R&S®FSVR
Real-Time Spectrum Analyzer
Release Notes
Firmware Version V2.23 SP1

These Release Notes are for following models of the R&S® FSVR Real-Time Spectrum Analyzer:
R&S® FSVR7, order no. 1311.0006K07
R&S® FSVR13, order no. 1311.0006K13
R&S® FSVR30, order no. 1311.0006K30
R&S® FSVR40, order no. 1311.0006K40

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The following abbreviations are used throughout this document:
R&S®FSVR is abbreviated as R&S FSVR

Test and Measurement
Release Notes
PAD-T-M: 3574.3288.02/02.00/CI/1/EN/

ROHDE&SCHWARZ

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1 Current Version and History

1.1 New Functions

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

New functions of Firmware V2.23 SP1:

Version	Function
V2.23 SP1	Sample transducer factor MDS-21_CA added. It includes the accessories shipped together with the MDS-21 and combines in one transducer factor the typical contribution of the MDS-21 clamp factor + cable loss + 6 dB attenuation.

New functions of Firmware V2.23:

Version	Function
V2.23	Support for new RF Frontend with order no. 1312.0512.04.
V2.23	Sweep Type Sweep is now available in Spectrum Analyzer Mode.
V2.23	Lower minimum sweep times in Spectrum Analyzer Mode supported.
V2.23	Support for High Speed LAN Instrument Protocol (HiSLIP) added.
V2.23	Support for remote command :SYSTem:SHUTdown.
V2.23	Support for Power Sensors R&S NRP-Z211 and R&S NRP-Z221
V2.23	OBW: Marker search limits can be used for multi-carrier measurements.
V2.23	User Preference: Remote command `MMEM:USER` added for automated configuration of the User Key assignment
V2.23	Limit line system supports unit dBpT
V2.23	I/Q Analyzer supports Bandpower and C/N measurement
V2.23	I/Q Analyzer: Supports display of RBW value in spectrum diagram.
V2.23	Support for the remote command `:SENSe:CORRection:TRANsducer:ACTive?` for reading back the active transducer name.
V2.23	HP emulation: Added `AMPCOR` commands for emulation amplitude correction values (similar to transducers).
V2.23	FSV-B21: Support for Transducers added
V2.23	Auto sequences support mode to continue without trigger
V2.23	SEM: new standard file for 1.4 MHz LTE signal: UL\BW_01_4_MHz.xml
V2.23	Remote command SYST:CLOG for SCPI logging added
V2.23	Remote command MMEM:DEL:IMM to delete write protected files added
V2.23	FSV-K7: Support of I/Q Im- and Export
V2.23	FSV-K7: Support for variable size capture buffers (allows capture buffer of up to 7.5 MSamples, or up to 240 s capture time with a demodulation bandwidth of 25 kHz)
V2.23	FSV-K10: Support for 100 kHz RBW/VBW at 1800 kHz offset freq. in Mod. spectrum measurement. CONFigure:SPECtrum:MODulation:LIST:BANDwidth:RESolution 1800000,100000
V2.23	FSV-K10: Selectable maximum offset frequency in Wide Mod. Spectrum measurement CONFigure:WSPectrum:MODulation:LIST:SELect NARRow

Version	Function
V2.23	FSV-K30: RF input coupling can be switched between AC and DC mode
V2.23	FSV-K30: Added SCPI command `MMEMory:STORe{1|2}:TRACe` (as Spectrum Analyzer)
V2.23	FSV-K30: ENR tables conforming to the Agilent format can be imported in the ENR table editor
V2.23	FSV-K40: Support for Active Probes R&S RT-ZS10, RT-ZS10E, RT-ZS20 and RT-ZS30 when using the RT-ZA9 adapter.
V2.23	FSV-K40: Added AC/DC coupling control & ability to measure a minimum frequency of 9kHz
V2.23	FSV-K70: new measurement Bit Error Rate (BER) belonging to source Modulation Accuracy
V2.23	FSV-K70: new measurement Constellation I/Q (Rotated) belonging to source Meas & Ref Signal
V2.23	FSV-K70: new parameter “Fine Synchronization” (Detected Data, Pattern, Known Data)
V2.23	FSV-K70: Sample Signals for some K70 standards are delivered with the instrument (C:\R_S\Instr\user\vsa\DemoSignals) in .iq.tar format. They can be used to get familiarized with the option without having a generator.
V2.23	FSV-K82/83/84/85: New Displays Magnitude Error vs Chip, Phase Error vs Chip, Magnitude Error vs Symbol and Phase Error vs Symbol
V2.23	FSV-K83: Added filter for multi carrier measurements
V2.23	FSV-K91: Simultaneous analysis of up to 4 Tx antennas for IEEE 802.11n MIMO capable devices.
V2.23	FSV-K91: Sequential analysis of up to 4 Tx antennas for IEEE 802.11n MIMO capable devices.
V2.23	FSV-K91: For the Spectrum Emission Mask (SEM) measurement, the trace data reduction mode is now selectable.
V2.23	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.
V2.23	FSV-K100/101/104/105: Settings file support for PUSCH Hopping Offset, PUSCH Hopping bits and Frame Number offset.
V2.23	FSV-K104: On / Off Power Measurement
V2.23	FSV-K104: Auto Gating
V2.23	FSV-K100/101/104/105: SCPI support for AUTO/Fixed scaling.
V2.23	FSV-K105: Configuration Special Subframe setting added.
V2.23	FSV-K100/101/104/105: Spectrum Mask and ACLR extended ‘Span’ support.
V2.23	FSV-K100/101/104/105: Spectrum ACLR extended ‘Sweep Time’ support.
V2.23	FSV-K100/101/104/105 Support up to 4 Markers and Delta Markers
V2.23	FSV-K100/101/104/105: Spectrum ACLR supports two Tx channels with independent BW setup
V2.23	FSV-K100/101/104/105: On/Off Power Measurement supports Noise Correction
V2.23	FSV-K100/101/104/105: SCPI command `*TRG` supported
V2.23	FSV-K100/101/104/105: Min/max statistic results for the EVM PDSCH PQSK/16QAM/64QAM
V2.23	FSV-K100/104 Support for PDSCH Power Ratio
V2.23	FSV-K100/104: Support for EVM versus Resource Block measurement
V2.23	FSV-K101/105: Support for PRACH measurements
V2.23	FSV-K100/101/104/105: Support for SCPI query of Result Summary Limit check
V2.23	FSV-K100/101/104/105: Measurement status reporting extended by 'Waiting for Trigger'.

Version	Function
V2.23	FSV-K100/101/104/105: Two instances of the option can be opened.

1.2 Modified Functions

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

Modified functions of Firmware V2.23 SP1:

Version	Function
V2.23 SP1	FSV-K54: The status message “Increase Sweep Points or RBW” is displayed when an EMI measurement is active, if the distance between two sweep points becomes wider than 1/3 of the resolution bandwidth.

Modified functions of Firmware V2.23:

Version	Function
V2.23	An additional state “Off” is now available to switch off the Video Output. The state “Off” is the default.
V2.23	Following trace functions in Real-Time-Mode are no longer available: Hold/Cont Trace Mathematics and Average Mode.
V2.23	The conditions “inside” and “outside” of the frequency mask trigger are not any longer available.
V2.23	LXI 1.4 conformity.
V2.23	The speed performance of switching between applications is improved.
V2.23	The maximum value for trace averaging is increased to 200 000.
V2.23	The Reference Level Offset is now also taken into account for the RF power trigger.
V2.23	The settings for HP emulation like: Sweep Repeat, IF Gain, etc. are now saved and restored during a standard power cycle from the front panel of the device.
V2.23	Improvements for HP8566 emulation for video trigger and marker.
V2.23	For measurement speed performance reasons the Windows Power Setup for Processor Throttle (AC) is now set to “none”.
V2.23	FSV-B21: The Y band is changed to the frequency borders: 325-500 GHz.
V2.23	I/Q Analyzer: Calculation of the Trace detectors in spectrum display modified: The spectrum trace is calculated using an FFT length of 4096 and a window length which is either 4096 or the record length, if lower than 4096. The window overlap is 0.75 if the record length is long enough to calculate multiple windows. Multiple FFT's are then combined to create the final spectrum trace. Up to firmware V2.10 a linear average detector was used to combine the overlapping FFT's into one spectrum trace. The selected trace detector was only used to reduce the number of FFT points to the (lower) number of sweep points. Starting from V2.20 the trace detector is already used when combining the overlapping FFT's. The algorithm to reduce the number of FFT points to sweep points remains unchanged.
V2.23	Print to file: To improve responsiveness first the snap shot is done, then the file dialog is opened
V2.23	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.
V2.23	Limited the `OUTP:UPOR:VAL` to `#B00111111` according to the possible bits.
V2.23	FSV-K10: Wide Modulation Spectrum measurement extended to 6 MHz frequency offsets. Previous versions only performed measurements up to 5.8 MHz frequency offsets.

Version	Function

V2.23	FSV-K10: The following query remote commands now return the short form
	`CONFigure:MS:CHANnel:SLOT1:FILTer?`
	`DISPlay:WINDow1:TRACe1:MODE?`
	`CONFigure:BURSt:PTEMplate:TALign?`
	`CONFigure:MS:DEMod:DECision?`
	`CONFigure:MS:DEMod:STDBits?`
	`CONFigure:SPECtrum:SELect?`

V2.23	FSV-K40: Residual Noise & Spot Noise Offset results now show user edited settings
V2.23	FSV-K70: The blue bar in the capture buffer showing the selected result range can now be moved with drag&drop in single sweep mode..
V2.23	FSV-K70: An improved synchronization algorithm affects the detection of known data sequences. Known data sequences recorded with an earlier version of FSV-K70 eventually must be newly recorded with V2.00 for proper operation.
V2.23	FSV-K70: The internally used peak excursion for diagrams scaled in % has been decreased, to work better within the EVM measurement
V2.23	FSV-K70: When switching back from the FSV-K70 to the Spectrum Analyzer Mode, now the last spectrum analyzer measurement (e.g. ACLR) is restored
V2.23	FSV-K70: When switching from ACLR to the FSV-K70, the FSV-K70 now uses the attenuation settings from the I/Q Analyzer Mode, and not from ACLR.
V2.23	FSV-K73: Adapted the configuration of the Spectrum Emission Mask measurement to 3GPP TS 34.121-1 V11.0.1
V1.63	FSV-K76/77 issue solved: - `command POW:ACH:BWID:CHAN<Tx> <bandwidth>` did not accept values for TX channels above 1.
V2.23	FSV-K100/101/104/105: Adjusted ACLR limits to latest 3GPP test specification.
V2.23	FSV-K100/101/104/105: Initial marker position now aligns to peak of current measurement when switched on.
V2.23	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.
V2.23	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.
V2.23	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.
V2.23	FSV-K100/101/104/105: Limited Group Hopping or Sequence Hopping selection to only one being set at any one time.
V2.23	FSV-K100/101/104/105: ‘Resource Block’ range restricted to standard values ‘6, 15, 25, 50, 75, 100’, GUI setting changes are only possible via Channel Bandwidth setting. Allocation file setting or Recall file setting not to standard values are promoted to nearest higher standard value unless above maximum value in which case set to the100 RB maximum value, an incompatible settings warning is generated. SCPI setting changes are limited to standard values otherwise a data out of range error is generated.
V2.23	FSV-K100/101/104/105: To improve persistent Frame Start Offset result visibility, the order of the display results Frame Start offset, Subframe selection and Marker value in Capture Measurement is changed.
V2.23	FSV-K101/105: Crest Factor results are not relevant for slot: 0 or 1 selections and are suppressed.
V2.23	FSV-K101/105: Bit Stream results extended to report ‘Allocation ID’ and ‘Codeword’ results.

Version	Function
V2.23	FSV-K101/105: PUCCH ‘Format’ range extended and simplified to ‘F1, F1a, F1b, F2, F2a, F2b and F3’.
V2.23	FSV-K101/105: Legacy PUCCH ‘Delta Offset’ setting removed. This setting supported very early standards of 3GPP LTE standard and is no longer required.
V2.23	FSV-K100/101/104/105: Improved subframe start offset precision.
V2.23	FSV-K101/105: Improved synchronization performance for PUCCH signals with high IQ imbalance.
V2.23	FSV-K100/104: The time interpolation method of the channel estimation is adapted to Change Request R4-102812.
V2.23	FSV-K100/104: Improved the robustness of subframe configuration detection, based on physical detection against boosting variations.
V2.23	FSV-K100/104: Support for boosting estimation with subframe configuration detection set to PDCCH Protocol.
V2.23	FSV-K100/104: Improved synchronization performance for signals with high IQ offset.
V2.23	FSV-K101/105: Improved time alignment error measurement precision.
V2.23	FSV-K101/105: CCDF and Crest Factor measurement results are not subjected to the multicarrier filter.
V2.23	FSV-K104: On / Off Power Measurement results now include External Attenuation.
V2.23	FSV-K100/101/104/105: Spectrum ACLR SCPI List results extended to include ‘Upper Power’ and ‘Limit’ results.
V2.23	FSV-K101/105: Results Summary now includes limits for ‘Frequency Error’ and ‘IQ Offset’ when appropriate.
V2.23	FSV-K105: Improved synchronization when DL subframes active.
V2.23	FSV-K100/101/104/105: In continuous sweep mode, the statistic is reset if ‘No Compatible Frame’ was found.
V2.23	FSV- K100/101/104/105: Capture Buffer is now reported in dBm for Digital Baseband measurements.
V2.23	FSV- K100/104: Support for PHICH Ng Setting 'Auto (PBCH)'.
V2.23	FSV- K101/105: 'UL Frame Config' table simplified, non-significant BoostingdB setting removed.
V2.23	FSV- K101/105: Support for Auto Demodulation: 'Subframe Configuration and DMRS'.
V2.23	FSV- K100/104: 'PDSCH Subframe Detection' cannot be set to OFF if 'Auto Demod' is enabled.
V2.23	FSV- K100/101/104/105: Spectrum SEM and ACLR measurement will increase the center frequency to ensure valid test start frequency.
V2.23	FSV- K100/101/104/105: Result Summary 'CenterFreq Offset' and 'IQ Origin' Statistic's now reflect the pass/fail status over the current statistic count instead of over the frames in the current analysis.
V2.23	Modified synthesizer setup table.
V2.23	FSV-K101/105: Added support for Spectrum Emission Mask measurement Category settings ‘Category B Opt1’, ‘Category B Opt2’, ‘Local Area’ and ‘Home’.
V2.23	Solved basic firmware issues: - Trace update in Zero Span mode for larger sweep time (with small RBW and high number of sweep points) is now in all cases performed during the sweep and not only at the end of a sweep.
V2.23	- If explicit file path information is not included in parameter of remote commands `MMEMory:LOAD:IQ:STATe` or `MMEMory:LOAD: DEModsettings`, the

Version	Function
	folder set by `MMEMory:CDIRectory` will be used. - Spectrum Mask with Auto Level selected may show IFOVL with attenuator clicking for part of 20 MHz Channel Bandwidth signal range.

1.3 Improvements

The following tables list the improvements and indicate since which version the issue could be observed:

Improvements of Firmware V2.23 SP1:

since	Function
V2.23	FSVR Windows XP: The touch screen was no longer operable after a touchscreen alignment was performed. This issue is solved.
V2.23	FSVR Windows 7: Screen saver did not work. This issue is solved.

Improvements of Firmware V2.23:

since	Function
V1.63	Trace with max hold is not reset after another trace was set to “View”.
V1.63	Solved basic firmware issues: - Recalling a file with an active transducer setup works now, no matter whether the save item "All Transducers" is selected. - While in continuous sweep with Trace1 Max Hold, Trace1 restarted the max hold function when Trace2 was switched to View mode. - In signal track mode, the marker symbol was not always positioned on the peak signal. - Print to file: Overwriting existing files is now possible after confirmation. - Enabling a transducer with absolute unit switched off transducers with relative units. - Marker Count readout corrected for frequencies ≤ 22 MHz. - Enabling a transducer with absolute unit switched off transducers with relative units. - Marker Count readout corrected for frequencies ≤ 22 MHz.
V1.46	Zero Span: Measurement speed improved for smaller RBWs.
V1.63	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.
V1.46	HP emulation: Handling of command complete improved.
V1.63	In some situation switching on a further marker cleared the history of the trace statistic. This issue is solved.
V1.63	SPU with gaps an transducers active: After every gap the first measurement point took not the transducer into account. This issue is solved.
V1.63	The command `SYST:SHUT` to shutdown the operating system was broken. This issue is solved.
V1.63	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.
V1.63	Some applications did not work with the windows login as NormalUser. Also the printing did fail. These issues are solved.
V1.46	SEM: The result level values on the screen and read out from remote had a data formatting issue thus values could differ up to 0,00003dB . This issue is solved.
V1.63	On few units a further improvement of the level stability for frequencies above 8 GHz in FFT mode was necessary.
V1.63	SEM: EUTRA/LTE xml Files updated, because some of them had no symmetrical setups.
V1.63	Improved resolution for x-values in Marker Peak List ASCII Export for Zero Span.
V1.63	Solved license key issue: - In some cases temporary key code licenses were not accepted due to an inconsistent system time management. This was fixed in V2.10. - If this happens with an older firmware version, please update to firmware V2.10 or newer and

since	Function
	request a Time-Control key from the R&S service center.
V1.63	ACLR: Inconsistency with FFT or SWEEP mode selection depending on sweep time setup manual or auto solved.
V1.63	Spurious Measurement: Issue with deleting last range from remote control is solved.
V1.63	I/Q Analyzer: Remote command `DISP:WIND:TRAC:Y` for setting the range of the Y-axis is missing. The remote command is now supported.
V1.63	FSV-K9: The Frequency Coupling of the power sensor did not work. This issue is solved.
V1.70	FSV-K10: Modulation spectrum limits are selected by the power level derived from the slot power. Previous versions used the reference power measured with a resolution bandwidth of 30 kHz. This leads to stricter limits for offset frequencies greater than or equal than 600 kHz. See 4GPP TS 45.005 §4.2.1.3.
V1.63	FSV-K10: DCS 1800 / PCS 1900 should not allow power classes 5-8. This issue is solved.
V1.63	FSV-K40: Improvements to PN curve from 1 Hz to 10 Hz frequency offset.
V1.63	FSV-K70. Modulation order Pi/8-D8PSK could not be loaded via SCPI. This issue is solved.
V1.63	FSV-K72/73: On first entry the application now takes over the Reference Level Offset from the previous application.
V1.63	FSV-K91: In some cases the peak power measured in the SEM measurement was different from the peak power in the trace. This issue is solved.
V1.63	FSV-K93: Downloading of settings from SMU generators with recent versions of the SMU firmware installed did not work. This issue is solved.
V1.63	FSV-K93: Auto-level did not work correctly with instruments with the B24 option installed. This issue is solved.
V1.63	FSV-K104: The Adjust Timing offset was not applied to the subsequent On/Off Power Measurement. This issue is solved
V1.63	FSV-K105: Auto Gating did not show expected effect This issue is solved.
V1.70	Power vs Time limit lines for AQPSK corrected. The limits have been updated according to 3GPP TS 45.005 V10.3.0, Figure B.10. Previous versions used the limits according to 3GPP TS 45.005 V10.0.0.
V1.70	FSV-K100/101/104/105: AUTO/Fixed scaling support occasionally inaccessible for ‘Capture Buffer’, ‘Power RB RS’ and ‘Power RB RDSCH’ Measurements. This issue is solved.
V1.63	FSV-K101/105: ‘LIST / GRAPH’ menu button state not always synchronized with the current display in EVM, SPECTRUM and CONSTEL menus. This issue is solved.
V1.63	FSV-K100/101/104/105: The `SYNC:STATE?` SCPI query would not reliably return ‘0,0,0’ for a ‘No Compatible frame’ analysis.. This issue is solved.
V1.71	FSV-K104 issues solved: - Corrected 'AMPT' and 'Auto Set' Hardkey behavior for Power On/Off Measurement.

1.4 Known Issues

The following table lists the known issues and indicates since which version the issue could be observed:

since	Function
V1.63	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
V1.63	For signals with AWGN distortion the SEM trace might show shoulders in neighbor channels.
V1.63	FSV-K100/K101/K104/K105: A measurement which fails due to invalid settings may not clear the previous measurements results.
V1.63	Upgrades from versions before FSVR 1.51 to Version 1.61SP3 can fail via remote installation. Installation works correctly when installed directly on device
V1.57	FSV-K100/K104 Constellation diagram does not display ideal constellation points for ‘rotated BPSK’ and PSK.
V1.57	FSV-K100/K104 The Capture ‘analyzed frame bar(green)’ updates are occasionally skipped when processing fast measurements in continuous mode.
V1.57	Hints to FSV-B17 Digital Baseband Interface: If the FSVR 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. For using R&S®DigIConf on the R&S FSVR a minimum R&S®DigIConf firmware version of V2.10 or higher is necessary.
V1.57	FSV-K93: Auto level result in the spectrum measurement can be improved manually.
V1.46	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: HKEY_LOCAL_MACHINE\SOFTWARE\Rohde&Schwarz\SoftwarePlatform\ServiceConfiguration\LanServices: "DoRenewDHCP"="1"
V1.46	FSV-K10: UNDO/REDO and touch events on markers and other result items will not work.
V1.46	FSV-K30 Toggle and zoom hard keys not active.

1.5 Modifications to the Documentation

The current documentation is up-to-date.

2 Firmware Update

The firmware update file for the R&S FSVR is one file including the main firmware version number e.g. FSVRSetup_V2.23.exe. It will be referred as FSVRSetup.exe later in the text. The file can be found on Rohde & Schwarz web page.

2.1 Performing the Firmware Update on the Instrument

There are three ways to make the setupFSVRSetup.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 FSVR.

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

1. Connect the R&S FSVR 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 FSVR 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 “894129”).
5. Copy the FSVRSetup.exe from your PC to a new folder e.g. C:\FWUpdate.
6. You can now access this directory with the FSVRSetup.exe from the R&S FSVR firmware.

Using a network drive:

1. Connect your R&S FSVR to your LAN, and establish a connection to one of your servers. (Please ask the local IT administrator for support)
2. Copy the FSVRSetup.exe from your PC to a directory on this server
3. You can now access the directory with the FSVRSetup.exe from the R&S FSVR firmware.

Performing the update on the instrument:

The firmware update process is performed by the following steps:

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

   A file browser is displayed to select the proper FSVRSetup.exe setup file. Change the path to the drive and directory which you prepared in the step before (USB

stick directory, remote PC directory or directory on a server) and close the dialog with the “Select” button.

3. 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.

4. 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

5. A self alignment is necessary. Press the "SETUP" hard key, then "Alignment" and the "Self Alignment" soft key to start the alignment procedure.

6. 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:

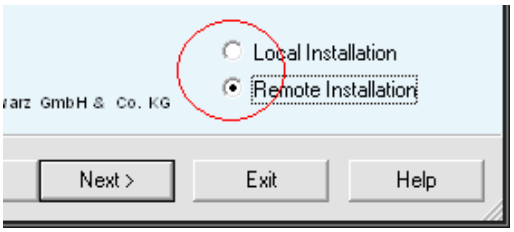
   `"FPGA Update. A system shutdown is necessary”`

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

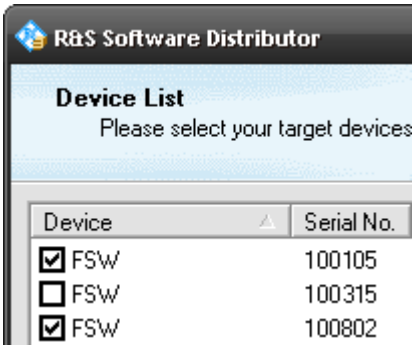
2.2 Performing the Firmware Update from a Windows PC

If the firmware version 1.78 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.

1. Run FSVRSetup.exe on your PC.
2. Select Remote Installation and click the button Next.



3. Select the Packages which shall be installed and click the button Next.
HINT FOR FIRE WALL USERS: The FSVRSetup.exe is communicating with the instruments via LAN. Therefore it is necessary that the FSVRSetup.exe may pass the fire wall. After adding it to the fire wall rules, restart the scan by clicking on Rescan.



4. 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.

NOTICE

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!

5. Additional help will be displayed after clicking the button "Help" and further options are available by clicking the button "Options".
6. Start the installation by selecting "Install"
7. Confirm that you want to reboot the instrument in order to activate the firmware update (the instrument then restarts automatically)

2.3 Operation with and without Administrator Rights

The R&S FSVR 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 R&S FSVR 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.

2.4 Firmware Downgrade

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

8. Ensure to be logged in with administrator rights (user “Instrument”)
9. Exit the firmware with ALT-F4
10. 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.
11. Open the Windows Explorer change the path to the drive and directory which you prepared in the previous step (USB stick directory, remote PC directory or directory on a server) and double click on proper FSV*.exe setup file.
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.
    After a few minutes the system restarts automatically. After the restart the firmware installation is complete and the "UNCAL" flag appears. A self alignment is necessary.
13. 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. An automatically restart is not possible because the FPGA needs a complete boot cycle from power off.

2.5 Installing Firmware Options

2.5.1 Firmware options included in basic instrument

The R&S FSV-K7, R&S FSV-K7S, R&S FSV-K8, R&S FSV-K9 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.

2.5.2 Other Firmware Options within the FSVRSetup.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/K91p/K91ac is integrated within FSV-K91 and is activated by an own key code.

The R&S FSVR Firmware V2.23 is compatible to the following options:

FSV-K10	FSV-K30	FSV-K40	FSV-K70	FSV-K72/ FSV-K73	FSV-K76/ FSV-K77
V2.23 SP1	V2.23	V2.23	V2.23	V2.23	V2.23

FSV-K72 FSV-K73	FSV-K76 FSV-K77	FSV-K82 FSV-K83	FSV-K91/ K91n	FSV-K100/ K101/K104 K105
V2.23	V2.23	V2.23	V2.23	V2.23

2.5.3 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.

2.5.4 Enabling Options by Entering Option Key Codes

NOTICE

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:

14. Press the "SETUP" hard key.
15. Go to the side menu using the "More" soft key.
16. Press the "Option Licenses" soft key.
17. Press the "Install Option" soft key.
    A dialog box is displayed.
18. Enter the option key number using the keypad.
19. Press "ENTER".
    After a successful validation the message "Option Key valid" is displayed. If the validation failed, the option software is not installed.
20. Reboot the device.

Installation of options via XML-file

21. Press the "SETUP" hard key.
22. Go to the side menu using the "More" soft key.
23. Press the "Option Licenses" soft key.
    A file browser is displayed.
24. Select the path to the XML file (e.g. network drive or USB stick)
25. Press "Select".
    After a successful validation the message "Option Key valid" is displayed. If the validation failed, the option software is not installed.
6. Reboot the device.

3 Quality Assurance

This firmware release was tested and approved according to the processes, which are part of the ISO 9001 certified quality system of Rohde & Schwarz. The test procedures include a verification of specified instrument performance, as described in the performance test in the service manual.

4 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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