Important Info:
Since firmware V1.51
the default windows
password is "894129"!

Release Notes

Revision: 5

R&S®FSVR
Real-Time Spectrum Analyzer

Firmware Release 1.63

These Release Notes describe the following models and options 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

New Features of Firmware V1.63:

- Zoom function for the spectrogram display in Real-Time mode
- 200001 Sweep points in EMI-Option FSV-K54
- Frequency Mask Trigger available in
  FSV-K10 FSV-K72 FSV-K73 FSV-K76
  FSV-K77 FSV-K82 FSV-K83 FSV-K84
  FSV-K85

A Full list of new functions is available inside these release notes

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1 Revision History

Date	Rel. Note rev.	Changes
02. Feb 2012	05	First revision for FSVR firmware V1.63

2 Installation Information

2.1 Firmware Update

The firmware update file for the R&S FSVR is one file including the main firmware version number e.g. `FSVRSetup_V1.63.exe`. It will be referred as `FSVRSetup.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 `FSVRSetup.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 `FSVRSetup.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 password “894129” by default).
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 analyzer 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 you 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 analyzer firmware.

Performing the update on instrument:

The firmware update process is performed by the following steps:

4. Switch the instrument on and wait until the Analyzer has resumed operation.
5. 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 FSVR*.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.
6. 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:

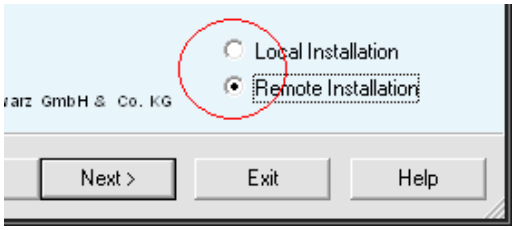
   `"FPGA Update. A system shutdown is necessary”`

   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

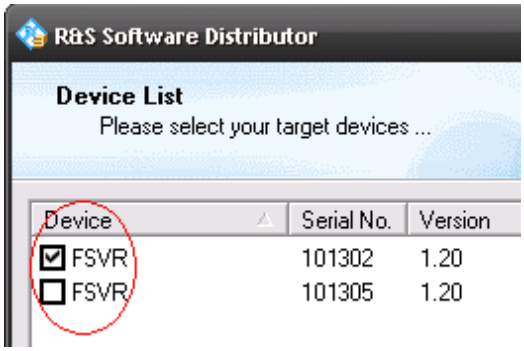
7. Run `FSVRSetup.exe` on your PC.

8. Select Remote Installation and click the button Next.



9. 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.

10. 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!

11. Additional help will be displayed after clicking the button "Help" and further options are available by clicking the button "Options".
12. Start the installation by selecting "Install"
13. 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 V1.51 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 FSVR.
An update from a firmware version <V1.51 to version V1.51 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 V1.51 or greater to version <V1.51 requires the following process:

1. Ensure to be logged in with administrator rights (user “Instrument”)
2. Exit the firmware with ALT-F4
3. Select Windows Start Menu -> Programs -> Accessories -> Backgrade to start the back grade preparation in the registry. Accept the message box to allow that registry settings to be performed.
4. 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 FSVR*.exe setup file.
5. 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 R&S 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 FSVRSetup.exe File

The R&S FSV-K10, R&S FSV-K30, R&S FSV-K40, R&S FSV-K70, R&S FSV-K72/73, R&S FSV-K76/77, R&S FSV-K82/83, R&S FSV-K84/85, R&S FSV-K91, R&S FSV-K93 and 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 FSVR Real-Time Spectrum Analyzer Firmware 1.63 is compatible to the following option:

FSV-K10	FSV-K30	FSV-K40	FSV-K70	FSV-K72 FSV-K73	FSV-K76 FSV-K77
V1.63	V1.63	V1.63	V1.61 SP3	V1.61 SP2	V1.61 SP2

FSV-K82 FSV-K83	FSV-K84 FSV-K85	FSV-K91 FSV-K91n	FSV-K93	FSV-K100 FSV-K101 FSV-K104 FSV-K105
V1.61 SP3	V1.61 SP3	V1.63	V1.63	V1.63

2.4.4 Compatibility with the EUTRA/LTE software

This R&S FSVR Real-Time Spectrum 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 FSVR 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 FSVR, 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:

1. Press the "SETUP" hard key.
2. Go to the side menu using the "More" soft key.
3. Press the "Option Licenses" soft key.
4. Press the "Install Option" soft key.

   A dialog box is displayed.
5. Enter the option key number using the keypad.
6. Press "ENTER".

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

Installation of options via XML-file

1. Press the "SETUP" hard key.
2. Go to the side menu using the "More" soft key.
3. Press the "Option Licenses" soft key.
4. Press the "Install Option by XML" soft key.

   A dialog box is displayed.
5. Select the path to the XML file (e.g. network drive or USB stick)
6. Press "ENTER".

   After a successful validation the message "option key valid" is displayed. If the validation failed, the option software is not installed.
7. 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
V1.63	Zoom-function for the spectrogram display in Real-time mode. Zooming into the spectrogram causes the R&S FSVR to reprocess and reevaluate the data that has been measured previously and stored in the R&S FSVR memory. The zoom also reduces the sweep time and/or resolution bandwidth and span. This in turn improves the resolution of the data (while a graphical zoom merely interpolates the data).
V1.63	Frequency Mask Trigger available in FSV-K10, FSV-K72, FSV-K73, FSV-K76, FSV-K77, FSV-K82, FSV-K83, FSV-K84, FSV-K85
V1.63	The marker info field may be switched off.

V1.63	FSV-K10: Support of frequency mask trigger masks
	Changed SCPI commands:
	TRIGger1:SEQuence:SOURce MASK
	New SCPI commands:
	`TRIGger1:SEQuence:MASK:CONDition ENTer | LEAVing | INSide | OUTSide`
	`CALCulate1:MASK:NAME 'MyMask'`
	`CALCulate1:MASK:CDIRectory '<Directory>'`
	`CALCulate1:MASK:DELete`
	`CALCulate1:MASK:LOWer:DATA -600e3,-90,600e3,-90`
	`CALCulate1:MASK:UPPer:DATA -600e3,-20,600e3,-20`
	`CALCulate:MASK:LOwer:SHIFT:X -5 MHZ`
	`CALCulate:MASK:UPPer:SHIFT:X  5 MHZ`
	`CALCulate:MASK:LOwer:SHIFT:Y -10 DB`
	`CALCulate:MASK:UPPer:SHIFT:Y  10 DB`
	`CALCulate:MASK:LOwer:STATe ON`
	`CALCulate:MASK:UPPer:STATe ON`
	`CALCulate1:MASK:MODE ABSolute | RELative`
	`CALCulate1:MASK:UPPer:AUTO`
	`CALCulate1:MASK:SPAN 3.6 MHz`

V1.63	FSV-K10: Support for 100 kHz RBW/VBW at 1800 kHz offset frequency in Modulation spectrum measurement New SCPI command: `CONFigure:SPECtrum:MODulation:LIST:BANDwidth:RESolution 1800000,100000`
V1.63	FSV-K10: Maximum offset frequency in Wide Mod. spectrum measurement can be selected New SCPI command: `CONFigure:WSPectrum:MODulation:LIST:SELect NARRow`
V1.63	FSV-K101/K105: MMI support for Power Spectrum measurement selection. FSV-K100/K101/K104/K105: An error is reported if an allocation file is loaded whose duplex TDD/FDD does not match the current standard FDD/TDD.

Version	Function
V1.63	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.
V1.63	FSV-K100/101/104/105: Settings file support for PUSCH Hopping Offset, PUSCH Hopping bits and Frame Number offset.
V1.63	FSV-K100/101/104/105: Extended Data Capture Settings for multiple frame analysis and statistics FSV-K100/101/104/105: External Trigger Settings for Digital Baseband FSV-K100/104: TDD enhanced test model support FSV-K100/104: TDD special subframe analysis FSV-K100/104: P-/S-SYNC Tx antenna setting FSV-K100/104: PHICH N_g parameter FSV-K100/104: PDSCH subframe configuration detection FSV-K100/104: PDCCH for demodulation setup FSV-K100/104: Boosting estimation FSV-K100/104: Auto detection of PRB symbol offset FSV-K100/104: UE ID/N_RNTI setting FSV-K100/104: PDSCH symbol data setting FSV-K100/104: Offset RB in Allocation Summary replaced by Rel. Power/dB FSV-K101/105: PUSCH frequency hopping and Sounding Reference Signal according to 36.211 V8.7.0 FSV-K101/105: Codeword scrambling FSV-K101/105: PUCCH bit stream result FSV-K101/105: EVM DMRS PUSCH QPSK/16QAM and EVM PUCCH/DMRS PUCCH FSV-K101/105: Suppressed interference synchronization FSV-K101/105: Increased allowed range for PUCCH Number of RBs
V1.63	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: `CONFigure:SPECtrum:HDYNamic ON | OFF`
V1.63	FSV-K10: New Transient Ref. Power mode for transient spectrum measurements SCPI command: `CONFigure:SPECtrum:SWITching:TYPE RMS | PEAK`
V1.63	FSV-K10: New SCPI command to query the current statistic count `SENSe1:SWEep:COUNt:CURRent?`
V1.63	FSV-K85: Support of Multi-Carrier Settings in Code Domain Analyzer independently of subtype setting.
V1.63	FSV-K83/K85: ACLR measurement: Remote query for multi carrier results supported via :CALCulate:MARKer:FUNCtion:POWer:RESult? MCACpower
V1.63	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.
V1.63	FSV-K91: Simultaneous analysis of up to 4 Tx antennas for IEEE 802.11n MIMO capable devices.

Version	Function
V1.63	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.
V1.63	FSV-K91: Sequential analysis of up to 4 Tx antennas for IEEE 802.11n MIMO capable devices.
V1.63	FSV-K91: For the Spectrum Emission Mask (SEM) measurement, the trace data reduction mode is now selectable.
V1.63	Support for FSV-B14 Ultra High Precision Reference
V1.63	Support for Active Probes R&S RT-ZS10, RT-ZS10E, RT-ZS20 and RT-ZS30 with using the RT-ZA9 adapter
V1.63	Noise correction now in all spectrum measurements
V1.63	Remote: Query command for smaller portions of a trace
V1.63	International keyboard support now possible (separate installation under R&S internet, FSV, Downloads, Firmware)
V1.63	Support for microwave converter board 1307.9748.xx with HWC 3 and 1308.1192.xx with HWC 3.
V1.63	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!)
V1.63	3dB Filter with a bandwidth of 6.25 kHz added for using with LTE measurements.
V1.63	Status Operation Register (STAT:OPER) enhanced for Sweeping (Bit 3), Measuring (Bit 4) and Waiting for Trigger Bit (Bit 5).
V1.63	Status Operation Register (STAT:OPER) enhanced for Sweeping (Bit 3), Measuring (Bit 4) and Waiting for Trigger Bit (Bit 5).
V1.63	Status Operation Register (STAT:OPER) enhanced for Sweeping (Bit 3), Measuring (Bit 4) and Waiting for Trigger Bit (Bit 5).
V1.63	FSV-B10: Support for SMB 12.75 GHz added.
V1.63	FSV-K10: New Refresh soft key in the Sweep soft key menu Repeats evaluation without capturing new I/Q data. New SCPI command: INITiate:REFMeas[:IMMediate]

V1.63	FSV-K10: New SCPI commands for file export and import of I/Q data
	New SCPI commands:
	`MMEMory:STORe:IQ:STATe 1,'C:\gsm.iqw'`
	`MEMory:LOAD:IQ:STATe 1,'C:\gsm.iqw'`

V1.63	FSV-K10: Support for auto detection of frame configuration on imported I/Q data
V1.63	FSV-K70: Mapping D8PSK_VDL added
V1.63	Support auto mode for ACLR noise correction in spectrum mode.
V1.63	FSV-K70: Demodulation π/4 QPSK NATURAL added
V1.63	FSV-K91: Simultaneous analysis of up to 2 TX antennas for IEEE 802.11n MIMO capable devices.
V1.63	Support for RF Power Trigger with detector board 1307.9554.02 Rev 05.00 or higher
V1.63	Continuous update for marker peak list
V1.63	SEM: Easy SEM measurement configuration with symmetrical setup possible and auto peak detector can now also be used.

Version	Function
V1.63	RRC filter with 6 kHz added for APCO25 phase 2 measurements
V1.63	New SCPI command: CALC:MARK:FUNC:POW:RES? AOBWidth to read out the temporary markers in OBW measurement.
V1.63	Squelch function for FSV-B3 Demod Marker and FSV-K7
V1.63	Save and load IQ measurement data for IQ Mode, FSV-K70/K72/K73/K76/K77/K82/ K83/K84/K85
V1.63	FSV-K7/K7S/K91/K93/K100/K101/K104/K105: Support for RF Power Trigger and with FSV-K9 Power Sensor Trigger
V1.63	FSV-K9: Continuous value update of power meter results after single sweep
V1.63	Support for Power Sensor Trigger with detector board 1307.9554.02 Rev 05.00 or higher and NRP sensor which supports this function e.g. NRP-Z81
V1.63	FSV-K10: New Trigger to Sync measurement
V1.63	FSV-K10: New Access Burst support
V1.63	FSV-K10: New auto set buttons for Level, Frame Configuration and Trigger added to the Auto Set tab of the Measurement Settings dialog.

V1.63	FSV-K10: New SCPI commands for abs/rel unit of spectrum power limit results
	`CONFigure:SPECtrum:SWITching:LIMit ABSolute | RELative`
	`CONFigure:WSPectrum:MODulation:LIMit ABSolute | RELative`

V1.63	FSV-K10: New SCPI commands to query spectrum reference power
	`FETCh:SPECtrum:MODulation:REFerence?`
	`FETCh:SPECtrum:SWITching:REFerence?`
	`FETCh:WSPectrum:MODulation:REFerence?`
	`READ:SPECtrum:MODulation:REFerence:IMMediate?`
	`READ:SPECtrum:SWITching:REFerence:IMMediate?`
	`READ:WSPectrum:MODulation:REFerence:IMMediate?`

V1.63	FSV-K14: Spectrogram specific ASCII trace export which exports all frames.
V1.63	FSV-K30: Interactive Schematic Overview: clicking on any of the buttons will open the corresponding Settings Dialog
V1.63	FSV-K30: Number of markers extended to 4. Markers can be used on any trace
V1.63	FSV-K30: Separate Calibration item in Save/Recall: saves the calibration data independently (calibration data are still saved with the trace data through item All Traces)
V1.63	FSV-K30/K40/K91/K93/K100/K101/K104/K105: Added support for Undo/Redo
V1.63	FSV-K40: Frequency/Level can be automatically searched for via Autoset
V1.63	FSV-K40: Traces now support zooming
V1.63	FSV-K30/K40: Added touch screen support for context menus and for clicking result items
V1.63	FSV-K70: new measurement “frequency (capture buffer)”
V1.63	FSV-K70: Captured I/Q data can be exported and imported.
V1.63	FSV-K70: user filter designed by the filtwiz tool can be selected as transmit filter (same filter format as FSQ-K70)
V1.63	FSV-K70: user filter designed by the filtwiz tool can be selected as measurement filter (same filter format as FSQ-K70)
V1.63	FSV-K70: Additional predefined measurement filters: Gauss, Narrow Low pass, Wide Low pass, Low ISI Meas Filter, Rectangular, EDGE HSR (Narrow Pulse), EDGE HSR (Wide Pulse)

Version	Function
V1.63	FSV-K70: Limits can be defined and checked for most values in the modulation accuracy table
V1.63	FSV-K70: New modulations and mappings: - 3Pi/4_QPSK_EDGE - 4 ASK Natural (4-ary user QAM) - 8 FSK Natural - OOK (ON/OFF keying, binary user QAM)
V1.63	FSV-K70: new digital standards - EDGE_QPSK_HSR_NarrowPulse - EDGE_QPSK_HSR_WidePulse - EDGE_16QAM_HSR_NarrowPulse - EDGE_16QAM_HSR_WidePulse - EDGE_32QAM_HSR_NarrowPulse - EDGE_32QAM_HSR_WidePulse
V1.63	FSV-K70: numerous new predefined sync patters for the new standards
V1.63	FSV-K70: With the new Refresh button in the sweep menu, a capture buffer can be evaluated again, e.g. after changing some settings or loading new I/Q data via the I/Q import functionality
V1.63	FSV-K70: Eye diagrams: additional trace modes MaxHold and MinHold. Now 3 traces can be used per Eye diagram instead of 2
V1.63	FSV-K70: Points per Symbol setting: additional value 32 possible
V1.63	FSV-K72: Added limits for Home Base Station in ACLR and Spectrum Emission Mask
V1.63	FSV-K91/K93/ K100/K101/K104/K105: touch screen support for markers and screen selection
V1.63	FSV-K91: Updates to support Equalizer length for 802.11b signals
V1.63	FSV- K100/K101/K104/K105: Support for Re-Size.

4 Modified Functions

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

Version	Function
V1.63	Maximum number of sweep points is 200001 in option R&SFSV-K54 EMI Measurement
V1.63	FSV-K54: Limit lines for EN55014 do have a linear frequency axis
V1.63	Transducer factors defined in unit dBpW up to now represented the insertion loss of e.g. an absorbing clamp. This was changed to use the clamp factor instead of the insertion loss, to avoid the chance of misinterpretation of the calibration values shipped in combination with the absorbing clamp. As a consequence the numerical values of a transducer factor in dBpW have to be reduced by 17 dB compared to previous firmware versions.
V1.63	FSV-K10: Issuing `INITiate1:CONTinuous ON` now automatically starts a measurement
V1.63	FSV-K101/K104: Spectrum measurement selection has been re-ordered, ‘Power Spectrum’, ‘Channel Group Delay’, ‘Channel Flatness Diff’ is now available via the ‘MORE 1/2’ key..

Version	Function
V1.63	FSV-K101/K104: 'Channel Flatness' and 'Channel Flatness Difference' measurement results corrected, previously reported results were 50% of true level.
V1.63	FSV-K100/K101/K104/K105: The ACLR settings range for 1.4MHz and 3MHz Channel Bandwidth extended.
V1.63	ACLR measurement: Limits for EUTRA/LTE adjusted to -44.2 dBc.
V1.63	SEM: New xml files for "Option2" filters for LTE downlink added.
V1.63	FSV-K100/101/104/105: Adjusted ACLR limits to latest 3GPP test specification.
V1.63	FSV-K100/101/104/105: Initial marker position now aligns to peak of current measurement when switched on.
V1.63	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.
V1.63	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.
V1.63	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.
V1.63	FSV-K100/101/104/105: Limited Group Hopping or Sequence Hopping selection to only one being set at any one time.
V1.63	FSV-K91 Standard 802.11n: *Demod Settings* | *Guard Interval Normal* was replaced by *Long*. The legacy remote command is mapped to the new command. Standard 802.11n MIMO: For the *Advanved Demod Settings* | *Guard Interval Length* combo box, the text stating the Bandwidth [BW] was removed and the *normal* specifier was replaced by *short*.
V1.63	Improved synthesizer setup with sweep type set to sweep and small spans.
V1.63	Increased resolution of transducer values to 0.01 dB.
V1.63	FFT filters for 1 and 3 MHz introduced for increasing measurement speed mainly if a small VBW is selected.
V1.63	In FFT mode the sweep time dependency of the VBW is now also reflected in the auto sweep time.
V1.63	ACLR measurement: Increased the maximum channel power band width up to 40 GHz, and channel power spacing up to 20 GHz.
V1.63	The change directory command (MMEM:CDIR) will now also define the destination for trace ASCII export files.
V1.63	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
V1.63	The active trace number is now shown above the trace -> trace 1/2/3 soft key menu.
V1.63	ACLR measurement: Limits for EUTRA/LTE adjusted to -44.2 dBc.
V1.63	FSV-K10: The resolution of the query commands of the `READ/FETCh:BURSt:PTEMplate:TRGS` subsystem (trigger to sync) is increased.
V1.63	FSV-K70: R&S Support button now additionally stores IQ data in .iq.tar format
V1.63	FSV-K85: Trigger to frame value was too large by ½ chip. Result reduced by 406.9 ns.
V1.63	Harmonic measurement: Modified signal search to find signals below 5 kHz.
V1.63	SEM: New xml files for "Option2" filters for LTE downlink added.
V1.63	Modified synthesizer setup table.

Version	Function

V1.63	For the following command the query will now return the SCPI short form:
	`INPut:ATTenuation:AUTO:MODE? [SENSe]:ESPectrum:RTYPe?`
	`[SENSe]:SWEep:TYPE? [SENSe]:ADEMod:ZOOM:LENGth:MODE`

V1.63	FSV-K10: Improved Auto Frame Configuration (VAMOS / Access Burst / Speed) Detection of VAMOS / Normal Burst / GMSK and TSCs of Set 1 and 2. Detection of VAMOS / Normal Burst / AQPSK, SCIPR and TSCs of subchannels. Detection of Access Bursts and Sync (TS0-2).
V1.63	FSV-K10: Support for Power vs Time limit lines of VAMOS AQPSK bursts Limit lines according to GP-101347 (3GPP TSG GERAN #47).
V1.63	FSV-K10: New Modulation Spectrum limits for HSR Wide Pulse according to 3GPP TS 45.005, §4.2.1.3.
V1.63	FSV-K10: Modulation spectrum measurement limit changed. The limit value at 400 kHz now depends on the modulation, see 3GPP TS 45.005, §4.2.1.3, tables ax), bx), cx), NOTE *.
V1.63	FSV-K10: Support Modulation Spectrum measurement limits for HSR Wide Pulse
V1.63	FSV-K10: The SCPI command `READ:BURSt:SPOWer:SLOT1:DELTatosync?` did not start a new measurement. This issue is solved.
V1.63	FSV-K10: Dynamic / Static PCL parameters removed. These parameter had no effect on the limit lines. The SCPI commands are retained for compatibility reasons.
V1.63	FSV-K10: SCIPR renamed to SCPIR 3GPP TS 45.004 V9.1.0 (2010-05) now uses Subchannel Power Imbalance Ratio (SCPIR) instead of the previously used Subchannel Interference Power Ratio (SCIPR). SCPI command removed: `CONFigure:MS:CHANnel:SLOT1:SCIPr 4` New SCPI command: `CONFigure:MS:CHANnel:SLOT1:SCPir 4`
V1.63	FSV-K10: "TSC symbols incorrect" message occurred for Normal Burst GMSK TSC6/7 Demodulation of Normal Bursts, GMSK with TSC6 and TSC7 created a "TSC symbols incorrect" message in the status bar even if the correct TSC symbols were sent. This issue is solved.
V1.63	FSV-K10: FS-K5 compatible command now returns correct value RMS instead of PEAK `CONFigure:SPECtrum:SWITching:TYPE?`
V1.63	FSV-K10: Dynamic of Wide Modulation Spectrum reduced with positive external attenuation This issue is solved.
V1.63	FSV-K10: The SCPI command `INITiate:IMMediate` does stop a continuous sweep. This issue is solved.
V1.63	The SCPI command TRACE:DATA? SGRAM does now also return the values in different unit from dBm.
V1.63	FSV-K70: the R&S Support button is now only available in single sweep mode
V1.63	FSV-K70: some measurement filters have been removed. They are replaced by the new “Low ISI Meas Filter”. In remote control the old filters still work, but are internally replaced by the new filter
V1.63	FSV-K70: Gain Imbalance: In the Peak column now the highest instead of the lowest db value is shown
V1.63	FSV-K70: On instruments with CPU Board FMR9, the maximum result length has been extended to 20.000 symbols
V1.63	FSV-K72: Time Alignment Error measurement showed the delay of antenna 1 compared to antenna 2. This has been changed now to the delay of antenna 2 to antenna 1, resulting in a change of the sign of the measurement result.
V1.63	FSV-K72 with B17: “Input sample rate too low” will now only be shown if digital sample rate is below the required bandwidth.

5 Improvements in V1.63

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

Version	Function
V1.57	Marker Peak List displays symbols with logarithmic frequency axis as expected.
V1.57	FSV-K54: Final measurements can be distributed below and above 21 MHz (direct path).
V1.51	The Noise Source Switch does work in Real-Time mode.
V1.57	FSV-K100/101/104/105: Oversized IQ file loaded by file manager are clipped to capture time and loaded data was erroneously cleared on clipping. This issue is solved.
V1.57	FSV-K100/101/104/105: ACLR list results that should have been shorter than previous results, included in displayed results the final row(s) of previous results. This issue is solved.
V1.57	FSV-K100/101/104/105: The Spectrum Mask displayed list was limited to seven data rows. This issue was solved.
V1.57	FSV-K100/101/104/105:: Setting time domain power limits in spectrum mode could lead to clicking attenuators when entering option. This issue is solved.
V1.57	FSV-K100/K101/K104/K105: In some cases clipping and grey sections anomalies could occur during printing. This issue is solved.
V1.57	FSV-K100/K101/K104/K105: The Spectrum Mask and ACLR table rightmost column data was obscured after width resizing operations. This issue is solved.
V1.57	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.
V1.57	FSV-K100/K101/K104/K105: IQ analysis would fail if the Trace:IQ:Data:Format had been set to IQPAIR prior entry into the option. This issue is solved.
V1.57	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.
V1.57	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.
V1.57	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.
V1.57	FSV-K100/K101/K104/K105: Corrected 'Channel Flatness' and 'Channel Flatness Difference' measurement results.
V1.57	FSV-K101/K105: Corrected 'CONF:LTE:UL:BW'-invalid deactivation of auto demodulation
V1.57	FSV-K100/K101/K104/K105: The Spectrum Mask Sweep time is now reported.
V1.57	FSV-K100/K101/K104/K105: The centre frequency was not reinstated on entry when application recovery was enabled. This issued is solved.
V1.57	FSV-K100/K101/K104/K105: Corrected behavior for SCPI command INIT:IMM whilst measurement running. Previous behavior quietly aborted the running measurement, new behavior SCPI command discarded and an execution error reported.

Version	Function
V1.57	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.
V1.57	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.
V1.57	FSV-K100/K101/K104/K105: Invalid 'No REF' warning on preset. This issued is solved.
V1.57	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.
V1.57	FSV-K72/K100: Memory leak solved.
V1.57	FSV-K100/K101/K104/K105: Center frequency was not synchronized on option entry when 'Application Setup Recovery' enabled. This issue is solved.
V1.57	FSV-K100/K101/K104/K105: Capture Memory y-axis was not tracking signal level during continuous auto level measurements. This issue is solved.
V1.57	FSV-K100/K101/K104/K105: Auto-level improvements reduce the situations where constant clicking of the attenuator or overloads could occur for Spectrum Mask and ACLR measurements.
V1.57	FSV-K10: Setting time domain power limits in spectrum mode could lead to clicking attenuators when entering K10. This issue is solved.
V1.57	FSV-K10: Entering K10 with a center frequency above 6 GHz could lead to a crash This issue is solved.
V1.57	FSV-K91 Erroneously restricted Capture Time for the 802.11g, 802.11b, 802.11n standards is now again as guaranteed. SCPI command to set Joined Rx Sync and Tracking available. SCPI command to set Pilots for Tracking available. Changing in full screen to Display List mode and back to Display Graph results in the original measurement. FETCh:BURSt:ALL? provides all the results including the peak power. FETCh:BURSt:PEAK? provide the peak power measurement result. Demod Dettings | Level Tracking is working. The status message 'Warning' is enhanced with detailed information in the Signal Field measurement. The algorithm to estimate the burst length was improved. For heavily distorted signals, the EVM measurement is improved. Artificial shoulders in Spectrum Emission Mask for noisy signals have been removed. For the IEEE Spectrum Emission Mask, the outmost tolerance limit was -40dB instead of - 45dB and is corrected now.
V1.57	FSV-K70: Markers in the constellation diagramm could be set one symbol next to their real value. This happend if the marker was positioned in the last part of the result range.
V1.46	Gaps in traces showing the sweep progress are now suppressed during printing.
V1.46	Improved switching security of the mechanical attenuator.
V1.46	Harmonics Measurement: For some sweep times the level readings of the table were not updated. This issue is solved.
V1.57	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.

Version	Function
V1.57	After increasing the span, delta markers sometimes were limited to the former span. Now they can be placed within the whole span.
V1.57	For delta marker 1 a wrong x-position could be shown in the marker info field. This has been fixed.
V1.57	When using FSP or FSU compatibility mode the application recovery function was not available. It is now available again.
V1.57	In this version the EX-IQ box dialog could terminate the firmware. This issue is solved.
V1.57	Since this version the FSVR firmware might terminate with some DNS servers when the FSVR is connected with a LAN cable. This issue is solved.
V1.57	FSV-K10: Setting TRACe:IQ:DATA:FORMat via remote in spectrum mode could cause GSM mode to fail. This issue is solved.
V1.57	FSV-K10: Presetting or exiting the GSM mode directly after entering could cause a hang-up. This issue is solved.
V1.57	FSV-K10: Sometimes mechanical attenuator allows a step size of 1 dB instead of 10 dB. This issue is solved.
V1.57	In rare cases sporadically I/Q samples with the wrong value could appear. This issue is solved.
V1.57	Dependency of the minimum and maximum of the IF power trigger level corrected.
V1.57	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.
V1.57	In rare cases the GPIB remote connection can hang whilst receiving data. This issue is solved.
V1.57	FSV-K10: Absolute Wide Modulation Spectrum list results could not be queried via SCPI. The command CONFigure:WSPectrum:MODulation:LIMit ABSolute had no effect. This issue is solved.
V1.57	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.
V1.57	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.
V1.57	FSV-K10: Sporadically FETCh remote commands caused a timeout. This issue is solved.
V1.57	FSV-K10: RF attenuation in steps of 5 dB without B25. Previous versions only supported steps of 10 dB. This issue is solved.
V1.57	FSV-K10: Setting the RF attenuation did not change the attenuation mode to auto. This issue is solved.
V1.57	FSV-K10: Sporadically the synchronization when setting the attenuator via SCPI failed. This issue is solved.
V1.57	FSV-K10: Sporadically the Ref. Level could not be set via SCPI. This issue is solved.
V1.57	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.
V1.57	FSV-K40: Improved phase noise curve via synthesizer settings control.
V1.57	FSV-K30: Added INITiate:CONTinuous SCPI command.
V1.57	FSV-K30: Auto Ref Level: increased level headroom to prevent overloading.

Version	Function
V1.57	FSV-K30: Correction preventing unwanted regeneration of the frequency list during the entry sequence.
V1.57	FSV-K85: Remote control: ACLR now can handle more than one TX channel.
V1.57	FSV-K91: The range for the sample rate setting was incorrect when the IEEE 802.11a standard was selected. This has been corrected.
V1.57	FSV-K91: The results returned via remote control for the signal field measurement were incorrect. This has now been corrected.
V1.57	FSV-K91: The results displayed for the Spectrum Flatness measurement for standards 802.11a, j and g were not correct. This has been corrected
V1.57	Limit lines with unit dBµA and active transducer factor with the same unit lead to wrong level values of the limit line. This issue is solved.
V1.57	Remote: Waiting on sweep end with *OPC and doing an *ESR? query directly afterwards could lead on some instruments to a hang up. This issue is solved.
V1.57	Remote: When switching in the noise measurement the trace detector was not switched to sample. This issue is solved.
V1.57	IQ Analyzer: In constellation diagram with a reference level offset the results had an offset. This issue is solved.
V1.57	Depending on the state in which the instrument was shut down after a reboot the order of the different spectrum tabs could be wrong. This issue is solved.
V1.57	FSV-K7: In a 4 screen layout configuration the THD value was not displayed. This issue is solved.
V1.57	FSV-K10: Activating four markers in the power vs time measurement while the measurement was running caused a slow down. This issue is solved.
V1.57	FSV-K70/72/73: IQ data save & recall improved.

6 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
V1.57	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.
V1.46	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-K10: SCPI commands do not provide full FS-K5 compatibility. See attached table.
V1.46	FSV-K30 Toggle and zoom hard keys not active.
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	FSV-K91: For low SNR signals the EVM might degenerate.
V1.63	For signals with AWGN distortion the SEM trace might show shoulders in neighbor channels.
V1.57	FSV-K93: Auto level result in the spectrum measurement can be improved manually.
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.
V1.63	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.
V1.63	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

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

SCPI Command	Comment
READ:AUTO:LEVT?	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 Modifications of 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 FSVR 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

Appendix: Contacting our Hotline

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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