Schwarz web page

2.1 Performing the Firmware Update on the Instrument

There are three ways to make the setup ESWSSetup.exe visible to the device:

Using a memory stick:

1. Copy the file to a directory of the memory stick and insert the memory stick into one of the USB sockets of the R&S ESW.

Using the remote desktop and copying the installation files to a directory of the instrument:

1. Connect the R&S ESW to your LAN.
2. Start the remote desktop on your PC (C:\winnt\system32\mstsc.exe).
3. Enter the TCP/IP address of the instrument, you want to update. Ensure that the "local resources" > "drives" option is selected and press the "Connect" button. (To get the TCP/IP address of the R&S ESW press the hard key "Setup" and then the softkey "Network + Remote". The IP address consists of 4 numbers between 0 and 255.
4. Login to the instrument (user name: "instrument" and default password "894129").
5. Copy the ESWSSetup.exe from your PC to a new folder e.g. C:\FWUpdate.
6. You can now access this directory with the ESWSSetup.exe from the R&S ESW analyzer firmware.

Using a network drive:

1. Connect your R&S ESW to your LAN, and establish a connection to one of your servers. (Please ask the local IT administrator for support)
2. Copy the ESWSSetup.exe from your PC to a directory on this server
3. You can now access the directory with the ESWSSetup.exe from the R&S ESW analyzer firmware.

Performing the update on the instrument:

The firmware update process is performed by the following steps:

1. Switch the instrument on and wait until the Analyzer has resumed operation.
2. Press the "SETUP" hard key, then the softkey "System Config", and select the tab "Firmware Update".
A file browser is displayed to select the proper ESW*.exe setup file. Change the path to the drive and directory which you prepared in the step before (USB stick

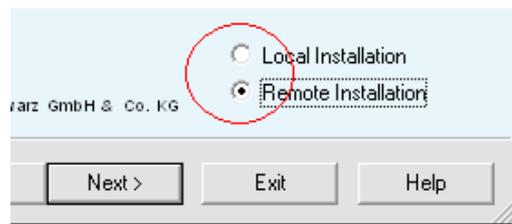
directory, remote PC directory or directory on a server) and close the dialog with the "Install" button.

3. Press the "Next" button to come to the selection of the firmware packages. By default all application should be installed. Ensure that the applications needed are selected.
4. Press the "Install" button.
The firmware will be stopped and the installation starts. After a few minutes the system restarts automatically. After the restart the firmware installation is complete. After the firmware update the "UNCAL" flag appears. A self-alignment is necessary.
5. Press the "SETUP" hard key, the softkey "Alignment" and then press the button "Start Self Alignment" to invoke the alignment procedure.

2.2 Performing the Firmware Update from a Windows PC

The new firmware can also be uploaded without using a memory stick or a network drive. Just a LAN connection from the instrument and a Windows PC is necessary.

1. Run ESWSSetup.exe on your PC.
2. Select Remote Installation and click the button Next.



3. Select the Packages which shall be installed and click the button Next.
HINT FOR FIRE WALL USERS: The ESWSSetup.exe is communicating with the instruments via LAN. Therefore it is necessary that the ESWSSetup.exe may pass the fire wall. After adding it to the fire wall rules, restart the scan by clicking on Rescan.



4. After scanning your LAN subnet all found instruments are listed. Select the instruments you want to update.
It is possible to select up to 5 instruments for updating in parallel.

NOTICE

Please be careful and check twice if you have selected the correct instruments. Depending on your company's network structure also instruments of other departments will show up!

5. Additional help will be displayed after clicking the button "Help" and further options are available by clicking the button "Options".
6. Start the installation by selecting "Install"
7. Confirm that you want to reboot the instrument in order to activate the firmware update (the instrument then restarts automatically)

2.3 Operation with and without Administrator Rights

The analyzer may be operated with or without administrator rights. Some administrative tasks (e.g. LXI functions or network configuration) do require administrator rights. A firmware update is also possible without administrator rights.

In the default configuration, auto login is enabled, and the "Instrument" account with administrator rights is active. This means that no password is required, and the full functionality of the analyzer is available. An additional user account (user name "NormalUser" with default password "894129") is pre-defined. Use standard Windows functionality if you wish to deactivate the auto login mechanism and activate the NormalUser account. Please refer also to the Quick Start Manual of the ESW.

2.4 Installing Firmware Options

2.4.1 Firmware options included in basic instrument

The R&S ESW-K7 and ESW-K33 application software package is included in the basic instrument firmware. Therefore, they do not have a separate item in the installer to be selected.

2.4.2 Enabling Options by Entering Option Key Codes

NOTICE

This section can be skipped if the option key was entered once.

To activate application software packages, you must enter a license key for validation.

If a XML-file with an option key was sent to you see the install description below.

The license key is in the device certificate or delivered as a part of the software package. The process is performed in the following steps:

1. Press the "SETUP" hard key.
2. Go to the tab "Versions + Options"
3. Press the button "Install Option".
A dialog box is displayed.
4. Enter the option key number using the keypad.
5. Press "ENTER".
After a successful validation the message "Option Key valid" is displayed. If the validation failed, the option software is not installed.
6. Reboot the device.

Installation of options via XML-file

1. Press the "SETUP" hard key.
2. Go to the tab "Versions + Options"
3. Press the button "Install Option by XML".
A file browser is displayed.
4. Select the path to the XML file (e.g. network drive or USB stick)
5. Press "Select".
After a successful validation the message "Option Key valid" is displayed. If the validation failed, the option software is not installed.
6. Reboot the device.

3 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.

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