

R&S®ETH

Handheld TV Analyzer

Firmware Version 4.40

R&S®ETH View

PC Software

Software Version 4.30

Release Notes

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81671 Munich, Germany

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The following abbreviations are used throughout this document:

R&S®ETH is abbreviated as R&S ETH. R&S®ETH View is abbreviated as R&S ETH View.

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1 Information on the Current R&S ETH Version

1.1 Version 4.40

New Functionality

- For TV receiver measurements, an RF setting status register is added. The status register can be remote controlled. It shows changes of Overload Detector, RF Preselection, RF Step Attenuator, OFDM Demodulator Lock and FEC Lock.
- For TV receiver measurements, an RF level (peak and average) with reset function is added. The RF level can be remote controlled.

Modified Functionality

- The speed of instrument mode changes is improved.
- For using the remote desktop software (included in the R&S ETH software package), the remote control software option is not necessary anymore.

Fixed Issues

- If a preset was applied in TV Spectrum mode, the channel bandwidth was not set right. This has been fixed.

Known Issues

- None

1.2 Version 4.30

New Functionality

- Multilingual user interface (English, Russian, Spanish, Portuguese, Japanese, Italian).
- Support of the new Windows PC software Broadcast Drive Test. The use of the Broadcast Drive Test software is available with the R&S ETH-K930 option.
- Support of the new Windows PC software Remote Desktop.

Modified Functionality

- The switch speed between the TV Spectrum, TV Spectrum Emission Mask and Spectrum Analyzer modes is improved.
- The amount of data points of an automatically generated transducer data set is extended from 60 to 631 measurement points.

- The 'RF Carrier Offset' measurement parameter gets an average factor of 10 in order to improve the stability of the result.
- The date/time information is now independent from the status of a connected R&S HA-Z240 GPS receiver. Always date and time of the instrument is indicated.
- With a connected and locked R&S HA-Z240 GPS receiver, the frequency measurement parameters (RF Carrier Offset, Symbol Rate Offset, TS Bitrate, Frequency Count Markers) are corrected using the received 1 PPS pulse from GPS. The reference frequency correction starts 5 seconds after the GPS lock. The applied average factor is 300. If the GPS lock is lost, the reference frequency correction factor is also kept as long as the GPS device is disabled in the instrument setup.

Fixed Issues

- In Network Analyzer mode, the display window for the electrical length parameter was too small under certain circumstances.

Known Issues

- None

1.3 Version 4.20

New Functionality

- New TV Analyzer Spectrum Emission Mask measurement mode.
- The 'TV Japan ISDB-T' channel table for Japan is added especially for the ISDB-T applications. To load this channel table, after the firmware update, reset the R&S ETH to the factory settings. For detailed information see section "[Loading the Default Files](#)".
- Measurement profile examples are added especially for Spectrum Emission Mask measurements. To load these examples, reset the R&S ETH to the factory settings after the firmware update. For detailed information see section "[Loading the Default Files](#)".
- Spectrum Emission Mask examples are added. To load these examples, reset the R&S ETH to the factory settings after the firmware update. For detailed information see section "[Loading the Default Files](#)".
- The SCPI commands are extended as follows:
 - New TV Analyzer Spectrum Emission Mask measurement.
 - Markers in TV Analyzer MER(k) measurement mode are added.
 - Markers in TV Analyzer Echo Pattern measurement mode are added.
 - Carrier-to-Noise and Occupied Bandwidth measurement parameter in TV Analyzer Spectrum measurement mode are added.

- The "Remote Commands (R&S ETH-K40) Supplement" manual can be downloaded from the R&S homepage, <http://www.rohde-schwarz.com/downloads/manuals/eth.html>.

Modified Functionality

- None

Fixed Issues

- Isotropic Antenna control is improved.
- SCPI stability is improved.
- The 'Multiple Transfer' function in combination with R&S ETH View software is improved.

Known Issues

- None

1.4 Version 4.10

New Functionality

- The TV Analyzer Spectrum measurement mode is extended by the Carrier-to-Noise and Occupied Bandwidth measurement parameters.
- The TV Analyzer Spectrum measurement mode is available for ISDB-T standard.
- Multilingual user interface (English, Russian, Spanish, Portuguese, Japanese).
- The SCPI commands are extended as follows:
 - New TV Analyzer Spectrum measurement parameters.
 - Readout of the guard interval in case of ISDB-T standard, CALC:DTV:RES:TMCC? GINTerval.
 - Readout of the guard interval in case of ISDB-T standard, CALCULATE:DTV:RESULT? MERPeak.
 - Readout of the Echo Pattern Peak List, CALCulate:DTV:EPATtern:PLISt:DATA?.
- Some equivalent SCPI commandos are added:


```
DISPlay[:WINDow]:TRACe[<1|2>]:X[:SCALe]:AUTO
DISPlay[:WINDow<1|2>]:TRACe:X[:SCALe]:DIVision
DISPlay[:WINDow<1|2>]:MEASurement:EPATtern:THReshold:LINE:STATe
DISPIAY:TRACE:X:CENTER
INSTrument[:SElect] TV
```

- The trace data of the measurements MER(k) and Echo Pattern can be read out. The "Remote Commands (R&S ETH-K40) Supplement" manual can be downloaded from the R&S homepage, <http://www.rohde-schwarz.com/downloads/manuals/eth.html>.

Modified Functionality

- The trace detector setting of the ISDB-T measurement profile example 'Transmitter.isdstd' is changed. To load this example, reset the R&S ETH to the factory settings after the firmware update. For detailed information see section "[Loading the Default Files](#)".

Fixed Issues

- SCPI query commands are not functional with FW versions V4.01 and V4.00. This has been fixed.

Known Issues

- None

1.5 Version 4.01

Modified Functionality

- TV Analyzer mode: Now each TV standard has its own PRESET settings.

Fixed Issues

- TV Analyzer mode: In case of the TV standard is changed the instrument behaviour is improved.
- ISDB-T analysis: In case of the GPS Receiver R&S HA-Z240 is connected and activated the frequency accuracy of the parameter MPEG TS Bitrate was not improved to 2.5e-8 in some cases. This has been fixed.

1.6 Version 4.00

New Functionality

- The TV Analyzer mode is extended by the ISDB-T standard. The Measurement List, TMCC Information, Constellation Diagram, Echo Pattern and MER(k) measurements are available with the R&S ETH-K160 option.
- The SCPI commands are extended by the ISDB-T standard. The "Remote Commands(R&S ETH-K40) Supplement" manual can be downloaded from the R&S homepage, <http://www.rohde-schwarz.com/downloads/manuals/eth.html>.

- The channel table for Brazil is added especially for the ISDB-T standard. To load this channel table, after the firmware update, reset the R&S ETH to the factory settings. For detailed information see section "[Loading the Default Files](#)".
- ISDB-T measurement profile examples are added. To load these examples, reset the R&S ETH to the factory settings after the firmware update. For detailed information see section "[Loading the Default Files](#)".
- The Network Analyzer mode supports limit lines.
- A LAN default gateway address can be set for LAN connections with firewall.
- A low level battery threshold can be set. If the battery level is under this threshold value, the battery symbol in the right upper display corner will be red and flashes.
- Screen capture supports JPG and PNG format.

1.7 Version 3.01

New Functionality

- A signal filter is added that improves the inherent MER of the border carriers. This is especially important for transmitter measurements. If the channel adaptation is set to "slow", this filter is active. Otherwise the filtering is optimized to receive signals with strong echoes.
- The Network Analyzer mode is extended by the "Save as Transducer" function. This function saves the magnitude of the current measurement as a relative transducer in the 'dB' unit.
- The "Recall" functionality is extended by the option for viewing of measurement results. Previously saved measurement results can be viewed.
- If the installed firmware version is V3.00 or higher, a USB memory stick can be used for installing a new firmware version, alternatively to the SD card. For detailed information see section "[R&S ETH Firmware Update](#)".
- The "TV UK incl offset channels" channel table for UK including positive and negative frequency offsets is added. To load this channel table, after the firmware update, reset the R&S ETH to the factory settings. For detailed information see section "[Loading the Default Files](#)".

Modified Functionality

- Channel tables with overlapping bands are taken into account.
- If no SD card is connected, a screenshot is saved on the USB memory stick and not on the internal memory.

Fixed Issues

- DVB-T/H Constellation Diagram: Only the constellations up to carrier 1704 were displayed independently from the FFT mode. This has been fixed.

- DVB-T/H MER(k) measurement: In 2k FFT mode, the carrier grouping to the pixel columns was not correct. This has been fixed.
- DVB-T/H MER(k) measurement: The "Next to Peak" marker function did not always find the next echo peak depending on the input signal. This has been fixed.
- DVB-T/H Spectrum measurement: Under certain circumstances, the power display shows the "\$" sign instead of a number. This has been fixed.

Known Issues

- None

1.8 Version 3.00

New Functionality

- DVB-T/H Test Receiver mode is extended by the MER(k) measurement.
- Spectrum Analyzer mode is extended by the Adjacent Channel Power measurement.
- Remote control functionality is added: R&S ETH-K40 option.
- Distance-to-Fault measurement mode is added: R&S FSH-K41 option.
- Quick Recall functionality of instrument settings added (USER key).
- Multilingual user interface (English, Russian).
- Limit lines examples for Out-of-Band Emission are added.
To load these examples, reset the R&S ETH to the factory settings after the firmware update. For detailed information see section "[Loading the Default Files](#)".
- DVB-T/H measurement profile examples are added.
To load these examples, reset the R&S ETH to the factory settings after the firmware update. For detailed information see section "[Loading the Default Files](#)".
- Channel tables for UK with positive and negative frequency offset are added.
To load these examples, reset the R&S ETH to the factory settings after the firmware update. For detailed information see section "[Loading the Default Files](#)".

Modified Functionality

- The count of measurement samples for determination of the crest factor is extended by factor 10. This results in a higher accuracy of the crest factor measurement.

Fixed Issues

- DVB-T/H Spectrum measurement:
 - The automatic gain control (AGC) function is now implemented also in the DVB Spectrum measurement.

- The displayed power in the DVB Spectrum measurement is now always calculated by using of the RMS detector independent of the trace detector selection.

Known Issues

- None

1.9 Version 2.10

New Functionality

- Support of R&S FSH-Z2 and R&S FSH-Z3 VSWR bridges. R&S ETH models with integrated tracking generator and a connected R&S FSH-Z2 or R&S FSH-Z3 VSWR bridge offer reflection measurements in addition to transmission measurements. The reflection is presented as return loss, VSWR or reflection coefficient.
With the Vector Network Analysis option (R&S FSH-K42) installed, in addition the reflection result is presented in a Smith chart and a one-port cable loss measurement is offered.
- Support of the Distance-to-Fault Analysis option (R&S FSH-K41).
- New transducers and TV channel tables are added. To make them available, the instrument must be reset to factory settings (SETUP menu: Instrument setup). Be aware that when you reset the instrument, all data sets will be deleted and only the factory default files will be reinstalled. Customer data sets, transducers, profiles and tables must first be saved to a PC or a laptop using the R&S ETH View Windows PC software. After the instrument has been reset to factory settings, the files can be added again.

Fixed Issues

- Spectrum Analyzer mode: The marker presentation in the sweep function of the R&S ETH View PC software is not correct. This is fixed.
- A spurious signal at 190 MHz has been removed.

Known Issues

- DVB-T/H Spectrum measurement:
 - The automatic gain control (AGC) function is not yet implemented. If you switch to the DVB-T/H Spectrum measurement, the RF attenuator control is set to manual control. If you then switch to the Measurement List or Constellation Diagram measurement, the RF attenuator control remains manual. You must set the AGC function (Auto Low Noise or Auto Low Distortion) manually if desired.

- The displayed power is calculated by using the selected trace detector (Max Peak, Sample or RMS). For correct power measurement results, the RMS detector must be used, because power measurements made with the RMS detector always indicate the true power, regardless of the signal shape. In the next firmware release, the RMS detector will always be used to calculate the power, independent of the set trace detector.

1.10 Version 2.00

New Functionality

- DVB-T/H Test Receiver mode:
 - Extended by the Echo Pattern measurement and the Echo Pattern Peak List.
 - Extended by the measurement parameter Crest Factor.
- The Network Analyzer mode is extended by the Vector Network Analysis option (R&S FSH-K42).
- Support of the GPS Receiver (R&S HA-Z240).
- Support of the Isotropic Antenna (R&S TS-EMF).
- Support of SDHC memory card (high capacity SD Card ≥ 2 GB)

1.11 Version 1.00

Initial release.

2 Information on the Current R&S ETH View Version and History

2.1 Version 4.30

New Functionality

- New Remote Desktop Windows PC software program.

Modified Functionality

- In vector network analyzer mode, the electrical length measurement parameter is always displayed.

Fixed Issues

- The MER(k) trace bug is solved.

2.2 Version 4.20

New Functionality

- The new TV Analyzer measurements 'Spectrum' and 'Spectrum Emission Mask' are supported.
- The results of the multiple transfer function can be stored now in one file.

Modified Functionality

- None

Fixed Issues

- None

2.3 Version 4.00

New Functionality

- ISDB-T supported.

2.4 Version 3.01

New Functionality

- DVB-T/H measurements Echo Pattern and MER(k): For the display sweep function, you can configure the color of the display lines.

Modified Functionality

- DVB-T/H MER(k): For the display sweep function, the “Next to Peak” marker function is improved.
- The 'DVB-TH xMHz Transmitter.dvbstd' default measurement profiles are modified with respect to out-of-emission measurement recommendations. You can copy them to the R&S ETH using the transfer function of R&S ETH View software.
- The provided default limit lines are modified and updated with respect to out-of-emission measurement recommendations. You can copy them to the R&S ETH using the transfer function of R&S ETH View software.

Fixed Issues

- Echo Pattern List: The absolute level of the echoes are shown correctly now.

2.5 Version 3.00

New Functionality

- The Display Sweep function of the Echo Pattern measurement in DVB-T/H Receiver mode is added.
- The Display Sweep function of the MER(k) measurement in DVB-T/H Receiver mode is added.
- The Display Sweep function of the Adjacent Channel measurement in Spectrum Analyzer mode is added.
- The BNC1 mode is added in the measurement setup.
- DVB-T/H measurement profile examples are added.
- Limit lines examples for Out-of-Band Emission are added.
- Channel tables for UK with positive and negative frequency offset are added.
- DVB-T/H limit table example is added.

Modified Functionality

- None

Fixed Issues

- During an established connection between the R&S ETH and the R&S ETH View PC software, R&S ETH View could be crashed when the R&S ETH was switched off or the hardware connection was interrupted. This has been fixed.
- Using R&S ETH View, data sets were transferred from the R&S ETH to the PC at a rate of about 10 seconds per data set. The rate is now less than 1 second per data set.
- The markers in the Display Sweep function of the Spectrum and Network Analyzer mode were not correct. This has been fixed.

Known Issues

- None

2.6 Version 1.00

- During an established connection between the R&S ETH and the R&S ETH View PC software, R&S ETH View can be crash when the R&S ETH is switched off or the hardware connection is interrupted.
- Using R&S ETH View, data sets are transferred from the R&S ETH to the PC at a rate of about 10 seconds per data set.
- The markers in the Display Sweep function of the Spectrum and Network Analyzer mode are not correct.
- The Display Sweep function of the new Echo Pattern measurement in DVB-T/H Receiver mode is not yet supported.

3 Modifications to the Documentation

The current documentation is up-to-date.

4 R&S ETH Firmware Update

The current firmware version is provided for download at <http://www.rohde-schwarz.com/downloads/firmware/eth.html>

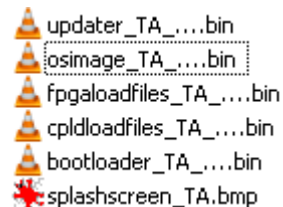
In order to install the firmware, it must first be copied onto an SD card, e.g. HA-Z232, order #1309.6223.00. If the installed firmware version is V3.00 or higher, instead of the SD card, a USB memory stick can be used for installing a new firmware version.

For information on updating software options refer to the Quick Reference Guide, chapter 2.

4.1 Preparing the SD Card or the USB Memory Stick

1. Download the firmware update package from the R&S website into an empty folder on your PC.
The update package comes as a self-extracting *.ZIP file, e.g. "ETH V3.01.EXE" for version 3.01.
2. Start the *.EXE file.
3. Select the folder for the extracted files.
4. Press the OK button to start the file extraction.
5. Copy all the files into the root directory of the SD card or the USB memory stick.

The root directory of the SD card or the USB memory stick should now contain the following files:

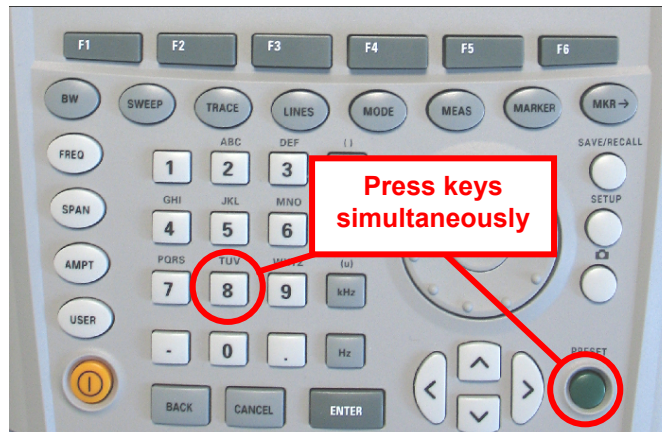


The SD card or the USB memory stick is now ready for use. Note that for using a USB memory stick, the installed firmware before firmware update must be version V03.00 or higher.

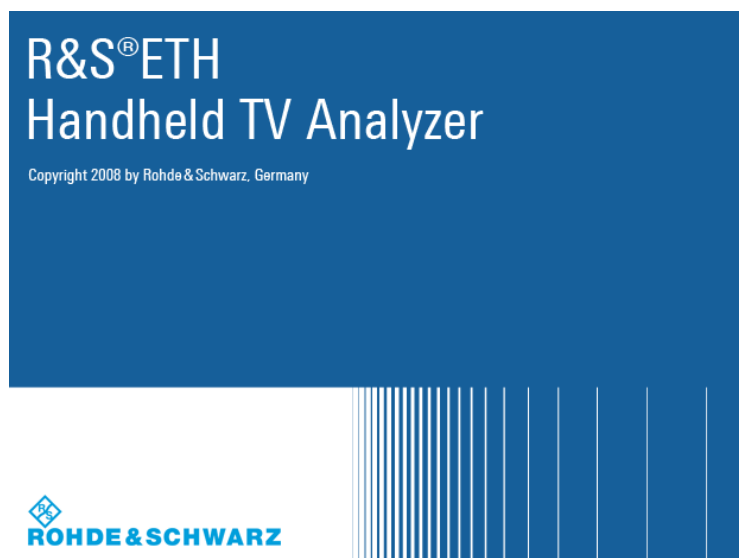
4.2 Performing the Firmware Update

1. Switch off the instrument.
2. Insert the SD card into the SD card slot on the right side of the instrument or connect the USB memory stick using the supplied USB adapter to the USB interface on the left side of the instrument.
3. Connect the instruments to AC mains via its AC power supply.

4. Press the PRESET and 8 keys simultaneously and switch on the instrument.



5. Keep the PRESET and 8 keys pressed for at least 2 seconds after the startup screen has appeared on the screen.



6. Release the PRESET and 8 keys.
The R&S ETH will continue its booting process and after a couple of seconds the following information will appear on the screen:

Instrument Firmware Update

Searching for firmware update (updater_*.bin)
... ..Found \ Storage Card \ updater TA_bin
...OK
Checking updater _TA_.....bin: ... OK

Update instrument to software version ...
Press [ENTER] to update the firmware.
Press [CANCEL] to abort firmware updating.



If the AC mains connection is missing at the start of the firmware update process, the following message will appear at the bottom of the screen:

Instrument not powered by the power adapter. Please connect power adapter.
Press [ENTER] to retry.
Press [CANCEL] to abort firmware updating.

In this case, check the power supply connection and press ENTER in order to continue the update process with step 7.

7. Press ENTER to start the firmware update process.
The instrument will perform the firmware update. This will take about 5 minutes.
The progress of the update will be displayed in a sequence of messages on the screen.
Notice: Do not switch the instrument off during the update process in order to avoid data corruption of the internal flash memory!
 8. As soon as the firmware update is completed, the R&S ETH will display the following message at the bottom of the screen:
-

Firmware updating is successfully completed.
Please switch off the instrument.

9. Switch the instrument off and on again. The R&S ETH will boot with the new firmware version.

4.3 Loading the Default Files

The new firmware contains additional default files (channel tables, measurement profiles, limit tables, limit lines, cable models, transducers and standards). To load these default files, reset the R&S ETH to the factory settings. The reset to the factory settings deletes or overwrites all data sets and screenshots which you have previously stored on the instrument. The same holds true for all channel tables, measurement profiles, limit tables, limit lines, cable models, transducers, and standards which you have created or modified. Therefore make sure to create a backup with the R&S ETH View PC software of all data sets before calling the "Reset to Factory Settings" function. After the reset to the factory settings, you can reload all your data sets using the R&S ETH View PC software.

To load the additional default files

1. Create a backup with the R&S ETH View PC software of all data sets.
2. Reset the R&S ETH to the factory settings.
All default files are loaded.
3. Reload all your data sets using the R&S ETH View PC software.

5 R&S ETH View Installation

For details on the installation refer to the R&S ETH View Manual.

5.1 System Requirements

The minimum system requirements are the following:

- Pentium® processor or equivalent at 133 MHz or higher
- 64 MB free memory space
- 50 MB free hard disk space
- Display resolution SVGA (800 x 600)
- One free communications port (LAN or USB)
- Windows® 2000/XP/Vista operating system

6 Open Source Acknowledgement

This instrument firmware makes use of valuable open source software packages. The most important of them are listed below together with their corresponding open source license. The verbatim license texts are provided in the following chapters.

Package	Link	License
OpenSSL	http://www.openssl.org	OpenSSL/SSLeay
BOOST Library	http://www.boost.org	Boost Software, Version 1.0
ONC/RPC	http://www.plt.rwth-aachen.de	SUN

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com) and software written by Tim Hudson (tjh@cryptsoft.com).

Rohde & Schwarz would like to thank the open source community for their valuable contribution to embedded computing. The source code of the open source packages is available on request.

OpenSSL/SSLeay

LICENSE ISSUES
=====

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OpenSSL License

```
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*
* This product includes cryptographic software written by Eric Young
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* Hudson (tjh@cryptsoft.com).
*
*/

```

Original SSLeay License

```

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*
* This package is an SSL implementation written
* by Eric Young (eay@cryptsoft.com).
* The implementation was written so as to conform with Netscapes SSL.
*
* This library is free for commercial and non-commercial use as long as
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Version 1.0 - August 17th, 2003

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