

Important Info:
 Since firmware V1.50
 the default windows
 password is "894129"!

Release Notes

Revision: 41

R&S® FSV Signal Analyzer

Firmware Release 1.70SP1

These Release Notes are for following models of the R&S® FSV Signal Analyzer:
 R&S® FSV3, order no. 1307.9002K03, R&S® FSV3, order no. 1307.9002K21,
 R&S® FSV7, order no. 1307.9002K07, R&S® FSV13, order no. 1307.9002K13,
 R&S® FSV30, order no. 1307.9002K30, R&S® FSV40, order no. 1307.9002K39,
 R&S® FSV40, order no. 1307.9002K40

New Features of Firmware 1.70/1.70SP1:

- Support for FSV-K54 EMI measurements
- Auto sequences support mode to continue without trigger
- Support for new Detector Board 1307.9554.03 Rev 07.xx
- SEM: new standard file for 1.4 MHz LTE signal: UL\BW_01_4_MHz.xml
- Remote command `SYST:CLOG` for SCPI logging added
- Remote command `MMEM:DEL:IMM` to delete write protected files added
- FSV-B10: Support of new SGS100A SGMA generator
- FSV-B10: Support of new SMB100A frequency options 20GHz/40GHz
- FSV-B10: Support of negative numerators
- FSV-B17: Support unfiltered mode
- FSV-B17: Support for digital LVDS trigger
- FSV-K7: Support of I/Q Im- and Export
- FSV-K10: Support for 100 kHz RBW in Mod. Spectrum measurement at 1.8 MHz
- FSV-K10: Selectable max. offset frequency in Wide Mod. Spectrum measurement
- FSV-K70: new measurements: Bit Error Rate and Rotated Constellation
- FSV-K70: new parameter "Fine Synchronization" (Detected Data, Pattern, Known Data)
- FSV-K83: Added filter for multi carrier measurements
- FSV-K91: Simultaneous analysis of up to 4 Tx antennas for IEEE 802.11n MIMO
- FSV-K91: Sequential analysis of up to 4 Tx antennas for IEEE 802.11n MIMO
- FSV-K100/101/104/105: Auto and Fixed Scaling for Measurements.
- FSV-K100/101/104/105: Settings file support for PUSCH Hopping Offset, PUSCH Hopping bits and Frame Number offset.

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1 Revision History

Date	Rel. Note rev.	Changes
07. March 2012	41	First version for FSV firmware V1.70SP1
05. December 2011	40	First version for FSV firmware V1.70

2 Installation Information

2.1 Firmware Update

The firmware update file for the R&S FSV is one file including the main firmware version number e.g. `FSVSetup_V1.05SP1.exe`. It will be referred as `FSVSetup.exe` later in the text. The file can be found on Rohde & Schwarz web page.

There are several ways how to update the device after downloading the `FSVSetup.exe` installation file. The update can be performed on the instrument (see chapter 2.1.1) or from a Windows PC (see chapter 2.1.2).

2.1.1 Performing the Firmware Update on the Instrument

There are three ways to make the setup `FSVSetup.exe` visible to the device:

Using a memory stick:

1. Copy the file to a directory of the memory stick and insert the memory stick into one of the USB sockets of the R&S FSV.

Using the remote desktop and copying the installation files to a directory of the instrument:

1. Connect the R&S FSV to your LAN.
2. Start the remote desktop on your PC (`C:\winnt\system32\mstsc.exe`).
3. Enter the TCP/IP address of the instrument, you want to update. Ensure that the "local resources" > "drives" option is selected and press the "Connect" button. (To get the TCP/IP address of the R&S FSV press the hard key "Setup" and then the soft keys "General Setup", "Network Address", "IP Address". The IP address consists of 4 numbers between 0 and 255)
4. Login to the instrument (user name: "instrument" and default password "123456" or since firmware version 1.50 password "894129").
5. Copy the `FSVSetup.exe` from your PC to a new folder e.g. `C:\FWUpdate`.

6. You can now access this directory with the `FSVSetup.exe` from the R&S FSV analyzer firmware.

Using a network drive:

7. Connect your R&S FSV to your LAN, and establish a connection to one of your servers. (Please ask you local IT administrator for support)
8. Copy the `FSVSetup.exe` from your PC to a directory on this server
9. You can now access the directory with the `FSVSetup.exe` from the R&S FSV analyzer firmware.

Performing the update on instrument:

The firmware update process is performed by the following steps:

10. Switch the instrument on and wait until the Analyzer has resumed operation.
11. Press the "SETUP" hard key, go to the side menu using the "More" soft key, and press the soft keys "Firmware Update".

A dialog box is displayed to select the proper `FSV*.exe` setup file. Change the path to the drive and directory which you prepared in the step 2.1.1 (USB stick directory, remote PC directory or directory on a server) and close the dialog with the "Select" button.

12. Press the "Next" button to come to the selection of the firmware packages. By default all application should be installed. Ensure that the applications needed are selected.
Press the "Install" button.

The firmware will be stopped and the installation starts. After a few minutes the system restarts automatically. After the restart the firmware installation is complete. After the firmware update the "UNCAL" flag appears. A self alignment is necessary. Press the "SETUP" hard key, then "Alignment" and the "Self Alignment" soft key to start the alignment procedure.

Depending on the previous firmware version, a reconfiguration of the hardware may be required during the first start of the firmware. In this case the following message box is displayed:

```
"FPGA Update. A system shutdown is necessary"
```

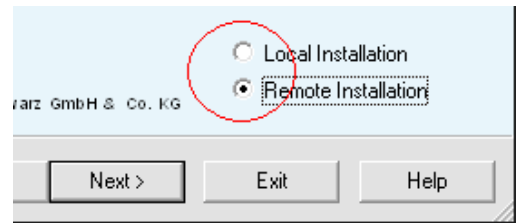
Accept this and the device will be shut down. It is then necessary to start the device on the front panel. A automatically restart is not possible because the FPGA needs a complete boot cycle from power off.

2.1.2 Performing the Firmware Update from a Windows PC

If the firmware version 1.20 or newer is installed on the instrument the new firmware can also be uploaded without using a memory stick or a network drive. Just a LAN connection from the instrument and a Windows PC is necessary.

13. Run `FSVSetup.exe` on your PC.

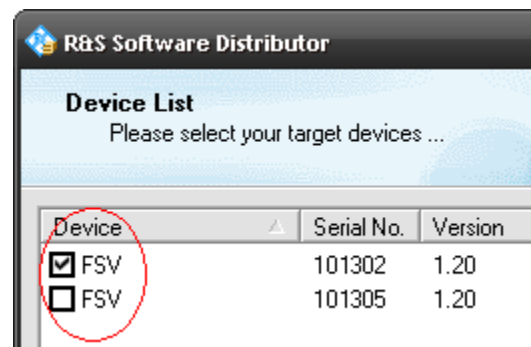
14. Select Remote Installation and click the button Next.



15. Select the Packages which shall be installed and click the button Next .

HINT FOR FIRE WALL USERS: The `FSVSetup.exe` is communicating with the instruments via LAN. Therefore it is necessary that the `FSVSetup.exe` may pass the fire wall. After adding it to the fire wall rules, restart the scan by clicking on Rescan .

16. After scanning your LAN subnet all found instruments are listed. Select the instruments you want to update. It is possible to select up to 5 instruments for updating in parallel.



ATTENTION



Please be careful and check twice if you have selected the correct instruments. Depending on your company's network structure also instruments of other departments will show up!

17. Additional help will be displayed after clicking the button "Help" and further options are available by clicking the button "Options".

18. Start the installation by selecting "Install"

19. Confirm that you want to reboot the instrument in order to activate the firmware update (the instrument then restarts automatically)

2.2 Operation with and without Administrator Rights

With firmware version V1.50 and image version V3.25 or higher, the analyzer may be operated with or without administrator rights. Some administrative tasks (e.g. a firmware update or a LXI functions or network configuration) do require administrator rights. In the default configuration, auto login is enabled, and the "Instrument" account with administrator rights is active. This means that no password is required, and the full functionality of the analyzer is available. An additional user account (user name "NormalUser" with default password "894129") is pre-defined. Use standard Windows functionality if you wish to deactivate the auto login mechanism and activate the NormalUser account. Please refer also to the Quick Start Manual of the FSV. An update from a firmware version <V1.50 to version V1.50 or higher does not replace the XP-image. This means that a firmware update only will not offer the functionality to the "NormalUser". To replace the image version, contact your R&S service representative. Prerequisite is a front module controller FMR9 which can be identified by the BIOS version V7.0.xx.yy shown during startup or by the CPU Board FMR9 with order no. 1091.1599.00 shown in SETUP-SYSTEM INFO-HARDWARE INFO.

2.3 Firmware Downgrade

A downgrade of the firmware from V1.50 or greater to version <V1.50 requires the following process:

20. Ensure to be logged in with administrator rights (user "Instrument")
21. Exit the firmware with ALT-F4
22. Select Windows Start Menu -> Programs -> Accessories -> Backgrade to start the back grade preparation in the registry. If a message box appears allow that registry settings to be performed.
23. Open the Windows Explorer change the path to the drive and directory which you prepared in the step 2.1.1 (USB stick directory, remote PC directory or directory on a server) and double click on proper FSV*.exe setup file.
24. Press the "Next" button to come to the selection of the firmware packages. By default all application should be installed. Ensure that the applications needed are selected. Press the "Install" button.
After a few minutes the system restarts automatically. After the restart the firmware installation is complete.
After the firmware update the "UNCAL" flag appears. A self alignment is necessary. Press the "SETUP" hard key, then "Alignment" and the "Self Alignment" soft key to start the alignment procedure.
Depending on the previous firmware version, a reconfiguration of the hardware may be required during the first start of the firmware. In this case the following message box is displayed:
"FPGA Update. A system shutdown is necessary"
Accept this and the device will be shut down. It is then necessary to start the device on the front panel. A automatically restart is not possible because the FPGA needs a complete boot cycle from power off.

2.4 Installing Firmware Options

2.4.1 Firmware R&S FSV-K7 Analog Demodulation, R&S FSV-K7S FM Stereo Measurements, R&S FSV-K8 Bluetooth®/EDR Measurements, R&S FSV-K9 Power Sensor Measurements, R&S FSV-K14 Spectrogram Measurements and FSV-K54 EMI Measurements

The R&S FSV-K7, R&S FSV-K7S, R&S FSV-K8, R&S FSV-K9,, R&S FSV-K14 and R&S FSV-K54 application software packages are included in the basic instrument firmware. Therefore they do not have a separate item in the installer to be selected.

Note:

The R&S FSV-K7S needs the FSV-K7 installed on the device.

2.4.2 Other Firmware Options within the FSVSetup.exe File

The R&S FSV-K10, R&S FSV-K30, R&S FSV-K70, R&S FSV-K72/73, R&S FSV-K76/77, R&S FSV-K82/84, R&S FSV-K91, R&S FSV-K93, R&S FSV-K100/104 application software packages have their own installation item and are therefore added to the selection list during the firmware update. Ensure that the checkbox is checked if their installation is requested.

Note:

The functionality of the FSV-K91n is integrated within FSV-K91 and is activated by an own key code.

2.4.3 Compatibility of Firmware Options

The R&S FSV Signal Analyzer Firmware 1.70SP1 is compatible to the following option:

FSV-K10	FSV-K30	FSV-K40	FSV-K70	FSV-K72 FSV-K73	FSV-K76 FSV-K77
V1.70SP1	V1.70SP1	V1.70SP1	V1.70	V1.70	V1.70

FSV-K82 FSV-K83	FSV-K84 FSV-K85	FSV-K91 FSV-K91n	FSV-K93	FSV-K100 FSV-K101 FSV-K104 FSV-K105
V1.70	V1.70	V1.70	V1.70	V1.70

2.4.4 Compatibility with the EUTRA/LTE software

This R&S FSV Signal Analyzer Firmware supports the EUTRA/LTE FSV-K100-K105 as internal measurement applications which are included in the FSVSetup.exe. Nevertheless this version is still compatible to the following EUTRA/LTE software running on PCs:

- R&S FSV-K100 EUTRA/LTE FDD Downlink
- R&S FSV-K101 EUTRA/LTE FDD Uplink
- R&S FSV-K102 EUTRA/LTE Downlink MIMO (requires either R&S FSV-K100 or R&S FSV-K104)
- R&S FSV-K104 EUTRA/LTE TDD Downlink
- R&S FSV-K105 EUTRA/LTE TDD Uplink

The EUTRA/LTE software can either be installed on an external PC or on the R&S FSV as an external application. The installation instructions can be found in the EUTRA/LTE release notes. If the EUTRA/LTE software is installed on the R&S FSV, the LTE Measurement Application is no longer available. In order to enable the LTE Measurement Application (build-in option), uninstall the EUTRA/LTE software under Windows Start -> Control Panel -> Add or Remove Programs -> Rohde & Schwarz Eutra/LTE.

2.4.5 Enabling Options by Entering Option Key Codes



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

To activate application software packages, you must enter a license key for validation. If a XML-file with an option key was sent to you see the install description below. The license key is in the device certificate or delivered as a part of the software package. The process is performed in the following steps:

25. Press the "SETUP" hard key.
26. Go to the side menu using the "More" soft key.
27. Press the "Option Licenses" soft key.
28. Press the "Install Option" soft key.
A dialog box is displayed.
29. Enter the option key number using the keypad.
30. Press "ENTER".

After a successful validation the message "option key valid" is displayed. If the validation failed, the option software is not installed.

31. Reboot the device.

Installation of options via XML-file

32. Press the "SETUP" hard key.
33. Go to the side menu using the "More" soft key.
34. Press the "Option Licenses" soft key.
35. Press the "Install Option by XML" soft key.

A dialog box is displayed.

36. Select the path to the XML file (e.g. network drive or USB stick)
37. Press "ENTER".

After a successful validation the message "option key valid" is displayed. If the validation failed, the option software is not installed.

38. Reboot the device.

3 New Functions

The following table lists the new functions and indicates the version in which the new function was introduced:

Version	Function
V1.70SP1	FSV39: Support for new Detector Board 1307.9554.03 Rev 07.xx
V1.70	Support for FSV-K54 EMI measurements
V1.70	Auto sequences support mode to continue without trigger
V1.70	Support for new Detector Board 1307.9554.03 Rev 07.xx
V1.70	SEM: new standard file for 1.4 MHz LTE signal: UL\BW_01_4_MHz.xml
V1.70	Remote command <code>SYST:CLOG</code> for SCPI logging added
V1.70	Remote command <code>M MEM:DEL:IMM</code> to delete write protected files added
V1.70	FSV-B10: Support of new SGS100A SGMA generator
V1.70	FSV-B10: Support of new SMB100A frequency options 20GHz/40GHz
V1.70	FSV-B10: Support of negative numerators
V1.70	FSV-B17: Support unfiltered mode
V1.70	FSV-B17: Support for digital LVDS trigger
	FSV-K7: Support of I/Q Im- and Export
V1.70	FSV-K10: Support for 100 kHz RBW/VBW at 1800 kHz offset freq. in Mod. spectrum measurement. <code>CONFigure:SPECTrum:MODulation:LIST:BANDwidth:RESolution 1800000,100000</code>
V1.70	FSV-K10: Selectable maximum offset frequency in Wide Mod. Spectrum measurement <code>CONFigure:WSPectrum:MODulation:LIST:SElect NARRow</code>
V1.70	FSV-K70: new measurement Bit Error Rate (BER) belonging to source Modulation Accuracy
V1.70	FSV-K70: new measurement Constellation I/Q (Rotated) belonging to source Meas & Ref Signal
V1.70	FSV-K70: new parameter "Fine Synchronization" (Detected Data, Pattern, Known Data)
V1.70	FSV-K70: Sample Signals for some K70 standards are delivered with the instrument (C:\R_S\Instr\user\vsal\DemoSignals) in .iq.tar format. They can be used to get familiarized with the option without having a generator.
V1.70	FSV-K83: Added filter for multi carrier measurements
V1.70	FSV-K91: Simultaneous analysis of up to 4 Tx antennas for IEEE 802.11n MIMO capable devices.
V1.70	FSV-K91: Sequential analysis of up to 4 Tx antennas for IEEE 802.11n MIMO capable devices using the Rohde & Schwarz OSP Open Switch and Control Platform.
V1.70	FSV-K91: Sequential analysis of up to 4 Tx antennas for IEEE 802.11n MIMO capable devices.
V1.70	FSV-K91: For the Spectrum Emission Mask (SEM) measurement, the trace data reduction mode is now selectable.

Version	Function
V1.70	FSV-K100/101/104/105: Auto/Fixed Scaling for Measurements. Measurements can now be displayed with fixed Y-axis scaling (default) or the original auto scaling Y-axis.
V1.70	FSV-K100/101/104/105: Settings file support for PUSCH Hopping Offset, PUSCH Hopping bits and Frame Number offset.

New functions from previous versions:

V1.61SP3	FSV-K10: New High Dynamic mode for modulation spectrum measurements with improved phase noise at 600 kHz offset frequency. Deactivate High Dynamic mode for optimum demodulation results. New SCPI command: <code>CONFigure:SPECTrum:HDYNamic ON OFF</code>
V1.61SP3	FSV-K10: New Transient Ref. Power mode for transient spectrum measurements SCPI command: <code>CONFigure:SPECTrum:SWITching:TYPE RMS PEAK</code>
V1.61SP3	FSV-K10: New SCPI command to query the current statistic count <code>SENSe1:SWEep:COUNT:CURRent?</code>
V1.61SP3	FSV-K85: Support of Multi-Carrier Settings in Code Domain Analyzer independently of subtype setting.
V1.61SP3	FSV-K83/K85: ACLR measurement: Remote query for multi carrier results supported via <code>:CALCulate:MARKer:FUNCTion:POWer:RESult? MCACpower</code>
V1.61SP2	FSV-K91: Enhanced Signal Field measurement. For the 802.11n standard it is now also possible to derive the payload length either from the HT-SIG field or to estimate it from the signal to analyze. For the 802.11n and 802.11n (MIMO) standard the Spectrum Emission Masks [SEM] 'IEEE802.11mb/D08' are supported.
V1.61SP2	Support for FSV-B14 Ultra High Precision Reference
V1.61SP2	Support for Active Probes R&S RT-ZS10, RT-ZS10E, RT-ZS20 and RT-ZS30 with using the RT-ZA9 adapter
V1.61SP2	Noise correction now in all spectrum measurements
V1.61SP2	Remote: Query command for smaller portions of a trace

FSV-K10x V1.62	<p>FSV-K100/101/104/105: Extended Data Capture Settings for multiple frame analysis and statistics</p> <p>FSV-K100/101/104/105: External Trigger Settings for Digital Baseband</p> <p>FSV-K100/104: TDD enhanced test model support</p> <p>FSV-K100/104: TDD special subframe analysis</p> <p>FSV-K100/104: P-/S-SYNC Tx antenna setting</p> <p>FSV-K100/104: PHICH N_g parameter</p> <p>FSV-K100/104: PDSCH subframe configuration detection</p> <p>FSV-K100/104: PDCCH for demodulation setup</p> <p>FSV-K100/104: Boosting estimation</p> <p>FSV-K100/104: Auto detection of PRB symbol offset</p> <p>FSV-K100/104: UE ID/N_{RNTI} setting</p> <p>FSV-K100/104: PDSCH symbol data setting</p> <p>FSV-K100/104: Offset RB in Allocation Summary replaced by Rel. Power/dB</p> <p>FSV-K101/105: PUSCH frequency hopping and Sounding Reference Signal according to 36.211 V8.7.0</p> <p>FSV-K101/105: Codeword scrambling</p> <p>FSV-K101/105: PUCCH bit stream result</p> <p>FSV-K101/105: EVM DMRS PUSCH QPSK/16QAM and EVM PUCCH/DMRS PUCCH</p> <p>FSV-K101/105: Suppressed interference synchronization</p> <p>FSV-K101/105: Increased allowed range for PUCCH Number of RBs</p>
V1.61SP2	International keyboard support now possible (separate installation under R&S internet, FSV, Downloads, Firmware)
V1.61	Support for microwave converter board 1307.9748.xx with HWC 3 and 1308.1192.xx with HWC 3.
V1.61	In order to easily setup the best dynamic of the FSV the mechanical attenuator in spectrum mode is now allowed down to 0 dB automatically. This applies to the auto level operation as well to changing the reference level. (Please observe the 20 dBm maximum input load from data sheet for RFatt < 10 dB!)
V1.61	3dB Filer with a bandwidth of 6.25 kHz added for using with LTE measurements.
V1.61	Status Operation Register (STAT:OPER) enhanced for Sweeping (Bit 3), Measuring (Bit 4) and Waiting for Trigger Bit (Bit 5).
V1.61	Status Operation Register (STAT:OPER) enhanced for Sweeping (Bit 3), Measuring (Bit 4) and Waiting for Trigger Bit (Bit 5).
V1.61	Status Operation Register (STAT:OPER) enhanced for Sweeping (Bit 3), Measuring (Bit 4) and Waiting for Trigger Bit (Bit 5).
V1.61	FSV-B10: Support for SMB 12.75 GHz added.
V1.61	FSV-K10: New Refresh soft key in the Sweep soft key menu Repeats evaluation without capturing new I/Q data. New SCPI command: <code>INITiate:REFMeas[:IMMEDIATE]</code>
V1.61	FSV-K10: New SCPI commands for file export and import of I/Q data New SCPI commands: <code>MMEMory:STORe:IQ:STATe 1, 'C:\gsm.iqw'</code> , <code>MEMory:LOAD:IQ:STATe 1, 'C:\gsm.iqw'</code>
V1.61	FSV-K10: Support for auto detection of frame configuration on imported I/Q data
V1.61	FSV-K70: Mapping D8PSK_VDL added

4 Modified Functions

The following table lists the modified functions and indicates the version in which the modification was carried out:

Version	Function
V1.70	Improved LO suppression by using direct sampling concept for low frequencies in more situations.
V1.70	Print to file: To improve responsiveness first the snap shot is done, then the file dialog is opened
V1.70	Improved Mini Frontpanel to include all necessary hard keys and adjusted size to work well on a 1024x768 screen. The keystroke ALT + M will work as a shortcut.
V1.70	Limited the <code>OUTP:UPOR:VAL</code> to <code>#B00111111</code> according to the possible bits.
V1.70	FSV-K10: The following query remote commands now return the short form <code>CONFigure:MS:CHANnel:SLOT1:FILTer?</code> <code>DISPlay:WINDow1:TRACe1:MODE?</code> <code>CONFigure:BURSt:PTEMplate:TALign?</code> <code>CONFigure:MS:DEMod:DECision?</code> <code>CONFigure:MS:DEMod:STDBits?</code> <code>CONFigure:SPECTrum:SElect?</code>
V1.70	FSV-K70: The internally used peak excursion for diagrams scaled in % has been decreased, to work better within the EVM measurement
V1.70	FSV-K100/101/104/105: Adjusted ACLR limits to latest 3GPP test specification.
V1.70	FSV-K100/101/104/105: Initial marker position now aligns to peak of current measurement when switched on.
V1.70	FSV-K100/101/104/105: Limited Uplink 'Subframe configuration' 'Number of RB' to a maximum of 100 and 'Offset RB' to a maximum of 99.
V1.70	FSV-K100/101/104/105: Limited 'Number of RB PUCCH' to a maximum of 'Signal Characteristics - Number of RB' or 100 whichever is the smaller.
V1.70	FSV-K100/101/104/105: Limited 'Number of subbands' to a maximum of 'Signal Characteristics - Number of RB' less 'Number of RB PUCCH' or 100 whichever is the smaller.
V1.70	FSV-K100/101/104/105: Limited Group Hopping or Sequence Hopping selection to only one being set at any one time.

Modified functions from previous versions:

Version	Function
V1.61SP3	FSV-K91 Standard 802.11n: <i>Demod Settings</i> <i>Guard Interval Normal</i> was replaced by <i>Long</i> . The legacy remote command is mapped to the new command. Standard 802.11n MIMO: For the <i>Advanced Demod Settings</i> <i>Guard Interval Length</i> combo box, the text stating the Bandwidth [BW] was removed and the <i>normal</i> specifier was replaced by <i>short</i> .
V1.61SP2	Improved synthesizer setup with sweep type set to sweep and small spans.
V1.61SP2	Increased resolution of transducer values to 0.01 dB.
V1.61SP2	FSV-K100/K101/K104/K105: The ACLR settings range for 1.4MHz and 3MHz Channel Bandwidth extended.
V1.61	FFT filters for 1 and 3 MHz introduced for increasing measurement speed mainly if a small VBW is selected.
V1.61	In FFT mode the sweep time dependency of the VBW is now also reflected in the auto sweep time.
V1.61	ACLR measurement: Increased the maximum channel power band width up to 40 GHz, and channel power spacing up to 20 GHz.
V1.61	The change directory command (MMEM:CDIR) will now also define the destination for trace ASCII export files.
V1.61	Adapted PSA89600 emulation to supports the usage of the PC software 89600B Vector Signal Analyzer together with the R&S FSV. inp1:att:auto:mode norm
V1.61	The active trace number is now shown above the trace -> trace 1/2/3 soft key menu.

5 Improvements in V1.70SP1

The following table lists the improvements and indicates the version in which the issue could be observed for the first time:

Version	Function
V1.30	Zero Span: Measurement speed improved for smaller RBWs.
V1.60	Printing: After using the EX-IQ Box setup or doing hardcopies within K10/K30/K40/K91/K93 or K100 the print outs may be incomplete or in wrong color scheme. These issues are solved.
V1.20	HP emulation: Handling of command complete improved.

6 Improvements in previous versions

The following table lists the improvements and indicates the version in which the issue could be observed for the first time.

Improvements in V1.70

Version	Function
V1.61	In some situation switching on a further marker cleared the history of the trace statistic. This issue is solved.
V1.61	SPU with gaps an transducers active: After every gap the first measurement point took not the transducer into account. This issue is solved.
V1.60	The command <code>SYST:SHUT</code> to shutdown the operating system was broken. This issue is solved.
V1.61	Creating a save set or shutting down the analyzer with Marker Auto Max Peak function active, did not show up the function afterwards. This issue is solved.
V1.61	Some applications did not work with the windows login as NormalUser. Also the printing did fail. These issues are solved.
V1.61	FSV-K10: DCS 1800 / PCS 1900 should not allow power classes 5-8. This issue is solved.
V1.60	FSV-K70. Modulation order Pi/8-D8PSK could not be loaded via SCPI. This issue is solved.

Improvements in V1.61-V1.61Sp3

Version	Function
V1.40	Gaps in traces showing the sweep progress are now suppressed during printing.
V1.40	Improved the switching security of the mechanical attenuator.
V1.40	Harmonics Measurement: For some sweep times the level readings of the table were not updated. This issue is solved.
V1.60	If marker count was on, the unit of normal markers 2 to 16 in the marker table was Hz instead of dB. Now the correct unit is shown.
V1.60	After increasing the span, delta markers sometimes were limited to the former span. Now they can be placed within the whole span.
V1.61	For delta marker 1 a wrong x-position could be shown in the marker info field. This has been fixed.
V1.61	When using FSP or FSU compatibility mode the application recovery function was not available. It is now available again.
V1.61SP1	In this version the EX-IQ box dialog could bring the firmware to terminate. This issue is solved.
V1.60	Since this version the FSV firmware might terminate with some DNS servers when the FSV is connected with a LAN cable. This issue is solved.
V1.60	In rare cases sporadically I/Q samples with the wrong value could appear. This issue is solved.
V1.60	Dependency of the minimum and maximum of the IF power trigger level corrected.
V1.60	In some cases an "Out of Memory" message box can occur using the device from the front panel or remote with active display update. This issue is solved.
V1.60	In rare cases on device with FMR9 front module controller the GPIB remote connection can hang whilst receiving data. This issue is solved.
V1.60	FSV-B9: Wrong power level at the tracking generator might happen after starting the FSV when the tracking generator was active during shut down. This issue is solved.
V1.61	FSV-K10: Setting <code>TRACe: IQ: DATA: FORMat</code> via remote in spectrum mode could cause GSM mode to fail. This issue is solved.
V1.61	FSV-K10: Presetting or exiting the GSM mode directly after entering could cause a hang-up. This issue is solved.
V1.61	FSV-K10: Sometimes mechanical attenuator allows a step size of 1 dB instead of 10 dB. This issue is solved.
V1.61SP2	FSV-K10: Setting time domain power limits in spectrum mode could lead to clicking attenuators when entering K10. This issue is solved.
V1.61SP2	FSV-K10: Entering K10 with a center frequency above 6 GHz could lead to a crash. This issue is solved.
V1.60	FSV-K10: Absolute Wide Modulation Spectrum list results could not be queried via SCPI. The command <code>CONFigure: WSpectrum: MODulation: LIMit ABSolute</code> had no effect. This issue is solved.
V1.60	FSV-K10: Multi Carrier parameters do not affect (Wide) Modulation Spectrum limit lines yet. The parameters "No. of active Carriers" and "BTS Class" are not taken into account for the limit line calculation yet. This issue is solved.
V1.60	FSV-K10: External attenuation could not be correctly set with 'Application Setup Recover' enabled and a Ref. Level Offset in Spectrum mode. This issue is solved.
V1.60	FSV-K10: Sporadically <code>FETCh</code> remote commands caused a timeout. This issue is solved.

Version	Function
V1.60	FSV-K10: RF attenuation in steps of 5 dB without B25. Previous versions only supported steps of 10 dB. This issue is solved.
V1.60	FSV-K10: Setting the RF attenuation did not change the attenuation mode to auto. This issue is solved.
V1.60	FSV-K10: Sporadically the synchronization when setting the attenuator via SCPI failed. This issue is solved.
V1.60	FSV-K10: Sporadically the Ref. Level could not be set via SCPI. This issue is solved.
V1.60	FSV-K10: Display Graph/List soft key now shows correct state. In previous versions mixed manual and remote use could lead to an incorrect state of the soft key. This issue is solved.
V1.60	FSV-K40: Improved phase noise curve via synthesizer settings control.
V1.60	FSV-K30: Added <code>INITiate:CONTinuous</code> SCPI command.
V1.60	FSV-K30: Auto Ref Level: increased level headroom to prevent overloading.
V1.60	FSV-K30: Correction preventing unwanted regeneration of the frequency list during the entry sequence.
V1.60	FSV-K85: Remote control: ACLR now can handle more than one TX channel.
V1.61 SP1	<p>FSV-K91</p> <p>Erroneously restricted <i>Capture Time</i> for the 802.11g, 802.11b, 802.11n standards is now again as guaranteed.</p> <p>SCPI command to set <i>Joined Rx Sync and Tracking</i> available.</p> <p>SCPI command to set <i>Pilots for Tracking</i> available.</p> <p>Changing in full screen to <i>Display List</i> mode and back to <i>Display Graph</i> results in the original measurement.</p> <p><code>FETCh:BURSt:ALL?</code> provides all the results including the peak power.</p> <p><code>FETCh:BURSt:PEAK?</code> provide the peak power measurement result.</p> <p><i>Demod Dettings Level Tracking</i> is working.</p> <p>The status message 'Warning' is enhanced with detailed information in the <i>Signal Field</i> measurement.</p> <p>The algorithm to estimate the burst length was improved.</p> <p>For heavily distorted signals, the EVM measurement is improved.</p> <p>Artificial shoulders in <i>Spectrum Emission Mask</i> for noisy signals have been removed.</p> <p>For the IEEE Spectrum Emission Mask, the outmost tolerance limit was -40dB instead of -45dB and is corrected now.</p>
V1.60	FSV-K91: The range for the sample rate setting was incorrect when the IEEE 802.11a standard was selected. This has been corrected.
V1.60	FSV-K91: The results returned via remote control for the signal field measurement were incorrect. This has now been corrected.
V1.60	FSV-K91: The results displayed for the Spectrum Flatness measurement for standards 802.11a, j and g were not correct. This has been corrected
V1.60	FSV-K100/K101/K104/K105: In some cases clipping and grey sections anomalies could occur during printing. This issue is solved.
V1.60	FSV-K100/K101/K104/K105: The Spectrum Mask and ACLR table rightmost column data was obscured after width resizing operations. This issue is solved.
V1.50	FSV-K100/K101/K104/K105: In some cases the constellation evaluation filter symbol range and display of selected symbol was incorrect. This issue is solved.
V1.50	FSV-K100/K101/K104/K105: IQ analysis would fail if the <code>Trace:IQ:Data:Format</code> had been set to <code>IQPAIR</code> prior entry into the option. This issue is solved.

Version	Function
aV1.50	FSV-K100/K101/K104/K105: The 'Ref level' range did not take into account the External Attenuation setting when set to default by SCPI command. This issue is solved.
V1.50	FSV-K100/K101/K104/K105: In some cases IQ measurements or Result Summary were not analyzed if selected from a continuous Spectrum Mask or ACLR measurement. This issue is solved.
V1.50	FSV-K100/K101/K104/K105: It was not possible to select both Power vs. RB measurements to be displayed simultaneously via the GUI. This issue is solved.
V1.50	FSV-K100/K101/K104/K105: Corrected 'Channel Flatness' and 'Channel Flatness Difference' measurement results.
V1.50	FSV-K101/K105: Corrected 'CONF:LTE:UL:BW'-invalid deactivation of auto demodulation
V1.60	FSV-K100/K101/K104/K105: The Spectrum Mask Sweep time is now reported.
V1.60	FSV-K100/K101/K104/K105: The centre frequency was not reinstated on entry when application recovery was enabled. This issued is solved.
V1.60	FSV-K100/K101/K104/K105: Corrected behavior for SCPI command <code>INIT:IMM</code> whilst measurement running. Previous behavior quietly aborted the running measurement, new behavior SCPI command discarded and an execution error reported.
V1.60	FSV-K100/K101/K104/K105: Uninstalling the option would interfere with the FSV-K90, FSV-K91, FSV-K92, FSV-K93, FSV-K94 operation. This issued is solved.
V1.60	FSV-K100/K101/K104/K105: Application stability issues due to changing IQ measurement prior to the first IQ analysis post standard selection. This issued is solved.
V1.60	FSV-K100/K101/K104/K105: Invalid 'No REF' warning on preset. This issued is solved.
V1.60	FSV-K100/K101/K104/K105: The first query of the operation registers could be incorrect if pre-entry the spectrum analyzer was in continuous mode. This issued is solved.

7 Known Issues

The following table lists the known issues and indicates the version in which the issue was observed for the first time:

Version	Function
V1.41	<p>Hints to FSV-B17 Digital Baseband Interface:</p> <p>If the FSV is used as digital output and for example the R&S SMU as digital input please ensure the sample rate 100 MHz on both devices.</p> <p>For using R&S@DiglConf on the R&S FSV a minimum R&S@DiglConf firmware version of V2.10 or higher is necessary.</p>
V1.20	<p>The analyzer supports the LXI standard. As a consequence the DHCP IP address assignment is performed twice: once while Windows XP is booting, and again when the firmware is started. This can result in a short loss of remote desktop control. In a stable IP environment this renewal is not necessary and can be omitted by deleting the following registry key:</p> <p>HKEY_LOCAL_MACHINE\SOFTWARE\Rohde&Schwarz\SoftwarePlatform\ServiceConfiguration\LanServices: "DoRenewDHCP"="1"</p>
V1.05	FSV-K10: UNDO/REDO and touch events on markers and other result items will not work.
V1.10	FSV-K10: SCPI commands do not provide full FS-K5 compatibility. See attached table.
V1.05	FSV-K30 Toggle and zoom hard keys not active.
V1.60	<p>FSV-K91: Remote controlled: In rare cases change between remote and local mode may lock up the firmware. Switching between local and remote causes the display updates to be switched on and off. It is more efficient to leave the display on or off as desired for the entire execution of the remote control script. Switching the display on is achieved with SYSTem:DISPlay:UPDate ON, switching the display off is achieved with SYSTem:DISPlay:UPDate OFF. Whilst a script is running with the display off the display can be switched on by pressing the Display Update soft key</p>
V1.60SP1	FSV-K91: For low SNR signals the EVM might degenerate.
V1.60	FSV-K91: For signals with AWGN distortion the SEM trace might show shoulders in neighbor channels.
V1.20	FSV-K93: Auto level result in the spectrum measurement can be improved manually.
V1.50	FSV-K100/K104 Constellation diagram does not display ideal constellation points for 'rotated BPSK' and PSK.
V1.50	FSV-K100/K104 The Capture 'analyzed frame bar(green)' updates are occasionally skipped when processing fast measurements in continuous mode.
V1.61	FSV-K100/K101/K104/K105: Spectrum Mask with Auto Level selected may show IFOVL with attenuator clicking for part of 20 MHz Channel Bandwidth signal range. Workaround is to post initial measurement, manually increase RF attenuation and REFLevel.
V1.61SP1	FSV-K100/K101/K104/K105: A measurement which fails due to invalid settings may not clear the previous measurements results.

7.1 FSV-K10: List of FS-K5 SCPI command compatibility issues

SCPI Command	Comment
READ:AUTO:LEV?T?	Supported, but the result is always shown as PASSED.
CALC:LIM{1..8}:CONT:OFFS CALC:LIM{1..8}:LOW:OFFS CALC:LIM{1..8}:UPP:OFFS CALC:LIM{1..8}:NAME CALC:LIM{1..8}:STAT {ON,OFF} CALC:LIM{1..8}:UPP:MARGIN CALC:LIM{1..8}:LOW:MARGIN CALC:MATH:MODE {LIN,LOG} CONF:BURS:PTEM:TMHR {OFF,ON} CONF:CHAN:TSC AB{0,1,2} CONF:MCAR {OFF/ON} CONF:MS:ECON:STAT ON CONF:MS:BSTHRESHOLD	Not supported. Command is accepted but ignored; query returns default values.
CONF:BURS:PTEM:FRZ {1,2,3} CONF:BURS:PTEM:SEL FALL CONF:BURS:PTEM:SEL RIS	Not supported. Available in command list. Returns SCPI error on execution.
CONF:BURS:POW CONF:BURS:PTEM:SEL FRZ CONF:MS:ECON:TREF {0..7} CONF:MS:ECON:SLOT{0..7}:RLEV:MODE {1,ABS,REL} CONF:MS:ECON:SLOT{0..7}:RLEV:VAL CALC:MARKER:FUNC:SUMM:MEAN:RESULT? CALC:MARKER:MAX:PEAK	Not supported. Not available in the command list.

7.2 Changing of hard disks between different types of front module controllers

For the FSV spectrum analyzer different CPU boards are in use:
FMR7 with order no. 1091.3204, FMR9 with order no. 1091.1599, 1206.0198 or 1091.1347.

The hard disks of the FSV can be changed from one device to another, as long as the devices have the same CPU board with the identical order number.

If the hard disk is exchanged between different types of CPU boards the operating system will not start up correctly. The following will happen:

Hard disc for FMR7 in device with FMR9:



A windows blue screen appears.

Hard disc for FMR9 in device with FMR7:



The “Found New Hardware Wizard” and a white/red cross symbol in the system tray can be seen, the firmware may start in the background.

Touch screen, keypad and all USB devices are not working.

Hard disc for FMR9 with different order numbers:

Touch screen, keypad and all USB devices may not work.

For images versions ≥ 3.28 (see Setup -> System Info -> Statistics) hard disks can be exchanged between all order numbers of FMR9 CPU boards.

General Solution:

Change back to the hard disc which fits to the front module controller.
The device will boot as usual.

8 Modifications to the Documentation

The new and modified functions mentioned in these release notes are already documented. Except the below mentioned last minute changes you can find the description including remote commands in the online help or in the manual. The manual can be downloaded from the internet under: <http://www.rohde-schwarz.com>. Select "DOWNLOAD" and search for R&S FSV within the category MANUAL.

FSV-K91: New functionality for the SEM Settings dialog

SEM Settings dialog 'Trace Reduction'



During the Spectrum Emission Mask (SEM) measurement measured-data is acquired according to the Detector setting –from the SEM xml definition file – for each frequency segment/interval being part of the SEM definition. The measured-data has to be reduced in order to display the corresponding trace for each frequency segment/interval.

Peak: For each frequency segment/interval, the reduction from measured-data to the corresponding trace uses the peak of the data to be reduced. This was the behaviour for the SEM measurement until FSV-K91 V1.61 SP2.

Trace Detector: The reduction from measured-data to the corresponding trace uses the Detector setting –from the SEM xml definition file – for the corresponding frequency segment/interval.

In case the Peak detector is used –from the SEM xml definition file– for a frequency segment/interval, the *Trace Reduction* won't have an effect on the trace result for this frequency segment.

In case the RMS detector is used –from the SEM xml definition file– for a frequency segment/interval, the *Trace Detector* selection will generate a smoother trace result compared to the *Peak* selection.

Remote: : POW:SEM:TRAC:RED

[SENSe:]POWer:SEM:TRACe:REDuction

This command specifies how trace reduction is performed for the Spectrum Emission Mask (SEM) measurement. The settings are:

PEAK The full trace uses peak detection for trace display. This matches the setting used for FSV-K91 up to and including FSV-K91 V1.61 SP2.

DETECTOR The trace for each sub span is reduced according to the trace detector specified for the sub span.

Example: "POW:SEM:TRAC:RED PEAK" set SEM measurement to use peak trace reduction

Characteristics: *RST value: PEAK
SCPI: device-specific

9 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 make sure that you get the right information.

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