RFEX V6.1.40
Release Notes

Products:

- R&S®RFEX
- R&S®RFEX-Fast

This document gives an overview of the additional features and improvements that are implemented with version 6.1.40

ROHDE&SCHWARZ

Release Note

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1 Scope

This document gives an overview of the additional features and improvements that have been implemented with version 6.1.40:

- Support for UMTS and LTE decoding with FSH4/8 (FDD mode) *)
- Spectral measurements with TSMW (RF Power Scan)

Furthermore, the release notes provide information on the download link, the update procedure and known issues for the current versions.

*) Because of the bandwidth of LTE signals, measurements are possible only with instruments that support a bandwidth of 20 MHz (serial numbers 105000 and higher).

2 Installation / Update

2.1 Download of Version V6.1.40

Download link
The software can be downloaded from the Rohde & Schwarz web site under the following link:

http://www2.rohde-schwarz.com/en/products/test_and_measurement/emc_field_strength/TS-EMF.html

The zip-file is password protected. Registered customers get the password via mailing from the R&S customer support center. Please contact customer support or your local sales representative in case you did not receive the mail and need the password.

2.2 Upgrade to V6.1.40

Upgrade to Version 6.1.40 is free of charge. Also for customers not using the UMTS/LTE decoding functionality with FSH4/8 or the spectral measurements with TSMW, upgrade is recommended due to other improvements and bug fixes included in the release.

Installation of RFEX 6.1.40 requires de-installation of the previously used version. Please refer to the quick start and installation guide for further information on the installation.

The following pre-requisites are required in order to use the new functionalities:

UMTS-decoding with FSH4/8

- FSH-K44
- TSEMF-K23

LTE-decoding with FSH4/8

- FSH-K50, FSH-K50E
- TSEMF-K23

Spectral measurements with TSMW

- TSMW-K27

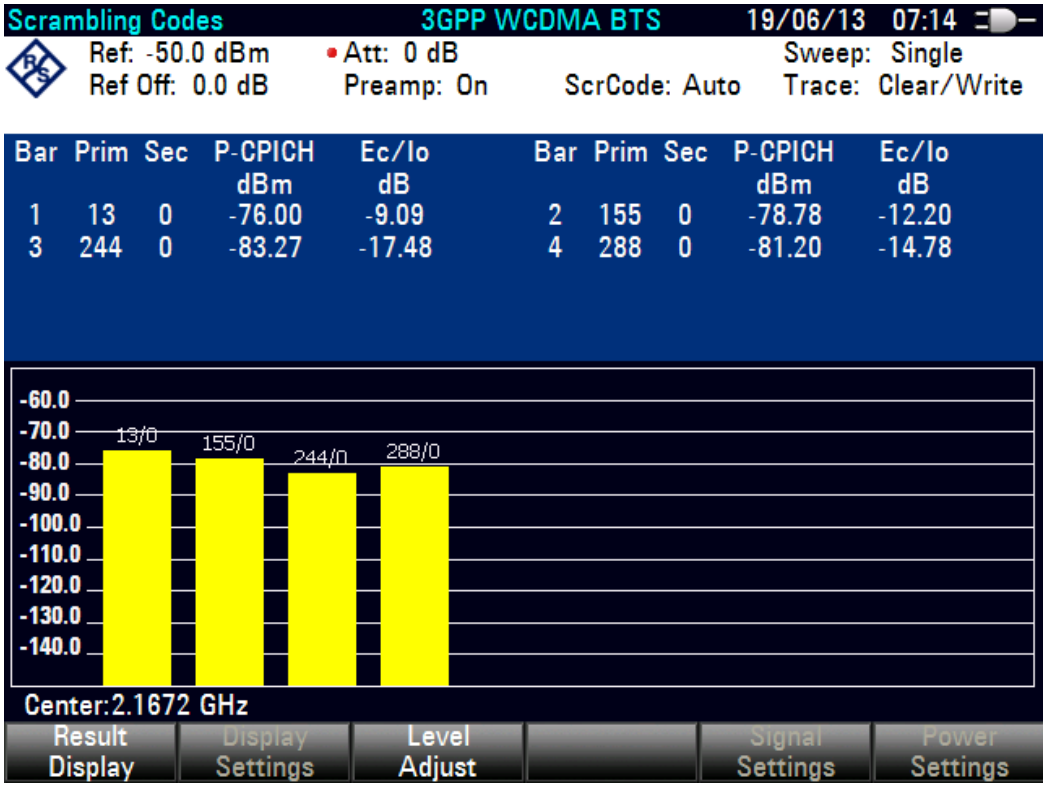
For ordering the upgrade license for TSEMF or for TSMW, please contact your local sales engineer. For the ordering process you need to provide the base license serial of your RFEX hardlock or the serial no of your TSMW, respectively.

3 New Features in Version 6.1.40

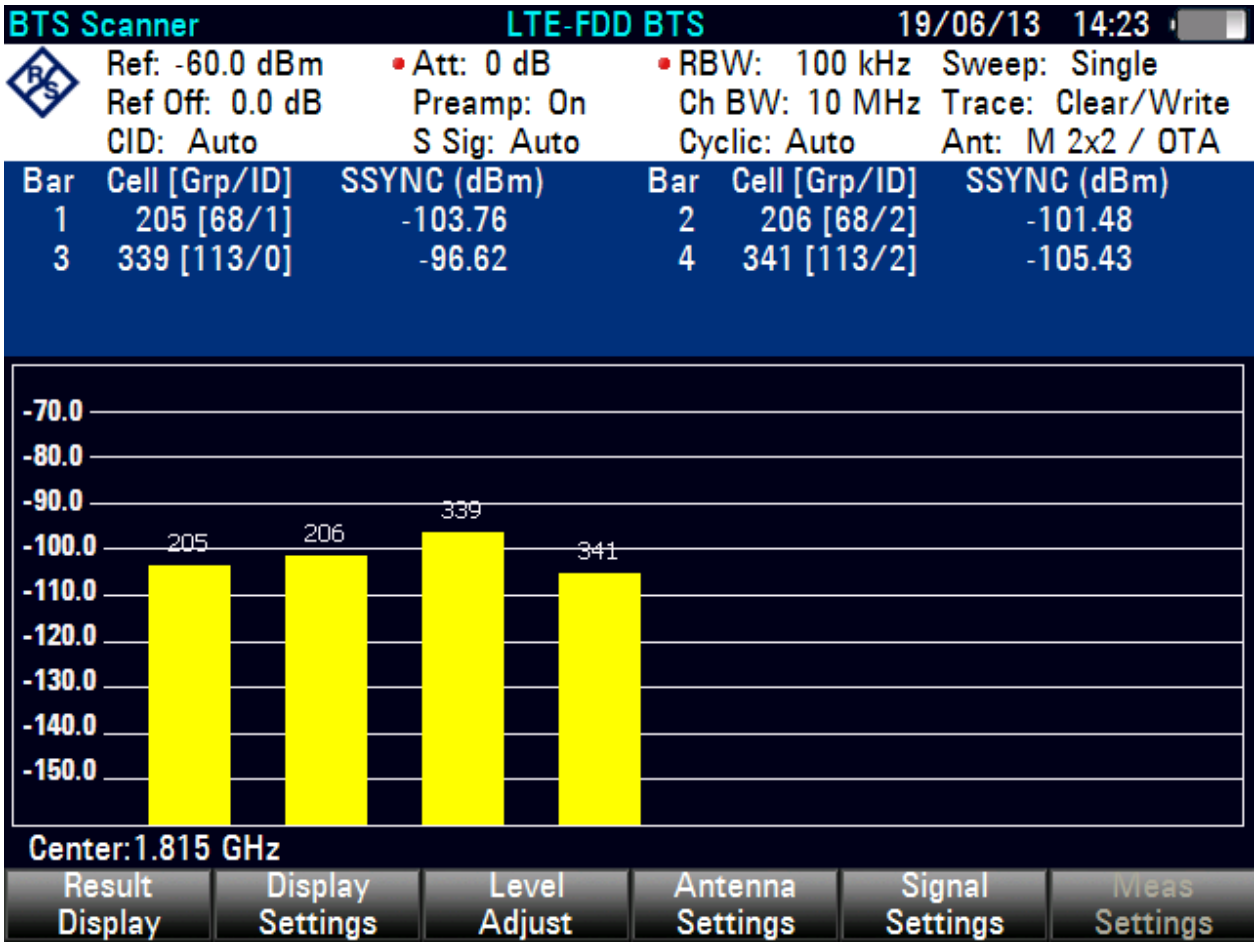
UMTS and LTE Decoding with FSH4/8

FSH4/8 owners now can use the RFEX to measure and record UMTS and LTE decoding measurements. Single, Peak/ Average and Long Term measurements are supported. The measurement principles are the same as for decoding measurements with other R&S spectrum analyzers or network scanners.

for UMTS, all available scrambling codes on a channel and the power of the respective CPICH are measured. An extrapolation to nominal power of the channel is possible (default setting in the UMTS-packet 10 dB). The exact channel frequencies must be known and entered in the measurement settings.



for LTE, the available Cell IDs on a channel and the power for the Reference Symbols of antenna 1 and, if available, antenna 2 are measured. Furthermore, the power of the SSYNCH and PSYNCH is measured and recorded. The exact channel frequencies must be known and entered in the measurement settings.



UMTS and LTE measurements are possible with directional and isotropic antennas.

The measurement speed depends on a number of factors like absolute signal level and Ec/Io. Due to the limited processor capability of FSH4/8, both decoding measurements cannot be compared to spectrum analyzers with a full XP operating system. The approximate time for an UMTS measurement is 17 seconds (isotropic antenna, one carrier, including all available scrambling codes). For LTE, each Cell ID is measured individually. Thus, approx. 30 seconds per Cell ID measurement are required (isotropic antenna, one carrier).

Known issues

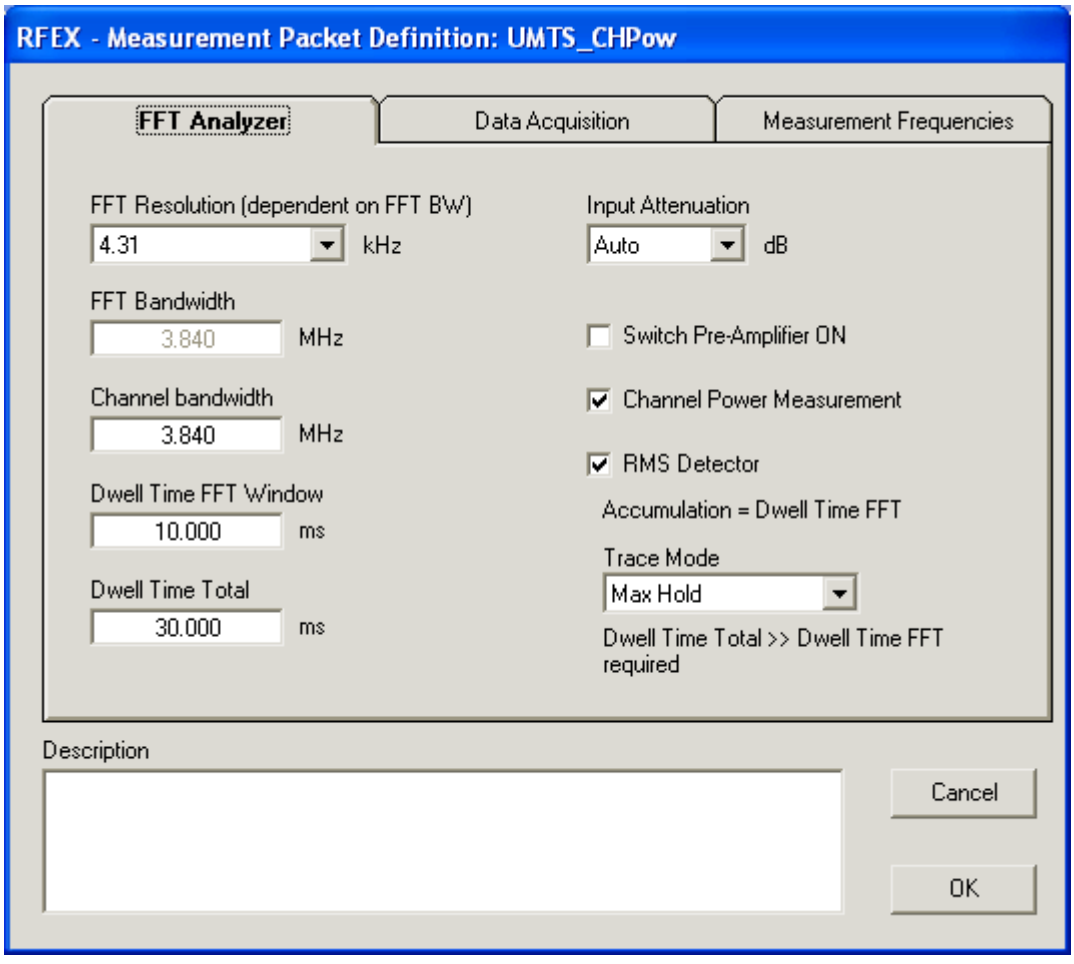
Level Adjust for LTE in Version RFEX 6.1.40

Due to a timing problem, the automatic leveling feature of the FSH4/8 LTE application cannot be initiated from the RFEX software, for the time being. The user should set the FSH to the respective frequency and result display and press the button “Level Adjust” manually. The RFEX will not overwrite the adjusted level settings. The limitation will be removed with the next RFEX issue.

Spectral Measurements with TSMW

TSMW owners can now use the RFEX to do spectral measurements with their network scanner. To make use of this feature option TSMW-K27 must be activated on the TSMW. The TSMW FFT functionalities are used to carry out the measurements. Both, recording of a spectrum and measurement of channel power are possible. The spectrum should be used mainly for overview measurements while the channel power functionality should be used for precise evaluation of the levels.

Due to the different functionality of an FFT analyzer compared to a spectrum analyzer, specific measurement packets and a separate packet editor have been implemented in the RFEX. Detailed information on the settings can be found in the RFEX Software manual.



Limitation in RFEX version 6.1.40:
With the channel power function, each channel of the channel list is measured individually. In the next version it will be possible to measure the complete set of channels in one shot, which will increase the speed considerably.

4 Improvements and known issues

4.1 Eliminated Errors Version 6.1.40

4.1.1 RFEX crash during startup

On some systems, old ocx and dlls were not overwritten by the components in the latest installation.

4.1.2 Switch through analyzer

The checkbox “Switch through Analyzer” on the tab “Switch Unit” of the RFEX hardware configuration sometime appeared, even if FSH4/8 was selected (reference to known issues below).

4.1.3 Diagnostic routine for antenna switching

A diagnostic routine has been implemented in case if there are problems switching the 3-axis-probe. Thus, the problem can be narrowed down to help the user to solve the problem.

4.1.4 Pre-Amplifier Support for FSL

The pre-amplifier can now be activated in the packet, if FSL is selected as analyzer.

4.2 Known Issues Versions 6.1.39/6.1.40

Please refer to chapter 3 for current limitations / known issues for LTE-measurements with FSH4/8 and TSMW spectral measurements.

Calibration File in the Hardware Configuration menu:

In the menu Hardware Configuration a calibration file can be used to compensate any frequency response of the measurement device or any additional attenuation. The functionality is the same and in addition to an extension cable called up in the packet settings. While the calibration file is correctly included in the calculation of the final results, it is not considered for the level indication during measurement in the status window and in the bar graph indication during Peak/Average measurement.

Suppress Crosstalk plus 8001 pixels resolution

Restrictions have been found when the Suppress Crosstalk function was used together with 8001 Pixel resolution (RFEX menu *System--> Options*), in particular for small frequency range and small RBW (transmission channel = ½ RBW). In this case, the 8001 pixels setting results in a high number of pixels per broadcast channel, which may lead to wrong results of the suppress crosstalk function.

Recommendation

- Use default setting 501 pixels
- Use 8001 pixel only for wide frequency ranges or together with the peak-search function.

Installation on analyzer

If the RFEX / RFEX-Fast are installed on an analyzer with WinXP (embedded) operating system, the Microsoft re-distributables are not installed automatically. The setup has to be started from the subdirectory Microsoft_redistributables on the RFEX distribution. If after start of the installations the software comes up with the message with the message "Windows Installer 3.1 or higher required ", upgrade of the installer is required, first. The file “WindowsInstaller-KB893803-v2-x86_Installer 3.1v2_for XP.exe” is now included on CD.

UMTS decoding with FSV

The theoretical maximum measurement rate for Peak/AV is 10 Hz. Due to a timing issue between start of measurement and trigger pulse quite often only 5 Hz may be achieved.

H-field measurements:

The RFEX supports H-field measurements and the use of the respective limit lines. However, currently the units in the report have to be changed manually from dBµV/m to dBµA/m.

FSH4 / FSH8 antenna switching:

For the time being it is not possible to control the switching of an R&S Isotropic Antenna from the RFEX via the Probe Connector of FSH4 / FSH8 (as it is possible for FHS3/6/18). Meanwhile, the functionality has been implemented in the firmware (since V2.0), but it requires activation of a Dummy Transducer on the FSH. An acceptable solution is being sought.

5 Improvements Previous Releases

Improvements in Version 6.1.39

LTE Raw data accumulation speed improved
Raw data information is longer accumulated and less often written to the file. This improves measurement speed with raw data recording activated

Alternative averaging mode for UMTS and LTE decoding
A second averaging mode has been implemented. Details are explained in the software manual at chapter 5.2.6. .

Diagnostic routine for antenna switching
A diagnostic routine has been implemented in case if there are problems switching the 3-axis-probe.

LTE spectral measurements
The packet 'LTE_ChPow.Packet' has been added.

Start new measurement with LTE
A checkbox in the option's dialog has been added to set LTE decoding as default for a new measurement.

Improvements in Version 6.1.38

Check Box "Two Step Mode" in UMTS packet

This mode is only available with TSMU, TSMQ and TSM-LW and if a non-isotropic antenna has been selected. For all other configurations, this check box will no longer appear in the packet.

Eliminated errors

Selection of LTE Bandwidth

For wideband LTE measurements, the used bandwidth of the signal has to be selected from a list. The sorting of the list has been corrected.

Improvements in Version 6.1.34SP1

FSH4 / FSH8 Pre-Amplifier with Switch Unit "None"

Activation of the FSH4/8 pre-amplifier in the packet also possible, if Switch Unit "None" is chosen in the configuration menu (i.e. for non-isotropic antennas).

LTE decoding Measurements

Report generation for LTE decoding measurements updated to the latest status.

Support of ESU

The ESU Receiver has been added to the hardware configuration and can be operated with RFEX and RFEX-Fast.

TETRA Packet

A packet with verified settings for TETRA has been included for downlink channels in the frequency range 300 – 395 MHz. Settings for TETRA included in the RFEX-Fast.

Limit Lines RFEX

Additional limit lines (ICNIRP_E_OC, occupational limit, BGBV11, German work safety) have been added and can be selected in the RFEX. The previous “ICNRIP” limit has been left in for compatibility reasons. Also H-field limits have been added and can be used.

Limit Lines FSH Analyzers on CD

The RFEX limit lines have been converted to the formats for FSH 3/6/18 and FSH4/8 and are available on the RFEX CD.

Eliminated errors

FSH4 / FSH8 Firmware 2.0 / 2.1

Workaround from RFEX version 6.1.34 removed. Measurement speed increase achieved for Channel Power through optimization for FSH firmware 2.0 / 2.1

Threshold calibration with Switch Unit “None”

Threshold calibration for non-isotropic antennas still used the antenna factors selected under isotropic antennas, even if the menu was not visible.

Threshold table for new Packet

If a new packet was generated in the RFEX, the message “Cable not defined in the given frequency range” could occur.

Bar graph for Peak-Average Measurements

The blue bar (current value) and the red bar (max value) were in the wrong order and had to be exchanged.

Alternative Pixel Resolution for Spectrum Analyzers

Switching between resolution 8001 and 501 pixels (not available for FSH-family) could lead to runtime errors (index error) due to wrong allocation of list length. 501 Pixels is the default setting.

Installation on Analyzer / Upgrade of Windows installer

Installation of Microsoft re-distributables on embedded XP-systems (e.g. for RFEX on analyser): Upgrade for Windows installer included in delivery

Improvements in Version 6.1.34

FSH4 / FSH8 Pre-amplifier

Selection of pre-amplifier supported in the packet setting if FSH4/8 is chosen in the configuration menu.

Modified Function of the Button “Repeat last measurement”

Warnings and intermediate steps have been removed from the “Repeat Last Measurement” shortcut. The button is now a quick shortcut for a repeated measurement with identical settings.

LTE decoding measurements

Increase of measurement rate compared to Version 6.1.30. Up to 10 measurements per second are possible if there is only one frequency in the packet.

Eliminated errors

RFEX-Installation / Windows redistributables

On some PCs, the additional windows files the RFEX requires for TSMW support were not available. The necessary files were not included in the delivery. Now, the necessary Windows re-distributable have been included in the RFEX-setup.

LTE-measurements

Invalid results (e.g. due to RF under-range, switched Cell-ID, not completed synchronization) reported by the TSMW could lead to wrong results in the report. The check for invalid measurement results in the RFEX has been improved to discard incomplete / inconsistent results.

FSH4/8-measurements

Workaround implemented for timing problems with Channel Power measurements with FSH4/8 firmware version 1.56. Workaround slows down the measurement.

Improvements / bug fixes in Version 6.1.30

Introduction of LTE-decoding measurement with TSMW

Support for latest TSMx-Firmware version and Firewire Driver
Drivers were also tested under Windows 7.

Improvements / bug fixes in Version 6.1.22

The NI-VISA™ setup included on the CD has been upgraded to a newer version (5.0.3).

Eliminated errors

RFEX-Threshold
If the selection “Suppress Cross Talk” was activated in the Packet settings, the Threshold calibration routine did not work correctly. Depending on the packet settings, this could lead to high measurement values.

Channel Power with FSH4/8
In the RFEX measurement mode "Channel Power" sometimes an increased delay was recognized until the FSH-result was available. In this case the RFEX read back "0", which was interpreted as dBm and converted into a very high field-strength value.

Improvements / bug fixes in Version 6.1.21

RFEX-Fast on FSL
The entry of frequencies and figures for the RFEX-Fast running on an FSL has been optimized.

Missing Antenna Files

RFEX-Fast did not show a message, if an antenna file was missing. Now, a message is displayed.

TS-EMF User Manual
Additional information has been added to chapter 8.1.8 on expert level settings.

Eliminated errors
If no values above the threshold were found, the next measurement using the start button resulted in a runtime-error.

If no values above the threshold were detected, an empty report was stored.

Services activated in the RFEX-Fast selection window were not measured, if the services were outside selected frequency range for intermediate ranges. (Please refer to the TS-EMF User Manual Chapter 7.5.4 for details on the Services / intermediate range merging).

Antenna files could not be opened with a double click on the file in the antenna file window (→File → Antenna).

Improvements in Version 6.1.20

RFEX / RFEX-Fast allow the handling of different sets of antenna files. After selecting the Type “Tri-Axis Probe”, in the hardware configuration menu, the calibration files for the antenna in use can be selected. It makes no difference, if X, Y or Z are selected, as long as the software finds three files with the same antenna name and the complementary axes. The previously used files (Probe X.Antenna, Probe Y.Antenna, Probe Z.Antenna) can be selected in the RFEX / RFEX-Fast like any other antenna file. Of course, the serial number of the selected antenna is taken over into the EXCEL-report generated by RFEX / RFEX-Fast.

About Rohde & Schwarz
Rohde & Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established 75 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

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Certified Quality System
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