

# R&S® ETL TV Analyzer

## Release Notes

### Firmware Version 3.54

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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® ETL TV Analyzer is abbreviated as R&SETL TV Analyzer.

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# 1 Information on the current version and history

## 1.1 Version 03.54

### Firmware package contents

Version	Contents
3.54	ETL instrument firmware
5.001	MB-FPGA
1.4.14	MPEG FPGA (B280)
1.30.31	MPEG FPGA (B380)
1.270	ATV FPGA
1.560	DTMB FPGA
2.440	DVB-T/H FPGA
1.600	J83A/B/C FPGA
1.532	ATSC FPGA
1.020	ATSC-M/H FPGA ext.
1.050	TDMB FPGA
2.100	ISDB-T FPGA
1.44h	UKW/FM FPGA
2.420	DVB-T2 FPGA
2.91f	DVB-T2 FPGA ext.
3.010	DTMB (K370) FPGA
3.010	DTMB (K370) FPGA ext.
3.40	ETL TxCheck

### New functionality

#### Contents

None.

### Modified functionality

#### Contents

Processing of GPS positioning data for optimized matching with measurement data.

### Improvements

#### Contents

Added information dialog for softkey *Firmware Update* in Windows 8.

### Known issues

#### Contents

None.

### Hint on Firmware Update for R&S ETL with Windows 8:

Please use the "FWInstaller" application from the ETL desktop.

## 1.2 Version 03.53

### Firmware package contents

Version	Contents
3.53	ETL instrument firmware
5.001	MB-FPGA
1.4.14	MPEG FPGA (B280)
1.30.31	MPEG FPGA (B380)
1.270	ATV FPGA
1.560	DTMB FPGA
2.440	DVB-T/H FPGA
1.600	J83A/B/C FPGA
1.532	ATSC FPGA
1.020	ATSC-M/H FPGA ext.
1.050	TDMB FPGA
2.100	ISDB-T FPGA
1.44h	UKW/FM FPGA
2.420	DVB-T2 FPGA
2.91f	DVB-T2 FPGA ext.
3.010	DTMB (K370) FPGA
3.010	DTMB (K370) FPGA ext.
3.40	ETL TxCheck

### New functionality

Contents
<p>Use of GPS devices: Mode "NMEA compatible" now also supports R&amp;S TSMX-PPS2 module. This enables the use of "dead reckoning" information when ETL is used in a driving vehicle, e.g. with BCDRIVE.</p> <p>See configuration dialog:  MODE &gt; TV/Radio Analyzer/Receiver &gt; Digital TV &gt; Measure Log &gt; Configure &gt; NMEA compatible (Virtual COM port)</p>

### Modified functionality

#### Contents

None.

### Improvements

#### Contents

None.

### Known issues

#### Contents

FM Radio (R&S ETL-K111):  
Audio frequency response trace sporadically may stop updating after a few cycles.  
In this case please restart the measurement.

### Hint on Firmware Update for R&S ETL with Windows 8:

Please use the "FWInstaller" application from the ETL desktop.

## 1.3 Version 03.51

### Firmware package contents

Version	Contents
3.51	ETL instrument firmware
5.001	MB-FPGA
1.4.14	MPEG FPGA (B280)
1.30.31	MPEG FPGA (B380)
1.270	ATV FPGA
1.560	DTMB FPGA
2.440	DVB-T/H FPGA
1.600	J83A/B/C FPGA
1.532	ATSC FPGA
1.020	ATSC-M/H FPGA ext.
1.050	TDMB FPGA
2.100	ISDB-T FPGA
1.44h	UKW/FM FPGA
2.420	DVB-T2 FPGA
2.91f	DVB-T2 FPGA ext.
3.010	DTMB (K370) FPGA
3.010	DTMB (K370) FPGA ext.
3.40	ETL TxCheck

### New functionality

#### Contents

Support of ETL-K470 (CDR License).

### Modified functionality

#### Contents

None.

## Improvements

### Contents

ATV / DTV-Spectrum and TV Analyzer:

In case of level units other than dBm: When changing the display scale state using Log/Lin and/or Abs/Rel, the trace was offset for a large amount.

## Hint on USB boot behavior for R&S ETL with Windows 8:

- R&S ETL with Windows 8 and ETL image version 3.00 and 3.01 when booting: With some USB devices (e.g. wireless mouse / keyboard) connected to the R&S ETL, the countdown shown in the ETL's backup / recovery page during startup will stop at zero and will not close the backup / recovery application.

This issue can be fixed by installing the Boot Manager Update (Grub Update):

- Open <https://www.rohde-schwarz.com/firmware/etl/>.
- Select "Fixing boot issue when USB devices are connected: Boot Manager (Grub) Update for ETL with Windows 8", and download the file "ETL-LPCA-W8\_32Bit-GrubOnlyRecoveryStick\_x\_xx.zip".
- Follow the instructions provided in the pdf document "Description: Boot Manager (Grub) Update for ETL with Windows 8" on the same page. See also section **Fehler! V erweisquelle konnte nicht gefunden werden.** of this document for further details.

This fix is implemented in all ETLs with ETL image version 3.02 and higher.

## Known issues

### Contents

None



## 1.4 Version 03.50

### Firmware package contents

Version	Contents
3.50	ETL instrument firmware
5.001	MB-FPGA
1.4.14	MPEG FPGA (B280)
1.30.31	MPEG FPGA (B380)
1.270	ATV FPGA
1.560	DTMB FPGA
2.440	DVB-T/H FPGA
1.600	J83A/B/C FPGA
1.532	ATSC FPGA
1.020	ATSC-M/H FPGA ext.
1.050	TDMB FPGA
2.100	ISDB-T FPGA
1.44h	UKW/FM FPGA
2.420	DVB-T2 FPGA
2.91f	DVB-T2 FPGA ext.
3.010	DTMB (K370) FPGA
3.010	DTMB (K370) FPGA ext.
3.40	ETL TxCheck

### New functionality

Contents
New ETL instrument drivers (LabView, LabWindows/CVI, Linux/OSX, VXI x64, VXI x86) for ETL FW version 3.50 are available for download on the R&S ETL page ( <a href="https://www.rohde-schwarz.com/driver/etl/">https://www.rohde-schwarz.com/driver/etl/</a> ).
Support of ETL-K950 (TVScan 2.0).

## Modified functionality

### Contents

#### FM Radio Analysis (R&S ETL-K110, R&S ETL-K112):

- Support of ITU-R SM.1268-4 (editorial change).
- Multipath measurement:
  - A new algorithm for the FM multipath measurement has been implemented, providing precise, stable and reliable results.
  - The trace is now fixed to 0 % AM at 0 Hz offset.
  - The number of FM/AM pairs per trace has been doubled to 384000.
  - Trace average is now active by default. Sweep count default is set to 10, and can be changed by the customer.
  - Limit for pass/fail of multipath has been changed from 2.0 %/kHz to 0.4 %/kHz, according to ITU-R SM.1268-3/-4.
  - Limit for pass/fail of channel response has been changed from 1.0 % to 100 %.
  - Default span has been changed to +/-75 kHz, default channel response scale has been changed to +/-10%, and default gradient scale has been changed to +/-1%.

Remote Color Settings have been extended. For a complete list, please refer to section "Remote Control TV/Radio Analyzer/Receiver/DISPlay Subsystem" in the user manual.

## Improvements

### Contents

#### HEVC Decoder (R&S ETL-B380):

- For unknown AC3 content, the HEVC video was not decoded.
- Audio bit rate displayed in some cases wrong results for MPEG and DOLBY.

#### Digital TV:

- If a parameter is out of limits and the screen is printed, the OLIM flag showed green color on the print out, instead of red color.
- Transducer Factors: In some cases, the transducer factor was not correctly processed, resulting in a wrong level measurement.

#### General:

- After configuring the display screen title to show date and time, it was not possible to show again firmware version and serial number.

#### TS Analyzer (R&S ETL-K280):

- Occasionally, an abnormal termination could be observed upon closing the TS Analyzer application if T2-MI inputs were connected.
- Packet and Table Interpreter did not show any result for PLPs.
- Table Interpreter allows now values different from 0xF for element "stream\_content\_ext" in the "Component Descriptor" of SDT.
- After a clear on the IP Flow Meter (R&S ETL-K386) 3 wrongly identified monitoring events showed up.
- Streaming to an external device: The label "Source" is now always consistent to the stream played out. A double click on a different PID now allows a quick change of the stream played out. Please note, that the external decoder must be capable to adapt dynamically to the new PID.

#### T2-MI Extension (R&S ETL-K382):

- The feature “hiding of events” is applicable for the PLP layer, but not for the T2MI layer. A hint on this has been added.

### Hint on USB boot behavior for R&S ETL with Windows 8:

- R&S ETL with Windows 8 and ETL image version 3.00 and 3.01 when booting: With some USB devices (e.g. wireless mouse / keyboard) connected to the R&S ETL, the countdown shown in the ETL's backup / recovery page during startup will stop at zero and will not close the backup / recovery application.  
This issue can be fixed by installing the Boot Manager Update (Grub Update):
  - Open <https://www.rohde-schwarz.com/firmware/etl/>.
  - Select “Fixing boot issue when USB devices are connected: Boot Manager (Grub) Update for ETL with Windows 8”, and download the file “ETL-LPCA-W8\_32Bit-GrubOnlyRecoveryStick\_x\_xx.zip”.
  - Follow the instructions provided in the pdf document “Description: Boot Manager (Grub) Update for ETL with Windows 8” on the same page. See also section **Fehler! Verweisquelle konnte nicht gefunden werden.** of this document for further details.  
This fix is implemented in all ETLs with ETL image version 3.02 and higher.

### Known issues

Contents

None

## 1.5 Version 03.40

### Firmware package contents

Version	Contents
3.40	ETL instrument firmware
5.001	MB-FPGA
1.4.14	MPEG FPGA (B280)
1.30.31	MPEG FPGA (B380)
1.270	ATV FPGA
1.560	DTMB FPGA
2.440	DVB-T/H FPGA
1.600	J83A/B/C FPGA
1.532	ATSC FPGA
1.020	ATSC-M/H FPGA ext.
1.050	TDMB FPGA
2.100	ISDB-T FPGA
1.44h	UKW/FM FPGA
2.420	DVB-T2 FPGA
2.91f	DVB-T2 FPGA ext.
3.010	DTMB (K370) FPGA
3.010	DTMB (K370) FPGA ext.
3.40	ETL TxCheck

### New functionality

Contents
DTMB (Chinese terrestrial, R&S ETL-K370): <ul style="list-style-type: none"> <li>— Four different System Optimizations (Equalizer off, Slow/Laboratory, Fast/SFN, Mobile) are available.</li> <li>— Implementation of automatic and manual echo compensation window positioning.</li> </ul>
Measurement Log (R&S ETL-K208): <ul style="list-style-type: none"> <li>— CSV files can now also be exported via SCPI command.</li> </ul>

## Modified functionality

### Contents

DTMB (Chinese terrestrial, R&S ETL-K370):

- If automatic modulation detection is activated within the MER(f) or Ingress Measurement and the applied signal changes from multicarrier to single carrier or vice versa, the view changes to Overview and possibly open measurement dialogs are closed.
- The selection of the carrier loop bandwidth has been removed. It is now internally set to a suitable value.

ETL base unit:

- As the LXI Web service is not supported anymore, also the LXI configuration possibility has been removed from the base unit.

FM (Radio Analysis, R&S ETL-K110, R&S ETL-K111, R&S ETL-K112):

- The color settings for the Deviation Violation Measurement has been modified to provide a better guidance of the actual state of the measurement.

## Improvements

### Contents

DTMB (Chinese terrestrial, R&S ETL-K370):

- Improvement of demodulator performance for measurements at the transmitter and measurements in AWGN channels.
- The value "AUTO" for SI Power Normalization could not be set via SCPI interface. This has been corrected.

J.83/A/B/C (R&S ETL-K210 and R&S ETL-K213):

- Toggling between MER (f) and Ingress Measurement could lead to a change to the Overview screen. This has been corrected.

FM (Radio Analysis / Generator, R&S ETL-B201, R&S ETL-K110, R&S ETL-K111, R&S ETL-K112):

- Depending on the operating history, the display showed a different setting for Preemphasis and Preemphasis Comp as actually configured within the hardware. This has been corrected.
- MPX Power Measurement: After usage of the timer, the time span was not automatically refreshed. This has been corrected.

TS Generator (R&S ETL-K280):

- License R&S ETL-LibK54 (ISDB-T streams) was not correctly verified. This has been corrected.

Analogue TV:

- Carriers measurement: After some time, under special conditions, the display update stopped. This has been corrected.
- When setting the Noise Reference Bandwidth in ATV C/N Setup menu, ETL always came back to the default value (5.0MHz) in the next measurement. This has been corrected.

TV Analyzer: Position of y axis did not always correctly consider the Expected Level setting. This has been corrected.

General: A freeze of the operating system has been observed occasionally on some Windows 8 instruments during application start, when latest Microsoft updates have been installed. This has been corrected.

## Known issues

### Contents

R&S ETL with Windows 8 and ETL image version 3.00 and 3.01; booting: With some USB devices (e.g. wireless mouse / keyboard) connected to the R&S ETL, the countdown shown in the ETL's backup / recovery page during startup will stop at zero and will not close the backup / recovery application.

This issue can be fixed by installing the Boot Manager Update (Grub Update). Download the file "ETL-LPCA-W8\_32Bit-GrubOnlyRecoveryStick\_x\_xx.zip" from <https://www.rohde-schwarz.com/firmware/et/> and follow the instructions provided in the pdf document. See also section **Fehler! Verweisquelle konnte nicht gefunden werden.** for further details. fix is implemented in all ETLs with ETL image version 3.02 or higher.

## 1.6 Version 03.30

### Firmware package contents

Version	Contents
3.30	ETL instrument firmware
5.001	MB-FPGA
1.4.14	MPEG FPGA (B280)
1.28.15	MPEG FPGA (B380)
1.270	ATV FPGA
1.560	DTMB FPGA
2.440	DVB-T/H FPGA
1.600	J83A/B/C FPGA
1.532	ATSC FPGA
1.020	ATSC-M/H FPGA ext.
1.050	TDMB FPGA
2.100	ISDB-T FPGA
1.44h	UKW/FM FPGA
2.420	DVB-T2 FPGA
2.91f	DVB-T2 FPGA ext.
1.000	DTMB (K370) FPGA
1.000	DTMB (K370) FPGA ext.
3.40	ETL TxCheck

### New functionality

Contents
<p>IP Input and Output (R&amp;S ETL-K386):</p> <ul style="list-style-type: none"> <li>— Initial release of this new option (requires R&amp;S ETL-B380).</li> </ul>
<p>DTMB (Chinese terrestrial, R&amp;S ETL-K370):</p> <ul style="list-style-type: none"> <li>— Automatic detection of Frame Header Power Boost and System Information Power Normalization.</li> </ul>

- Additional method for Frame Header Power Reference (now selectable between “Compliant to GB/T 20600-2006”, and “Average Power of 4 QAM”. This provides improved compatibility to some exciters in the market.
- Added new parameters: MER(FH, rms), MER(FH, peak), MER(SI, rms), MER(SI, peak). These parameters are also available with the ETL Measurement Log (ETL-K208).
- Additional remote commands.

#### DTMB Tx Measurements (Chinese terrestrial, R&S ETL-K372):

- Zoom parameters implemented.
- Measurement of Adjacent Channel Power according to GB/T 28435 and GB/T 28436 in the Spectrum Analyzer.
- Measurement of Out of Band Emissions according to GB/T 20600-2006.

#### MPEG Analyzer (R&S ETL-K282):

- Context sensitive help functionality implemented.

#### TS Generator Analyzer (R&S ETL-K280):

- TRP files can now be played seamless (requires R&S ETL-B380).

## Modified functionality

### Contents

#### AV decoder and TS processing (R&S ETL-B380):

- Improved decoding performance.

#### DVB-T/DVB-T2 (R&S ETL-K240/K340):

- Out of Band Emission Masks: Now supporting ETSI EN 302 296 V2.10 (released 2017).

#### Spectrum Analyzer:

- The default value for ACP limit check has been changed to “On”.

#### ETL base unit:

- Context sensitive help: The help browser has been exchanged by the browser of the operating system.
- The central dialog for entering frequency, bandwidth, etc. has been moved to the upper right corner to avoid hiding of central measurement properties.
- ETL Mode button pressing twice: Now, a fast selection between applications is possible.

## Improvements

### Contents

#### DTMB Tx Measurements (Chinese terrestrial, R&S ETL-K372):

- DTMB Ingress Single Carrier: Marker frequency input field now uses a frequency in MHz; and the trace is now visible under any conditions.

#### Measurement Log (R&S ETL-K208):

- Export via remote now uses correct data combinations (avg, min, max).
- Export of data via remote: Time shift (by 1 hour) is now corrected.

#### MPEG Generator / Recorder (R&S ETL-K280):

- Corrected: TS errors when using streams from LIB-K71.



- Corrected: TS sync loss when using encrypted TRP streams.
- In some rare cases, a strange behavior of softkeys for TS Generator and TS Recorder occurred. This has been fixed.

**Audio/Video Decoder (R&S ETL-B281):**

- CCVS output for hardware decoder is not working. This has been corrected.
- Corrected: B280 and B281 were not shown in ETL option list.

**Analog TV Video Analysis (R&S ETL-K202):**

- Sin x/x measurement graphic did not show the group delay trace. This has been corrected.
- ICPM measurement showed the result = 0. This has been corrected.
- Sin x /x amplitude measurement showed too high trace and peak values. This has been corrected.

**DVB-T/DVB-T2 (R&S ETL-K240/K340):**

- Out of Band Emission Masks: Corrected: Indication of Fail despite of a compliant signal.

**DVB-T2 (R&S ETL- K340):**

- Corrected: The spectrum measurement uses too many sweep points, after having selected the Echo Pattern measurement (16K and 32 k FFT only).

**Known issues****Contents****DTMB (Chinese terrestrial; R&S ETL-K370):**

- In FH595 mode, when significant noise is added, the displayed MER is about 2 dB below of the theoretical MER.

**AV decoder and TS processing (R&S ETL-B380):**

- For update from FW version 3.20, there should not be a LAN cable connected to the RJ45 connector of the B380. Otherwise, the driver update may fail.

## 1.7 Version 03.20

### Firmware package contents

Version	Contents
3.20	ETL instrument firmware
5.001	MB-FPGA
1.4.14	MPEG-FPGA
1.270	ATV FPGA
1.560	DTMB FPGA
2.440	DVB-T/H FPGA
1.600	J83A/B/C FPGA
1.532	ATSC FPGA
1.020	ATSC-M/H FPGA ext.
1.050	TDMB FPGA
2.100	ISDB-T FPGA
1.44h	UKW/FM FPGA
2.420	DVB-T2 FPGA
2.91f	DVB-T2 FPGA ext.
1.000	DTMB (K370) FPGA
1.000	DTMB (K370) FPGA ext.
3.40	ETL TxCheck

### New functionality

Contents
ATV: Added: Remote control for CTB, CSO and C/N measurement.
MPEG Analyzer / Decoder: Support of new option R&S ETL-B380 (AV Decoder and TS Processing), including HEVC and AVS/AVS+ decoding, including UHD (R&S ETL-K381).
DTMB (Chinese terrestrial) (R&S ETL-K370): <ul style="list-style-type: none"> <li>— R&amp;S ETL-K371 (DTMB SFN Frequency Offset): Initial release.</li> <li>— R&amp;S ETL-K372 (DTMB Extended TX Measurements): Initial release.</li> </ul>

## Modified functionality

### Contents

MPEG Analyzer (R&S ETL-K282):

The user specific SNMP configuration has been moved to C:\User\SNMP\USER\snmpetl.conf. This allows a reliable conservation of the SNMP configuration after shutdown.

## Improvements

### Contents

Remote control via GPIB: Frequent pressing of LOCAL button during GPIB operation sometimes resulted in a black screen. This has been corrected.

All digital TV standards: The default value for the carrier recovery loop bandwidth is correctly set to the default value.

DTMB (Chinese terrestrial) (R&S ETL-K370):

- Improved BER performance in case of noisy signal, especially for code rates 0.6 and 0.4.

MPEG Recorder (R&S ETL-K280):

- Recording file size is not limited to 116 MB anymore.

## Known issues

### Contents

DTMB (Chinese terrestrial; R&S ETL-K370):

- In FH595 mode, when significant noise is added, the displayed MER is about 2 dB below of the theoretical MER.
- Small amount of phase jitter in single carrier mode.
- Functions are set to fixed values in the special settings dialogue:  
System optimization, bandwidth of symbol loop, manual FFT window positioning.

K372: MER(f) in Single Carrier mode: Markers are not supported.

## 1.8 Version 03.11

### Firmware package contents

Version	Contents
3.11	ETL instrument firmware
5.001	MB-FPGA
1.4.14	MPEG-FPGA
1.270	ATV FPGA
1.560	DTMB FPGA
2.440	DVB-T/H FPGA
1.600	J83A/B/C FPGA
1.532	ATSC FPGA
1.020	ATSC-M/H FPGA ext.
1.050	TDMB FPGA
2.100	ISDB-T FPGA
1.44h	UKW/FM FPGA
2.420	DVB-T2 FPGA
2.91f	DVB-T2 FPGA ext.
1.000	DTMB (K370) FPGA
1.000	DTMB (K370) FPGA ext.
3.40	ETL TxCheck

### New functionality

Contents
<p>DVB-T2 Firmware (R&amp;S ETL-K340):</p> <ul style="list-style-type: none"> <li>— The T2 profile configured (T2-base, T2-lite) is now shown in all measurement views.</li> </ul>
<p>DTMB (Chinese terrestrial) (R&amp;S ETL-K370):</p> <ul style="list-style-type: none"> <li>— MPEG TS via ASI available.</li> <li>— Support of Channel Bandwidths 6MHz and 7MHz.</li> <li>— Added new measurements: BER before LDPC, BER before BCH, Number of LDPC Iterations, Mpeg TS Packet Error Ratio, Mpeg TS Packet Errors per second, Errored Second Ratio with configurable pipeline length, MPEG TS Bitrate.</li> </ul>

- Automatic detection of Carrier Mode.
- Automatic detection of Sideband Position.
- Selectable Measurement Guideline (Transmitter, Exciter, ETSI) for Shoulder Attenuation measurement, now including GB/T 28435 and GB/T 28436.

#### T2-MI Extension (R&S ETL-K382):

- T2-MI Analyzer: Added new feature for checking the DVB-T2-MI compliance of the incoming T2-MI stream.

#### ETL TxCheck (Transmitter test SW):

- Support of new measurement parameters for DTMB ETL-K370.

## Modified functionality

### Contents

The central dialog for entering frequency, bandwidth, etc... has been moved to avoid hiding of central measurement properties.

Video capturing of decoder output (R&S ETL-B281) is only accessible from the TS Analyzer application. The input button within the ATV capture view has been removed.

## Improvements

### Contents

#### Windows 8:

- Internet Explorer is now started correctly from Windows 8 Start Menu. This avoids the error message "This app cannot open".
- DHCP setting does not disable itself anymore when no network connected.
- Network Address, Subnet mask and DHCP settings: In some cases a change of the network settings resulted in a black screen. The complete configuration dialogue has now been changed. It is recommended to use a mouse for changing the network settings.

#### Windows XP:

- SETUP key now works correctly for Windows XP and ETL-Firmware 3.0x.
- Power sensor driver is now installed correctly.

#### DVB-T2 Firmware (R&S ETL-K340):

- MiSo: In case of even frame length and FFT 16k or 32k: LDPC Iterations can now be 1.00 in case of error free signals.

#### FM (Radio) Firmware (R&S ETL-K110):

- After performing FM audio analysis, the overview parameters "L Deviation" and "R Deviation" were not measured anymore. This has been corrected.
- MPX Deviation Violation Setup: Editor for Deviation Limit now works correctly.
- Warning "EXT REF" is now correctly shown when External Reference PLL is unlocked.

ISDB-T: OLIM flag was not set to red when bit rate offset was violated. This has been corrected.

#### MPEG Analyzer:

- Manual operation by hardkeys is enabled.
- Display of PCR-PID in Advanced Tabs isn't limited anymore.

ATV Video Analysis (ETL-K202): Fixed: Abnormal termination of the application.

## Known issues

### Contents

All digital TV standards: The default value for the carrier recovery loop bandwidth is set to low. Especially for ATSC, ATSC-M/H, DVB-C, J.83/A/B/C and ISDB-C, it is recommended to set the loop bandwidth manually to Medium.

#### DTMB (Chinese terrestrial) (R&S ETL-K370):

- In FH595 mode, when significant noise is added, the displayed MER is about 2 dB below of the theoretical MER.
- Small amount of phase jitter in single carrier mode.
- Functions are set to fixed values in the special settings dialogue: System optimization, bandwidth of symbol loop, manual FFT window positioning.
- K372: MER(f) in Single Carrier mode: Markers are not supported.

## 1.9 Version 03.05

### Firmware package contents

Version	Contents
3.05	ETL instrument firmware
5.001	MB-FPGA
1.4.14	MPEG-FPGA
1.270	ATV FPGA
1.560	DTMB FPGA
2.440	DVB-T/H FPGA
1.600	J83A/B/C FPGA
1.532	ATSC FPGA
1.020	ATSC-M/H FPGA ext.
1.050	TDMB FPGA
2.100	ISDB-T FPGA
1.44h	UKW/FM FPGA
2.410	DVB-T2 FPGA
2.91f	DVB-T2 FPGA ext.
0.90a	DTMB (K370) FPGA
0.90a	DTMB (K370) FPGA ext.
3.31	ETL TxCheck

### New functionality

Contents
DTMB (Chinese terrestrial) Firmware (R&S ETL-K370): <ul style="list-style-type: none"> <li>— Constellation diagram of data carriers, system information and frame header</li> <li>— MER (rms and peak) of data carriers</li> <li>— MER vs. carrier measurement with data and system information carriers</li> <li>— Signal level</li> <li>— Carrier frequency offset.</li> <li>— Bit rate offset.</li> <li>— MPEG transport stream bit rate.</li> <li>— Automatic detection of frame header, QAM order, PN phase, code rate, time deinterleaver.</li> </ul>

- Manual setting of OFDM / single carrier mode.
- Amplitude / Phase / Group delay measurement.
- Amplitude Probability Distribution (APD) with crest factor.
- Complementary Cumulative Distribution Function (CCDF) with crest factor.
- Shoulder attenuation measurement (ETSI TR 101290).
- C/N Measurement.

Measurement Log of overview parameters (requires R&S ETL-K208).

## Modified functionality

### Contents

FW Installer: A new version is used for installing the ETL FW.

## Improvements

### Contents

None.

## Known issues

### Contents

DTMB (Chinese terrestrial) (R&S ETL-K370):

- Marker not supported in MER(f) and Amplitude / Phase / Group delay measurements.
- Measure Log: Due to the later implementation of MPEG TS, the Demod Lock State is shown at bottom of display instead of MPEG TS synchronization.
- Measure Log: The Bit Error and Packet Error measurements, and the LDPC iterations are selectable but not yet functional.
- In FH595 mode, if C/N added, the displayed MER is about 2 dB below the true MER.
- Small amount of phase jitter in single carrier mode.
- In single carrier mode, in very rare cases small circles in the constellation may occur for a very short time.

Functions are set to fixed values in the special settings dialogue:

System optimization, bandwidth of AGC, carrier loop and symbol loop, manual FFT window positioning.



## 1.10 Version 03.00

### Firmware package contents

Version	Contents
3.00	ETL instrument firmware
5.001	MB-FPGA
1.4.14	MPEG-FPGA
1.270	ATV FPGA
1.560	DTMB FPGA
2.440	DVB-T/H FPGA
1.600	J83A/B/C FPGA
1.532	ATSC FPGA
1.020	ATSC-M/H FPGA ext.
1.050	TDMB FPGA
2.100	ISDB-T FPGA
1.44h	UKW/FM FPGA
2.410	DVB-T2 FPGA
2.600	DVB-T2 FPGA ext.
3.31	ETL TxCheck

### New functionality

Contents
Support of operating system Windows 8.
Foxit Reader is installed on instruments with hard disc.
DVB-T2 Firmware (R&S ETL-K340): <ul style="list-style-type: none"> <li>— Tolerant ISSY processing.</li> </ul>

### Modified functionality

Contents
None.

## Improvements

### Contents

In version 2.80 there has been signal attenuation of about 40dB after usage of FM and switching back to the Spectrum Analyzer. This problem occurred only with R&S ETL-B310 and has been corrected in this version.

Analog TV used 5MHz filter instead of 5.5 MHz in standard I. This has been corrected.

## Known issues

### Contents

None.

## 2 Modifications to the documentation

### **Hint on Display Pwr Save behavior for R&S ETL:**

On R&S ETL the display power save under  
SETUP > General Setup > Meas Display > More > Display Pwr Save [On | Off] does  
not work directly. Use the Windows control panel to change these power options.

The current documentation is up-to-date.

## 3 Firmware update

### Further information

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

### 3.1 Validity information

If necessary list here the material and model numbers the firmware is referring to

Device	Order Number
Text	Text
Text	Text

### 3.2 Update information

#### Firmware versions $\geq$ 01.71

Use the procedure described in section 3.3.1. Only if the recommended procedure does not work or is not applicable, install the firmware by means of Windows XP or Windows 8 (see section 3.3.2).

#### Firmware versions $\leq$ 01.70

Use the special procedure described in section 3.3.3.

#### Running out of disk space

If you are running out of disk space during installation, uninstall the old firmware manually. For details, refer to section 3.3.3.

#### Requirements for firmware options

Details on requirements for options are provided in the data sheet.



Do not enable **R&S ETL Firmware Options**, if your R&S ETL has no corresponding R&S ETL-B- or K-option installed.

#### Overview on user selectable options

Firmware Option	TV standard	Required for ETL Option
R&S ETL B280 & B380 Drivers	MPEG-TS	ETL B280 or B380
R&S ETL TS Analyzer	MPEG-TS	ETL B280 or B380
R&S ETL K280 TS-Generator	MPEG-TS	ETL K280
R&S ETL K203 ATV Video Generator	ATV	ETL K203

R&S ETL B3x0 K110 K320 K322 K340	FM (Radio), and/or ATSC/ATSC-MDTV, and/or DVB-T2	ETL K110 with B310 *) ETL K320 or K322 ETL K340
R&S ETL K370 DTMB	DTMB	ETL K370
R&S ETL TxCheck	All DTV stds and FM	none

\*) The installation of this packet is only required when both options are installed.

## 3.3 Updating the firmware

### Prerequisites

- A mouse is connected to the USB interface of the R&S ETL.
- The content of the downloaded ETL\_<version>.zip file is stored on the R&S ETL hard disk or an external storage medium (e.g. USB memory stick).
- If you use an external storage medium, connect it to the R&S ETL.

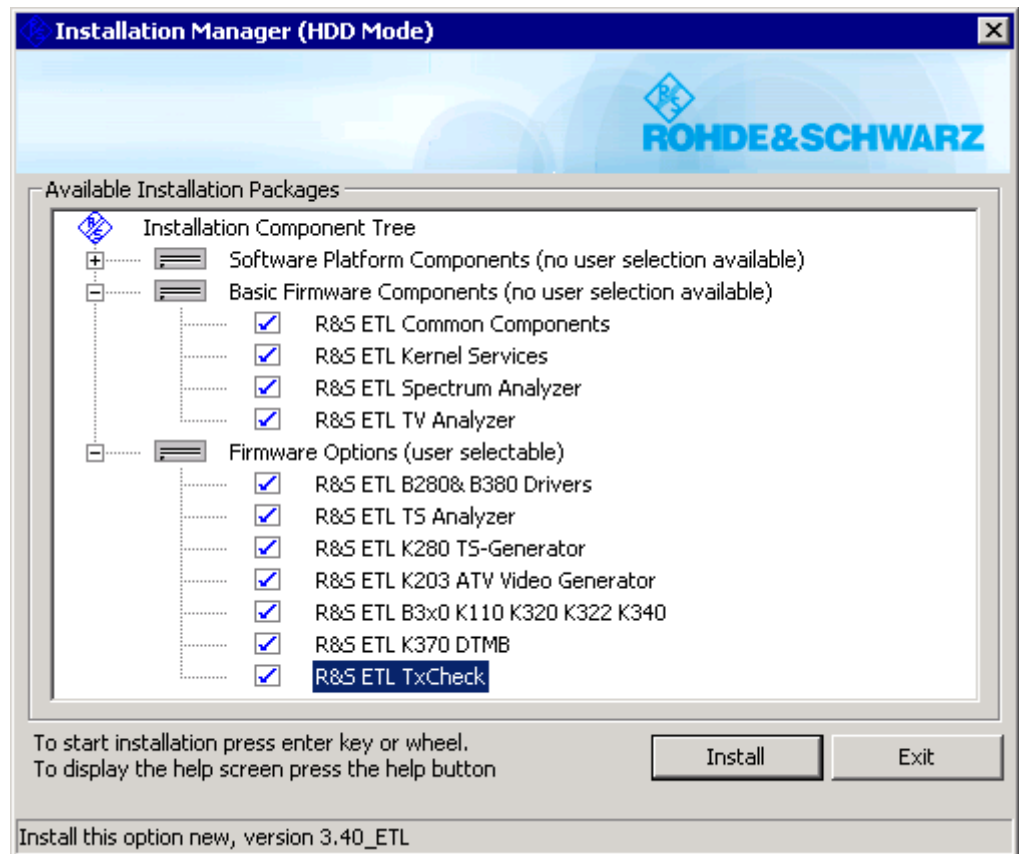
### 3.3.1 Recommended Procedure

1. On the R&S ETL, select **SETUP > More > Firmware Update > Firmware Update**.

The **Firmware Update** dialog box with the update path that was last set is displayed.

2. If the update path differs, click **Browse** to locate the directory:
  - a) In the displayed dialog box, select the drive.
  - b) On the selected drive, select the folder that contains the installation files (ETL.package).
  - c) Click **Select** to confirm your selection and go back to the **Firmware Update** dialog box.
3. Click **Execute**.

The installation manager starts running, and the **Installation Manager** dialog is displayed:



Under **Firmware Options**, all options are enabled that have been installed before. Note the "[Requirements for firmware options](#)" before enabling further options.

4. Click **Install**.

The firmware is updated. During the installation, status dialogs keep you informed.

If you are running out of disk space during installation, deinstall the old firmware manually. For details refer to section [3.3.3.1](#).

At the end of the installation, a reboot is performed. After the firmware update, a message indicates the necessity of a self alignment.

5. Perform a self alignment (for details refer to the getting started manual, chapter 6).
6. If an exception occurs, and you cannot proceed according to the above described step-by-step instructions, install a new firmware version using the Windows operating system (see section [3.3.2](#)).

### 3.3.2 Using the Windows Operating System

1. At the R&S ETL, close all applications.
2. This step depends on the installed operating system:
  - Windows 8: On the Windows 8 desktop, double-click **FWInstaller**.
  - Windows XP: Select **Start > Programs > Accessories > FWUpdate Tool**.

The Windows dialog box to open a file is displayed.

3. Select the `ETL.package` installation file.
4. Click **Open**.

The **Install Manager** dialog box is displayed. To call help for this dialog box, press **F1** or the **HELP** key on the front panel of the R&S ETL.

If desired, you can enable or disable firmware options. Note the "[Requirements for firmware options](#)" before enabling further options.

5. Click **Install**.

### 3.3.3 Updating Older Firmware Versions



Use this procedure only to update firmware versions  $\leq 01.70$ , or when you are running out of disk space during installation

#### 3.3.3.1 Removing the Old Firmware

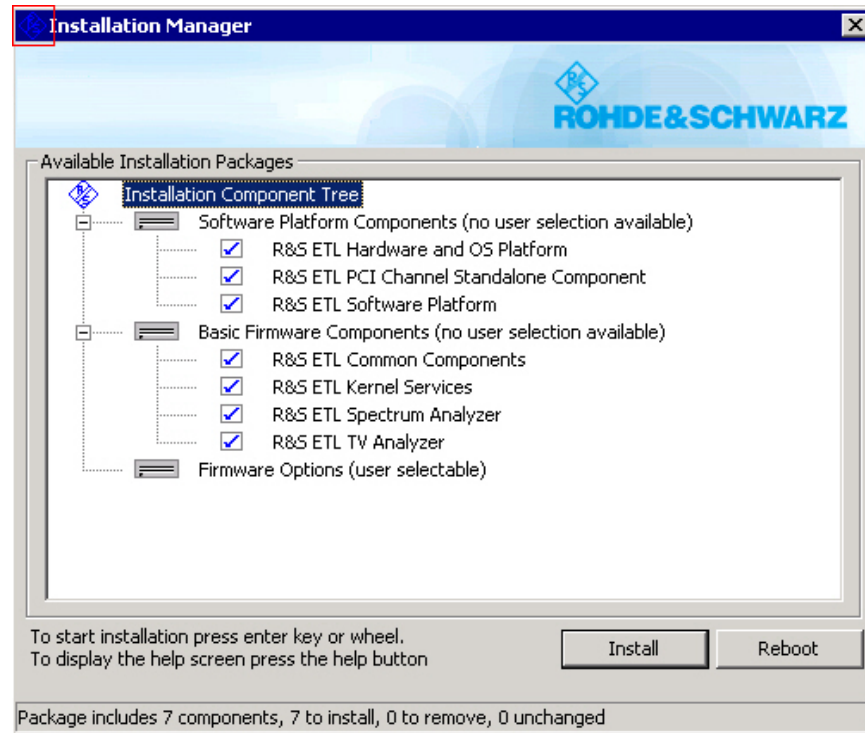
6. On the R&S ETL, select **SETUP > More > Firmware Update > Firmware Update**.

The **Firmware Update** dialog box with the update path that was last set is displayed.

7. If the update path differs, click **Browse** to locate the directory:
  - a) In the displayed dialog box, select the drive.
  - b) On the selected drive, select the folder that contains the installation files (`ETL.package`).
  - c) Click **Select** to confirm your selection and go back to the **Firmware Update** dialog box.

8. Click **Execute**.

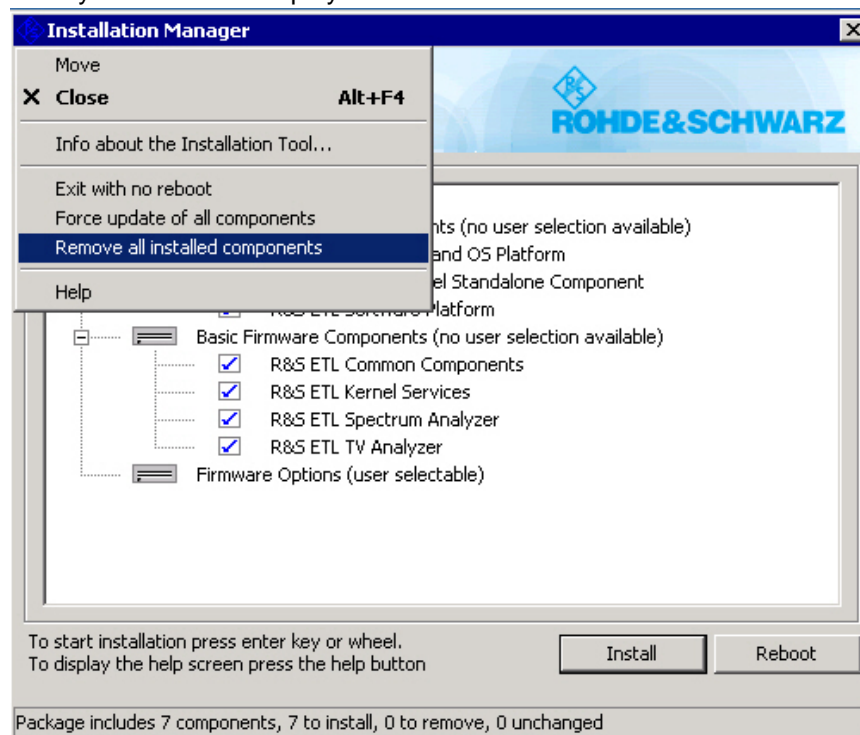
The application is terminated. The installation manager starts running, and the **Installation Manager** dialog is displayed:



9. In the left-hand upper corner of the title bar, click the blue R&S rhombus (marked by red rectangle in screenshot above).



The system menu is displayed.



10. Select **Remove all installed components**.
11. Click **Remove** to confirm your selection.
12. Click **Install** to uninstall the components.  
The Windows desktop is displayed after booting.

### 3.3.3.2 Installing the New Firmware



Other than stated under "[Prerequisites](#)", the content of the downloaded ETL\_<version>.zip file has to be stored on either a USB memory stick or a USB hard disk.

13. Windows XP: Select **Start > Programs > Accessories > FWUpdate Tool**.  
Windows 8: On the **Windows 8 Desktop**, start the icon "**FWInstaller**".  
The Windows dialog box to open a file is displayed.
14. Select the ETL.package installation file.
15. Click **Open**.  
The **Install Manager** dialog box is displayed. To call help for this dialog box, press **F1** or the **HELP** key on the front panel of the R&S ETL.  
If desired, you can enable or disable firmware options. Note the "[Requirements for firmware options](#)" before enabling further options.
16. Click **Install**.

## 4 ETL Boot Manager (Grub) Update

**Issue:**

With some USB devices (e.g. wireless mouse / keyboard) connected to the R&S ETL, the countdown shown in the ETL's recovery page during startup will stop at zero and will not close the recovery application.

**Related products:**

R&S ETL with Windows 8 and ETL image version 3.00 and 3.01. This fix is implemented in all ETLs with ETL image version 3.02 or higher.

This issue can be fixed by installing the Boot Manager Update (Grub Update).

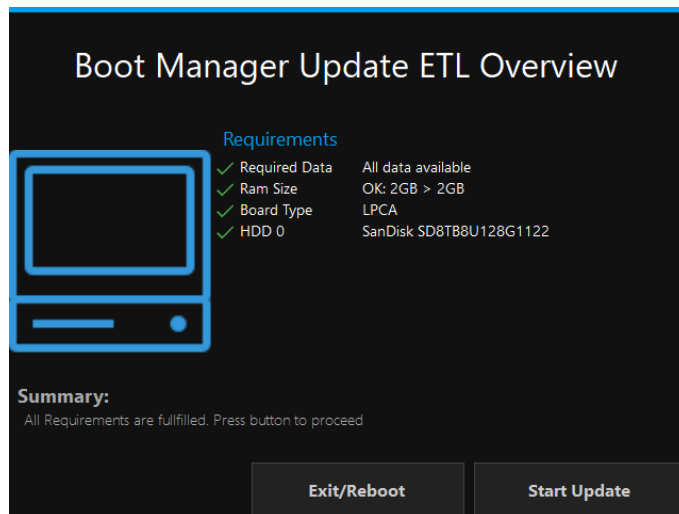
- Open <https://www.rohde-schwarz.com/firmware/etl/>.
- Select "Fixing boot issue when USB devices are connected: Boot Manager (Grub) Update for ETL with Windows 8", and download the file "ETL-LPCA-W8\_32Bit-GrubOnlyRecoveryStick\_x\_xx.zip".
- Follow the instructions provided in the pdf document "Description: Boot Manager (Grub) Update for ETL with Windows 8" on the same page.

Unpack the contents of the downloaded file to a local directory on your PC. Insert an USB stick (at least 8 GB) to your PC and run PrepareWinPEStic.exe to create a bootable USB stick containing the Boot Manager (Grub) Update.

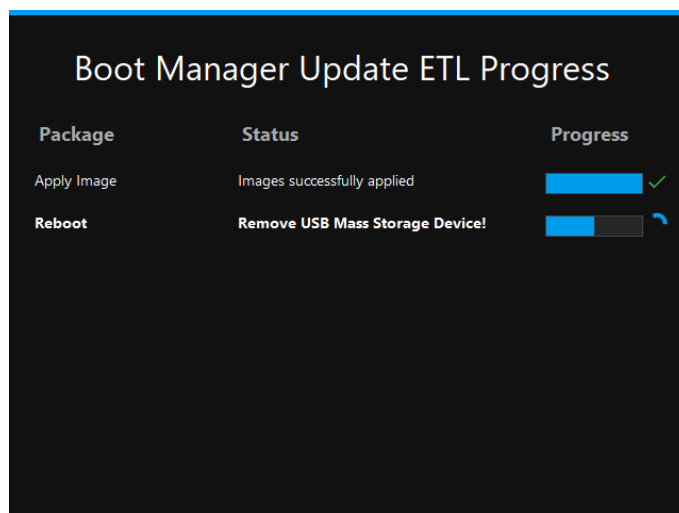
**Attention!** During this process, all previous data on the stick will be removed.

Connect the newly prepared USB stick to one of the USB connectors on the front panel of your ETL, and a USB keyboard to the other USB connector. Restart the device. Press the DEL key on the USB keyboard to enter the BIOS setup menu. In the Boot folder of the BIOS setup menu, move the cursor to "USB Boot order" and select "Always". Leave the BIOS setup with F4 and confirm "Save configuration and exit?" with "Yes", by pressing Enter.

When rebooting the Windows PE (Preinstallation Environment) is started. After a while, the "Boot Manager Update ETL Overview" screen is shown.



Change your USB keyboard against a USB mouse and press “Start Update” to execute the Boot Manager (Grub) Update. The “Boot Manager Update ETL Progress” screen is shown during the update process.



When the message “Remove USB Mass Storage Device!” is shown, remove your USB Grub Update stick. ETL will automatically reboot.

Now, the ETL Boot Manager will perform a proper countdown, even in case USB devices are connected to the ETL USB ports.

## 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:



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