

# R&S®ZVH Handheld Cable and Antenna Analyzer Release Notes

## Firmware Version V2.00

These Release Notes are for following models of the R&S®ZVH Handheld Cable and Antenna Analyzer:  
R&S®ZVH4, order no. 1309.6800.24  
R&S®ZVH8, order no. 1309.6800.28

© 2023 Rohde & Schwarz GmbH & Co. KG  
Muehldorfstr. 15, 81671 Munich, Germany  
Phone: +49 89 41 29 - 0  
E-mail: [info@rohde-schwarz.com](mailto:info@rohde-schwarz.com)  
Internet: <http://www.rohde-schwarz.com>

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The software makes use of several valuable open source software packages. For information, see the "Open Source Acknowledgment" provided with the product.

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



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# 1 Information on the 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 of firmware V2.00:

Version	Function
V2.00	Split Screen in Cable and Antenna Test mode for parallel display of DTF and reflection measurements results

### New functions of earlier firmware versions:

Version	Functions
V1.90	Support for saving dataset in csv format (in Spectrum Analyzer mode only)
V1.90	SCPI command to read out memory trace
V1.90	SCPI command to check status of FSH-Z114
V1.80	AM/FM demodulation in Spectrogram application
V1.80	Support of waveguide calibration and DTF measurements with waveguides
V1.71	Support for R&S® ZN-Z103 Calibration Unit 1 MHz – 6 GHz
V1.70	SCPI command to retrieve IQ data
V1.70	FFT based SEM & ACLR (for NB-IoT)
V1.60	Support of HE400 antenna
V1.60	Support of optical power sensor UPM100 from ODM Inc
V1.60	Display S21 & S11 or S21 & S22 measurements in one screen
V1.60	Support of Declassification procedures according to DoD 5220.22-M (see Instrument Security Procedures for more details)
V1.60	Added switch to force either sweep mode or FFT mode
V1.52	Support of ZVH-K14 for long time recording
V1.52	Support of ZVH-Z14 with USB adapter FSH-Z144

V1.52	Tone feature for Spectrogram and Spectrum Analyzer
V1.52	New support of power sensor, NRPx
V1.52	ZVH4View, save all traces from spectrogram to CSV format
V1.52	Coupling of Span settings from reflection measurement to DTF measurement
V1.52	Create folders on SD Card from File Manager
V1.51	New measurement application: R&S®ZVH-K29 Pulse Measurements with Power Sensor (using the NRP-Z81, NRP-Z85 or NRP-Z86 power sensors). This feature is supported for instruments starting at serial number 115331 for the R&S ZVH4 and 115239 for the R&S ZVH8. Instruments with lower serial numbers require an R&S®FSH-Z129 adapter cable.
V1.51	The amplitude range can now be entered as a numeric value instead of fixed steps
V1.51	Enabling and disabling coupling of span in DTF and reflection measurements is now supported
V1.51	R&S ZCAN calibration data file added
V1.51	Limit lines in VSWR and Cable Loss measurement are now supported
V1.51	Limit lines can now be selected during Wizard execution
V1.51	The user can now be prompted to change cable settings in wizard operation
V1.51	Spectrum Analyzer: Frequency counter resolution is now selectable between 0.1 Hz (low) and 0.1 mHz (high)
V1.51	R&S HL300 antenna transducer file added
V1.51	Creating folders on the SD card with the File Manager is now supported
V1.50	Channel Power Meter (R&S®ZVH-K19)
V1.50	Cable & Antenna Test: Added limit lines in 1-Port Cable Loss measurement
V1.50	The active calibration data are preserved when loading a dataset stored with another instrument
V1.50	ZVH View: Support of Microsoft Windows 8
V1.50	ZVH View: Spectrogram Playback
V1.50	ZVH View: Added possibility to select the Easy 1 Port calibration as the default calibration when using the Wizard

## 1.2 Modified functions

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

### Modifications of firmware V2.00:

Version	Function
V2.00	ICNIRP Limit Lines are added as predefined limit lines for EMF measurements
V2.00	ZN-Z135 and ZN-Z170 calibration kits are added as default kits
V2.00	SCPI Command to set the Frequency Counter Resolution added
V2.00	Entry field for the user name is added to the preferences

### Modifications of earlier firmware versions:

Version	Function
V1.80	Support of discrete marker mode to set markers to discrete sweep points only
V1.80	Supports ZN-Z103 calibration up to 6 GHz
V1.80	Added SCPI support to acquire compass information
V1.70	Compass: Update World Magnetic Model coefficients to 2015-2020
V1.60	Removed the limitation to 3 points for triangulation
V1.60	MIMO configuration per carrier within LTE Carrier aggregation
V1.52	Decrease minimum sweep time for Zero span to 100 us
V1.51	ZVHView: lock and unlock buttons were added to the file control windows
V1.50	Spectrum Analyzer: modified the default display position of trace mathematics results

## 1.3 Improvements

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

### Improvements of firmware V2.00:

No new Improvements are implemented in this release.

### Improvements of earlier firmware versions:

since	Function
V1.90	Improved spur performance

V1.80	Added "Waiting for Trigger" indication
V1.80	Enabled support for Rosenberger cables
V1.71	Communication issues with USB Power Sensors
V1.71	Device freeze while processing GPS data at selected locations/altitudes
V1.52	Increase maximum Reference Level from 30dB to 50dB
V1.51	Trace averaging did not work properly in Antenna & Cable Test - DTF operation with high accuracy calibration
V1.51	ZVH locked up if the wizard configuration contained a power meter dataset
V1.51	The Pincode protection did not work properly
V1.50	Spectrum Analyzer: Status of the preamplifier is displayed in the hardware settings summary
V1.50	Date and time indication available when playing back data recorded with the Spectrogram measurement application (R&S®ZVH-K14)
V1.50	Improved visualization of the highest peak per segment in Spectrum Emission Mask and 3GPP BTS Spurious Emission measurement
V1.50	ZVH View: Internal DC Bias measurement results in a dataset got lost when modifying settings in ZVH View and storing the dataset again. This has been fixed.
V1.50	ZVH View: Pass/fail information contained in ACLR datasets is now displayed
V1.50	ZVH View: Removed possible error message when opening the marker editor
V1.50	ZVH View: Display pass/fail information contained in ACLR datasets

## 1.4 Known issues

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

since	Function
Since V1.52	If NRP-Z5x Power Sensor is not functional a NRP-Z5x Firmware update to version V4.26 is required.

## 2 Modifications to the documentation

The current documentation is up-to-date.

## 3 Firmware update

### 3.1 Validity information

Device	Order Number
R&S® ZVH4	1309.6800.24
R&S® ZVH8	1309.6800.28

### 3.2 Update information

Before you update the firmware, it is recommended to make a backup of the stored data on the R&S®ZVH Handheld Cable and Antenna Analyzer (datasets, screenshots, transducer factors etc.). You can make a backup with the tools available in the R&S®InstrumentView software package.

### 3.3 Updating the firmware

The firmware update itself does not delete or modify that data. However, it is recommended to perform a factory reset after the firmware update. This will update predefined limit lines, channel tables etc. but will delete user data.

New firmware versions usually contain new features, improvements of existing functionality, bug fixes etc. When a new firmware version is available, it is recommended to replace the old firmware with the new one.

The latest installation file is can be found on the Rohde & Schwarz web page at <http://www.rohde-schwarz.com/firmware/zvh>

The steps for the installation of the firmware update are the following:

1. Download the firmware installation file `ZVH_<version>.exe` from the internet.
2. The firmware comes in a single `.exe` file.
3. Save the file to the root directory of a memory stick or SD-card.
4. Run the `.exe` file to unpack the self-extracting zip archive. The installation files are automatically extracted.
5. Make sure that only the extracted files are present in the root directory of the memory stick.
6. Turn off the R&S®ZVH Handheld Cable and Antenna Analyzer.
7. Connect the R&S ZVH Handheld Cable and Antenna Analyzer to AC via its power adapter. The instrument firmware will refuse to perform the update if the instrument runs on battery.
8. Put the memory stick or SD-card into respective slot of the instrument.
9. Press the "Preset" key and the number "8" key simultaneously.
10. Turn on the R&S®ZVH Handheld Cable and Antenna Analyzer and keep pressing the two keys for at least 5 seconds after the startup screen appears.

11. Release the keys.
12. The booting process continues. After a couple of seconds, the R&S®ZVH Handheld Cable and Antenna Analyzer asks you if you really want to update the firmware.
13. Press the ENTER key to update the firmware. You can cancel the firmware update with the CANCEL key.  
The firmware update takes several minutes. The R&S®ZVH Handheld Cable and Antenna Analyzer shows a message when the firmware update is done. **Note:** Do not turn off the R&S®ZVH Handheld Cable and Antenna Analyzer during the firmware update.
14. Turn off the R&S®ZVH Handheld Cable and Antenna Analyzer.
15. Turn on the R&S®ZVH Handheld Cable and Antenna Analyzer.
16. The R&S® ZVH Handheld Cable and Antenna Analyzer boots with the new firmware version.
17. Optional: It is recommended to perform a **factory reset** after a firmware update to replace the predefined limit lines, channel tables and other data with the latest updates.  
**Note:** Before you start a factory reset, make sure to make a backup of your data that you have saved on the R&S® ZVH Handheld Cable and Antenna Analyzer. Otherwise that data is deleted.

### 3.4 Performing the Self Alignment on the Instrument

This section is relevant for R&S ZVH4 and R&S ZVH8 when being updated from firmware versions V1.11 or below.

In Network operating mode the instrument models R&S ZVH4 and R&S ZVH8 support a default set of calibration data, the so-called factory calibration. This dataset is used whenever the instrument displays "fcal" in the title bar.

Instruments equipped with firmware versions V1.11 or below need an update of this dataset, as firmware versions > V1.11 use improved algorithms which need more data in order to obtain optimum results.

The self alignment procedure requires a calibration standard R&S FSH-Z28 (order # 1300.7810.03), which is suitable for R&S ZVH4 and R&S ZVH8 instruments, or at least a calibration standard R&S FSH-Z29 (order # 1300.7510.03) for R&S ZVH4 instruments. In addition, a RF cable with two N connectors is required in order to provide a through connection between measurement port 1 and port 2.

The self alignment is performed by the following steps:

1. Switch the instrument on
2. Select Network operation by pressing MODE – Cable & Antenna Test.
3. Make sure that the instrument runs for at least 30 minutes at room temperature.
4. Press the keys SETUP – INSTRUMENT SETUP. Place the cursor on the menu entry "Self Alignment" by scrolling the menu bar down with the rotary knob and press ENTER.
5. The instrument will prompt you to confirm that the factory calibration data will be overwritten.

6. Press softkey YES.
7. The self alignment procedure will start and prompt you to connect the calibration standards and the through connection to port 1 and 2 in the sequence.
8. Follow the instructions until the instrument reports "Self Alignment Done!".
9. Press softkey EXIT to return to the measurement screen.

## 4 Firmware options

You can equip the R&S®ZVH Handheld Cable and Antenna Analyzer with optional functionality or firmware options. These firmware options expand the functionality of R&S®ZVH Handheld Cable and Antenna Analyzer with new measurement functions settings etc.

This section can be skipped if the option keys were already entered once. Option keys are not affected by a firmware update.

To install a new firmware option, you have to enter a license key for validation. The license key is included in the delivery of the firmware option.

The steps for the installation of the firmware options are the following:

1. Press the "Setup" key to enter the instrument setup menu.
2. Select the "Installed Options" menu item.  
The R&S®ZVH Handheld Cable and Antenna Analyzer shows a list of all options that are currently installed on your R&S®ZVH Handheld Cable and Antenna Analyzer.
3. Select the "Install Option" button and press the ENTER key.  
The R&S®ZVH Handheld Cable and Antenna Analyzer opens an input field.
4. The license key is a 32-digit number. Enter the license key with the alphanumeric keys and confirm the entry with the ENTER key.
5. The R&S®ZVH Handheld Cable and Antenna Analyzer confirms a successful installation.  
If the R&S®ZVH Handheld Cable and Antenna Analyzer shows an "Invalid Key Code" message, try to enter the license key again.

## 5 Customer support

### Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz product, contact our customer support center. A team of highly qualified engineers provides support and works with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz products.

### Contact information

Contact our customer support center at [www.rohde-schwarz.com/support](http://www.rohde-schwarz.com/support) or follow this QR code:



Bild 5-1: QR code to the Rohde & Schwarz support page