ROHDE&SCHWARZ

Test and Measurement
Division

Release Notes

R&S FSQ-K70

Vector Signal Analysis Application Firmware

Release 4.72

for R&S FSU, FSQ, FSG, FMU, FSUP
Analyzer Firmware 4.7x

New Features:

- **Magnitude Error calculation:**
  Selectable normalization method "Max Symbol / Signal Mean Power" available.
- **Magnitude Error calculation:**
  Additional signed grid scaling supported.

Release Note Revision: 3

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History

Date	Rel Note Rev	Changes
8 August 2012	1	First revision for Vector Analysis Application Firmware 4.72.
17 August 2012	2	Typo corrected.
06 February 2014	3	Update according to new operating manual revision.

General Topics

Hardware Requirements

The option R&S FSQ-K70 requires certain minimum board revisions of the Wideband Detector Board.

For R&S FSUP at least model 08 of Wideband Detector Board is required for R&S FSQ-K70:

This can be checked in the SPECTRUM -> SETUP -> SYSTEM INFO menu with softkey HARDWARE INFO. For component WBDET with order number 1130.3086 is required at least:

Model	Revision	Sub Revision	for	
3	4	≥ 8	R&S FSQ (with CPU-Board 1091.2520)	**or**
3	≥ 5		R&S FSQ (with CPU-Board 1091.2520)	**or**
5			R&S FSQ (with CPU-Board 1091.2520), R&S FSU (with CPU-Board 1091.2520)	**or**
8			R&S FSU (with CPU-Board 1091.3104), R&S FSQ (with CPU-Board 1091.3104), R&S FSUP, R&S FSG, R&S FMU	

Compatibility of the R&S FSQ-K70 Vector Analysis Application Firmware with other Firmware Releases

The following table shows the compatible versions of the basic analyzer firmware and the Vector Analysis Application Firmware:

Table of compatible versions:

R&S FSQ-K70 Application Firmware	R&S FSU Basic Firmware	R&S FSQ Basic Firmware	R&S FSMR Basic Firmware	R&S FSUP Basic Firmware	R&S FMU Basic Firmware	R&S FSG Basic Firmware
4.72	4.71 SP5	4.75 SP5	-	-	-	4.79 SP5
4.72	4.71 SP4	4.75 SP4	-	-	-	4.79 SP4
4.71	4.71 SP3	4.75 SP3	-	-	-	4.79 SP3
4.70	4.71	4.75	-	-	-	4.79
4.60	4.61	4.65	4.67	-	-	4.69
4.50 SP3	4.51 SP1	4.55 SP2	-	-	-	4.59 SP1
4.50 SP2	4.51	-	-	-	-	-
4.50 SP1	-	4.55 SP1	-	-	-	4.59
4.50	-	-	-	-	-	4.59
4.40 SP1	-	-	-	4.47	-	-
4.40	4.41	4.45	-	-	-	4.49
4.30 SP1	4.31 SP1	4.35 SP1	4.36	4.37	4.38	4.39 SP2
4.30	4.31	4.35	-	-	-	4.39
4.20 SP2	4.21 SP1	4.25 SP1	4.26	4.27	-	4.29 SP3
4.20 SP1	4.21	4.25	-	-	-	4.29
4.20	4.21	4.25	-	-	-	4.29
4.10	4.11	4.15	4.16	4.17	-	-
4.01	-	-	-	-	4.08	-
4.00 SP2	4.01 SP3	4.05 SP3	-	-	-	-
4.00 SP1	-	-	4.06	-	-	-
4.00	4.01	4.05	-	-	-	-
3.90 SP1	-	3.95 SP2	-	-	-	-
3.90	-	3.95	3.96	-	-	-
3.80	-	3.85				
3.70	-	3.75	-	-	-	-
3.60	-	3.65	-	-	-	-
3.50 SP1	-	3.55 SP2	-	-	-	-
3.50	-	3.55	-	-	-	-
3.40	-	3.45	-	-	-	-
3.30	-	3.35	-	-	-	-

R&S FSQ-K70 Application Firmware	R&S FSU Basic Firmware	R&S FSQ Basic Firmware	R&S FSMR Basic Firmware	R&S FSUP Basic Firmware	R&S FMU Basic Firmware	R&S FSG Basic Firmware
3.28	-	3.25	-	-	-	-
3.24	-	3.15	-	-	-	-
3.21	-	3.05 SP1	-	-	-	-
3.20	-	3.05	-	-	-	-
2.30	-	2.35	-	-	-	-
2.28	-	2.25	-	-	-	-
2.24	-	2.15	-	-	-	-
1.21	-	2.05	-	-	-	-
1.00	-	1.85	-	-	-	-
-	-	1.65	-	-	-	-
-	-	1.55	-	-	-	-

The FSQ-K70 application firmware versions 3.xx or 4.xx requires Windows XP. For NT based instruments a Windows-XP upgrade kit FSQ-U2, order # 1162.9696.02 is available.

Note:

Applications with version number 3.xx or 4.xx are only compatible with basic firmware 3.yy or 4.yy (see table above). Do not install them on basic firmware versions below 3.00!

Firmware Update of the R&S FSQ-K70 Vector 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 FSU 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 R&S FSQ or delivered as a part of the R&S FS-K70 Vector 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.

- 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 message box 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 and the application firmware package is installed prior to entering the license key code.

New Functions in Version 4.72

- **Magnitude Error calculation:**
  Selectable normalization method "Max Symbol / Signal Mean Power" available.
- **Magnitude Error calculation:**
  Additional signed grid scaling supported.

Improvements with Version 4.72

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

1. (V4.70) EVM CALC softkey indicates a wrong state of normalization, if the function is not available.

This has now been corrected.

Known Issues with option R&S FSQ-K70 Vector Analysis

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

1. (V4.50) Selection of User QAM Mapping files does not work in remote operation.

Work around: Define a a new generic standard using this demodulation and mapping in manual operation and select this generic standard in remote operation.

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. (V3.60) EXPORT STANDARD: Query before overwriting existing file in manual operation.

2. (V3.60) Menu HOME VSA - FACTORY DEFAULTS now support PATTERNS, too.

3. (V3.60) Expanded range for Symbol Rate. The lower limit is now 100 Hz.

4. (V3.60) A trace in VIEW state in analyzer mode is set to CLR/WRITE when leaving the vector analysis mode.

5. (V3.80) Expanded range for FSK Ref. Deviation. The upper limit is now 1.5 * Symbol Rate.

6. (V3.80) Measurements at low frequencies using baseband inputs of option FSQ-B71 by a digital down conversion are now supported.

7. (V3.80) Absolute marker position for marker 1 added for measurement result AM/AM - AM/PM conversion.

8. (V3.80) SAVE AS STANDARD additionally stores statistics parameter settings (X-AXIS QUANTIZE, X-axis and Y-axis scaling).

9. (V3.80) Default focus for NEW PATTERN dialog is change to pattern name.

10. (V3.90) Support of option FSQ-B100: Extended Record Length.

11. (V4.00) External trigger level in steps 0.1V over the complete range of 0.5V to 3.5V.

12. (V4.20) Support for instrument R&S FSG.

13. (V4.20) Result SYMBOLS & MOD ACC: Calculation of SNR (signal-to-noise ratio) changed.

Before version 4.20, the SNR calculation is dependent on the EVM CALC setting (MAX SYMBOL / SIGNAL MEAN POWER). Since version 4.20 the SNR value is only referenced to the mean power. EVM CALC setting is ignored for SNR calculation.

14. (V4.20) Trace Export of I/Q Data (RAW DATA) in WAVEFORM format.

15. (V4.30) Softkeys Signal Source Type (I+j*Q, I Only, Q Only) are only available if baseband input is selected.

16. (V4.30) Multi Mode: Changing the Zoom Start window has no effect.

The Capture Buffer Trace is not updated according to the new zoom window position, if the zoom start position is changed at the current zoom window is located at the end of the I/Q capture buffer.

17. (V4.30) Statistics measurement: New function field indicates voltage/level interval.

The interval used for the statistics evaluation is indicated with a new function field at the left top corner of the grid replacing the reference level indication.

18. (V4.30) New windows dialogs available for File Import/Export functions.

New dialog with browser functions are now available to export traces or configure the import / export path for Standards, Pattern, Filters, Equalizers.

19. (V4.40) Export and Import of I/Q RAW data.

20. (V4.50) Extended maximum FSK Reference Deviation (8 * Symbol Rate).

21. (V4.50) Additional Trace ASCII Export information (Preamplifier, Transducer).

22. (V4.50) Direct Ex-IQ-Box Configuration Dialog access.

23. (V4.50) New sub menus for signal path dependent softkeys with option R&S FSQ-B71 (Analog Baseband Input) and R&S FSQ-B17 (Digital baseband Input).

24. (V4.60) New filter set "HALF SINE" supporting ZigBee (IEEE 802.15.4).

25. (V4.60) New modulation type π/8-D8PSK.

26. (V4.60) Additional Symbol Mappings available for TETRA and APCO-25 Phase 2.

For π/4-DQPSK: "APCO25 Phase 2"

π/8-D8PSK: "APCO25 Phase 2"
"TETRA"

27. (V4.70) New remote command "DISP:WIND:TRAC:SYMB" available to select the display of the decision instants on the trace.

28. (V4.71) New instrument models FSU50 VAR49, FSU67 VAR66, FSQ40 VAR39 supported.

29. (V4.72) Magnitude Error calculation: Selectable normalization method "Max Symbol / Signal Mean Power" available.

30. (V4.72) Magnitude Error calculation: Additional signed grid scaling supported.

31. (V4.72) ASCII Trace Export: New output lines "Error Calculation" and "Error Absolute" available for Magnitude Error and/or EVM traces.

Modifications to the Operating Manual and Supplements

The R&S FSQ-K70 analyzer functions are included in a separate new manual set. Please refer to the following order numbers:

- 1161.8073.42-13 (English)
- 1161.8073.41-13 (German)

The corresponding PDF-Files are separately available on the service board.

The current documentation is up-to-date.

Customer Support

Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz equipment, contact one of our Customer Support Centers. A team of highly qualified engineers provides telephone support and will work with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz equipment.

Up-to-date information and upgrades

To keep your instrument up-to-date and to be informed about new application notes related to your instrument, please send an e-mail to the Customer Support Center stating your instrument and your wish.
We will take care that you will get the right information.

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