



ROHDE & SCHWARZ

Test and Measurement
Division

Release Notes

TETRA II Analysis

Application Firmware R&S FS-K110

Release 4.60

for R&S FSQ, FSU, Analyzer Firmware V4.6x

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History

Date	Rel Note Rev	Changes
22 July 2010	1	First revision of K110 Application Firmware for V4.60

General Topics

Compatibility of the R&S FS-K110 TETRA II Analysis Application Firmware with other Firmware Releases

The following table shows the compatible versions of the basic analyzer firmware and the TETRA II Analysis Application Firmware.

Table of compatible versions:

R&S FS-K110 Application Firmware	R&S FSQ Basic Firmware	R&S FSU Basic Firmware
4.60	4.65	4.61
4.50 SP1	4.55 SP2	4.51 SP1
4.50	4.55 SP1	4.51
4.40	4.45 SP 2	4.41 SP 2

Firmware Update of the R&S FS-K110 TETRA II Analysis Application Firmware

Since basic firmware version 4.2x a ZIP file with the update sets of the basic system firmware and all available applications is provided. This ZIP file is available in the instruments FIRMWARE section, e.g. R&S FSQ of the Service Board on GLORIS.

Please follow the steps described in the instrument's basic firmware release note to perform a complete firmware update.

Enabling the Application Firmware via License Key Code Entry

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

After installing the application firmware package a license key for validation must be entered. The license key is printed either on a label on the rear panel of the instrument or delivered as a part of the R&S FS-K110 TETRA II Analysis application firmware package.

The key sequence for entering the license key is:

SETUP - GENERAL SETUP – OPTIONS - INSTALL OPTION

Use the numeric keypad to input the license key number and press ENTER.

- On a successful validation the message 'option key valid' will appear. The instrument will perform an automatic reboot.
- If the validation failed, the application firmware is not installed.
The most probable reason will be that the instrument is not equipped with the correct basic firmware version. Therefore a messagebox will appear asking for installation of the correct basic firmware version.
If the application firmware package was not installed prior to entering the license key code, a message will appear asking for installation of the application firmware package.
In any case please make sure that the correct basic firmware version is installed prior to entering the license key code..

System Memory Requirements

For FS-K110 TETRA II Analysis Application Firmware, an installed system memory of 512MByte is essential.

The system memory size can be easily checked by pressing SETUP – SYSTEM INFO – STATISTICS, item "Memory size". This item is available since version 3.25 of the base system firmware.

For FSQ instruments, shipped with 256MByte system memory, a memory extension FSQ-B512, order number 1157.1590.02, is available.

For FSU instruments, shipped with 256MByte system memory, a memory extension FSP-B512, order number 1157.1590.03 (for CPU boards with order no. 1091.2520.00) respectively 1157.1590.04 (for CPU board with order no. 1091.2808.00 or 1091.2814.00), is available.

Please refer to the Software Release Notes of the basic system firmware for further system memory requirements which may apply.

New Functions in Version 4.60

None

Improvements

None

Known Issues with option R&S FS-K110 TETRA II Analysis Application Firmware

The version numbers in brackets indicate the version in which the error was observed for the first time.

Manual Operation and IEC/IEEE Bus

1. (K110 V4.40) Y-Auto scaling is not always optimum

The automatic scaling of the y-axis of some measurements needs improvement.

Workaround: Switch to manual y-axis scaling for measurements located in the EVM-submenu.

2. (K110 V4.40) RBW of FFTs blinks

In the measurements Spectrum FFT and ACP due to Modulation the application delivers FFT traces and the resolution bandwidth of them. These RBW figures blink and disappear after a RUN SGL is finished.

Workaround: In the release 4.50 the RBW is always 300 Hz.

3. (K110 V4.50) FSQ-B17: The message "PRBS Test passed" is indicated, but the test is failed.

The remote status register bit is not affected.

Workaround: Check the status in Spectrum Analyzer mode (menu SETUP –SIGNAL SOURCE, Softkey DIGITAL BB INFO).

IEC/IEEE Bus only

1. (K110 V4.40) Setting limits for ACP due to Transients does not update GUI

Commands that set limits of the measurement ACP due to Transients like

CALCulate1:LIMit:BURSt:ACPTrans:CHAN2:RELPower:BANDwidth0

change the limits but the GUI does not reflect these changes.

Commands that query failed / passed limits like

CALCulate1:LIMit:BURSt:ACPTrans:CHAN2:RELPower:MAXimum:RESult?

use the correct (i.e. changed) limits.

Modified Functions

The behaviour of the following functions changed compared to earlier versions [the number in brackets indicates the firmware version that introduced the individual change]:

1. (K110 V4.50 SP1) Support of digital baseband inputs (HW option R&S FSQ B17)

If the option R&S FSQ B17 is fitted in the instrument, the application R&S FS-K110 can use the digital baseband input for capturing IQ data.

For digital and analog Baseband operation the measurement Magnitude Capture Display now shows the relation of the input signal to the Reference Level in unit decibels. But the markers and the trace delivered by SCPI commands is still in unit "Volt".

2. (K110 V4.50 SP1) Digital baseband inputs (HW option R&S FSQ B17) "Auto Set" feature

When using the digital baseband input (option R&S FSQ B17), the Digital Input Sampling Rate and the Full Scale Level can be set automatically in the R&S FS-K110 if the device under test (transmitter) sends the corresponding information via the LVDS connection.

Modifications to the Operating Manual

The R&S FS-K110 TETRA II Analysis Application Firmware functions are included in a separate manual set. Please refer to the following order numbers:

- 1309.9680.42-02- (English)

Modified Chapters for manual operation

Full Scale Level

IQ Digital

Full Scale Level	Auto	<input checked="" type="checkbox"/>	1 V
Digital Input Sampling Rate	Auto	<input checked="" type="checkbox"/>	2 MHz

When using the RF or the analog Baseband input the analyzer uses the parameter *Signal Level* to adjust its hardware in a way, that the mixer is not overloaded and no clipping occurs in the ADC.

But when using the digital Baseband input, the analyzer uses the parameter *Full Scale Level* instead. Parameter *Signal Level* is ignored, because there is no physical signal that has to be processed and digitized. Instead the digital Baseband input gets a stream of IQ data that has been digitized (or has been generated by means of SW) outside the analyzer. The analyzer can therefore not know the voltage that originally corresponded to a certain IQ sample magnitude.

The parameter *Full Scale Level* tells the analyzer which voltage corresponds to the maximum I or Q value that can be fed into the digital Baseband input (0x7FFFF as integer or as fixed point about 1.0 +j*0.0 or 0.0 +j*1.0).

The application does not offer this setting if the digital Baseband option FSQ-B17 is not installed or the digital Baseband input is not used as signal path!

Remote: INP:DIQ:RANG

Auto checkbox:

If not checked, the correct *Full Scale Level* value must be entered manually.

If checked, the *Full Scale Level* value cannot be entered manually. Instead the R&S FS-K110 expects that the device-under-test sends the correct *Full Scale Level* value via the LVDS connection. Only certain R&S test transmitters will support this feature.

It is recommended to not check this checkbox right now.

Remote: INP:DIQ:RANG AUTO OFF

Digital Input Sampling Rate

IQ Digital

Full Scale Level	Auto	<input checked="" type="checkbox"/>	1 V
Digital Input Sampling Rate	Auto	<input checked="" type="checkbox"/>	2 MHz

Specifies which sample rate the IQ signal has which is fed into the analyzer's digital Baseband input.

Do not confuse with the transmission speed of the digital Baseband input, which can be totally different (e.g. if IQ data was stored in a memory)!

Auto checkbox:

If not checked, the correct *Digital Input Sampling Rate* value must be entered manually.

If checked, the *Digital Input Sampling Rate* value cannot be entered manually. Instead the R&S FS-K110 expects that the device-under-test sends the correct *Digital Input Sampling Rate* value via the LVDS connection. Only certain R&S test transmitters support this feature.

It is recommended to only check this checkbox when using a suitable R&S test transmitter.

Remote: `INP:DIQ:SRAT AUTO ON`

Setting a too low *Digital Input Sampling Rate* will cause a warning, because the IQ signal's bandwidth might become too low for running all measurements reliably (especially ACP measurements). The instrument will continue measuring, because most measurements do not need such high sampling rates as the ACP measurements. Of course results can not be guaranteed in this operation mode.

Channel BW: Minimum sampling rate without warning:

25 KHz	259.2 KHz
50 KHz	259.2 KHz
100 KHz	324.0 KHz
150 KHz	388.8 KHz

Digital Input Sampling Rates much higher than needed for capturing TEDS signals (greater than 10 MHz, depends on channel bandwidth) might cause the analyzer to automatically reduce the maximum *capture time* that can be used.

The *Digital Input Sampling Rate* parameter is editable only and has an effect only when digital Baseband input is selected.

The application does not offer this setting if the digital Baseband option FSQ-B17 is not installed!

Remote: INP:DIQ:SRAT

Modified Chapters for remote operation

INPut Subsystem

The INPut subsystem controls the characteristic of the input path of the instrument.

COMMAND	PARAMETERS	UNIT	COMMENT
:INPut			
:ATTenuation	< numeric_value >	DB	Cancels GAIN value
:DIQ	< numeric_value >	DB	FSQ-B17 option only
:RANGe			Full Scale Level
[:UPPer]	< numeric_value >	Volt	
:AUTO	ON OFF		Auto Set of Full Scale Level
:SRATe	< numeric_value >	Hz	Digital Input Sampling Rate
:AUTO	ON OFF		Auto Set of Dig. Input SR
:EATT			
:AUTO	<Boolean>		
:STATe	<Boolean>		
:GAIN			Controls the preamplifier
:STATe	<Boolean>		Automatic setting
:SElect	RF BB DIQ AIQ		FSQ-B71 / FSQ-B17 option only
:IQ			FSQ - B71 option only
:BALanced			
[:STATe]	<Boolean>		
:IMPedance	LOW HIGH		
:TYPE	IQ I Q		

INPut<1|2>:DIQ:RANGe[:UPPer]:AUTO ON | OFF

This command corresponds to the *Auto* checkbox of the parameter *Full Scale Level*. This command is only available with option FSQ B17 installed. This command is only of importance if the digital Baseband input is used. This command is only useful if the device-under-test is an R&S test transmitter that is capable of transmitting the *Full Scale Level* value via the LVDS connection. The R&S FS-K110 will automatically set the received value as *Full Scale Level*.

Example: "INP:DIQ:RANG:AUTO OFF" ' Deactivates the automatic mode of
' parameter *Full Scale Level* of the digital
' baseband input.

Characteristics: *RST value: OFF
SCPI: conforming

INPut<1|2>:DIQ:SRATe:AUTO ON | OFF

This command corresponds to the *Auto* checkbox of the parameter *Digital Input Sampling Rate*. This command is only of importance if the digital Baseband input is used. This command is only available with option FSQ B17 installed. This command is only useful if the device-under-test is an R&S test transmitter that is capable of transmitting its digital sampling rate via the LVDS connection. The R&S FS-K110 will automatically set the received value as *Digital Input Sampling Rate*.

Example: "INP:DIQ:SRAT AUTO ON" ' Activates the automatic mode for parameter
' *Digital Input Sampling Rate* of the digital
' baseband input.

Characteristics: *RST value: ON
SCPI: conforming

Appendix: Contacting our hotline

Any questions or ideas concerning the instrument are welcomed by our hotline:

USA & Canada

Monday to Friday (except US public holidays)

8:00 AM – 8:00 PM Eastern Standard Time (EST)

Tel. from USA 888-test-rsa (888-837-8772) (opt 2)

From outside USA +1 410 910 7800 (opt 2)

Fax +1 410 910 7801

E-mail Customer.Support@rsa.rohde-schwarz.com

East Asia

Monday to Friday (except Singaporean public holidays)

8:30 AM – 6:00 PM Singapore Time (SGT)

Tel. +65 6 513 0488

Fax + 65 6 846 1090

E-mail Customersupport.asia@rohde-schwarz.com

Rest of the World

Monday to Friday (except German public holidays)

08:00 – 17:00 Central European Time (CET)

Tel. from Europe +49 (0) 180 512 42 42

From outside Europe +49 89 4129 13776

Fax +49 (0) 89 41 29 637 78

E-mail CustomerSupport@rohde-schwarz.com