R&S®FSWP
Release Notes

Firmware Version V2.00

These Release Notes are for following models of the R&S®FSWP Phase Noise Analyzer:

R&S® FSWP8,   order no. 1322.8003K08,
R&S® FSWP26, order no. 1322.8003K26,
R&S® FSWP50, order no. 1322.8003K50.

PAD-T-M: 3574.3288.02/05.00/CI/1/EN

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Contents

1 Information on the 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 V2.00:

Version	Function
V2.00	R&S FSWP-K980: Health and Utilization Monitoring Service.
V2.00	Basic instruments: Last service date, last calibration date, next calibration due date and recommended calibration interval are indicated in the R&S support dialog.
V2.00	Support for Three-Path Diode Power Sensor R&S NRP67SN-V, order no. 1424.6415.02.

New functions of firmware V1.92:

Version	Function
V1.92	Phase Noise: Support for external trigger to start phase noise measurement.
V1.92	Phase Noise: Introduced possibility to change color of spur lines.
V1.92	Phase Noise: Introduced Capture Range 40 MHz to measure DUTs swept from -40 MHz to +40 MHz relative to center frequency.
V1.92	Phase Noise: Support for ultra-small resolution bandwidths down to 0.0003%. Using ultra-small RBWs goes along with very long measurement times, which may be wrongly interpreted as freezing of the instrument.
V1.92	Support for R&S FSWP-K19 Noise Power Ratio (NPR) measurement.
V1.92	R&S FSWP-K6: Increased numerical resolution of marker display for Parameter Trend and Parameter Distribution displays.
V1.92	R&S FSWP-K30: ENR measurements inside the option.
V1.92	R&S FSWP-K30: Saving and recalling calibration results.
V1.92	R&S FSWP-K50: Supports saving predicted spurs list.
V1.92	R&S FSWP-K50: Supports user defined tolerance for frequency plan.
V1.92	R&S FSWP-K70: Support for R&S FSWP-K70M Multi-Modulation Analysis.
V1.92	R&S FSWP-K70: Support for R&S FSWP-K70P BER PRBS Measurements.

Version	Function
V1.92	R&S FSWP-K70: New predefined digital standard: DMR (Digital Mobile Radio).
V1.92	R&S FSWP-K70: Support of "RF Power"-Trigger.
V1.92	R&S FSWP-K70: Improved burst search for low reference levels.
V1.92	R&S FSWP-K70: Improved coarse synchronization for 64APSKs.
V1.92	Support for Thermal Power Sensor R&S NRP90T, order no. 1424.6473.02. Thermal Power Sensor R&S NRP90TN, order no. 1424.6480.02. Three-Path Diode Power Sensor R&S NRP67S, order no. 1424.6396.02. Three-Path Diode Power Sensor R&S NRP67SN, order no. 1424.6409.02.

1.2 Modified functions

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

Modifications of firmware V2.00:

Version	Function
V2.00	Phase Noise Trace Alignment for Offsets > 10 MHz available for Signal Level Low and for R&S FSWP-B21.
V2.00	R&S FSWP-B1: MSRA: "MSRA Master" renamed to "MSRA Primary".
V2.00	R&S FSWP-B1: Optimized FFT synthesizer setup algorithm.
V2.00	R&S FSWP-K50: Harmonics of the carrier are now identified and marked in the result summary.

Modifications of firmware V1.92SP1:

Version	Function
V1.92SP1	VCO Characterization: Smoothing added for frequencies below 8 GHz.

Modifications of firmware V1.92:

Version	Function
V1.92	Phase Noise: Transient Measurement: Renamed to PN Transient Measurement.
V1.92	R&S FSWP-B1: Zero span: the same x-axis scaling algorithm is now used for traces and diagram graticule.
V1.92	R&S FSWP-B320: Improvement of external trigger accuracy.
V1.92	R&S FSWP-K7: Option renamed to AM/FM/PM Modulation Analysis.

Version	Function
V1.92	R&S FSWP-K30: Option renamed to Noise Figure in Mode dialog.
V1.92	R&S FSWP-K50: Option renamed to Fast Spur Search in Mode dialog
V1.92	R&S FSWP-K70: Preview windows have been removed to allow for more compact dialogs.
V1.92	R&S FSWP-K70: In order to better visualize the symbol transitions, the sample points are now connected in the density trace mode for result type 'Vector I/Q'.
V1.92	R&S FSWP-K70: After preset and for the predefined standard 3G_WCMDA.xml, the trace in the constellation diagram in window 1 is now a "Density" trace and no longer a "Clear Write" trace. This only affects the coloring of the trace. The trace values remain the same.

1.3 Improvements

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

Improvements of firmware V2.00:

Version	Function
V2.00	Phase Noise: Optimized IF frequency setting.
V2.00	R&S FSWP-B21: With a very high number of cross correlations, sometimes the Phase Noise measurement did not finish. The issue is solved.

Improvements of firmware V1.92:

Version	Function
V1.92	Phase Noise: Trace smoothing is now disabled for integrated measurements.
V1.92	Phase Noise: Optimized IF frequency setting at RF 52 MHz.
V1.92	Phase Noise: Improvements to Keysight E5052 compatibility mode.
V1.92	Phase Noise: Improved leveling during auto search.
V1.92	Baseband Noise: Units dBV/Hz and dBµV/Hz are renamed to dBV/√Hz and dBµV/√Hz, respectively. For compatibility, old units are used in SCPI, Limit Line files and Trace Export files.
V1.92	Baseband Noise: Remote Control: Resolution increased for unit V/√Hz.
V1.92	PN Transient Measurement: In rare cases, the frequency deviation marker was invalid. This issue is solved.
V1.92	R&S FSWP-B21: In Phase Noise, improved sideband selection.

1.4 Known issues

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

since	Function
-	For devices including the patch "Apply MS17-010 to prevent WannaCrypt attacks" – Microsoft Patch KB4012212: When starting the self-alignment or self-test, the corresponding result dialog is hidden. The measurements themselves are performed correctly in the background. Workaround: Select the orange colored "Alignment" or "Service+Support" softkeys or simply touch the screen. The result dialogs appear again.
V2.00	R&S FSWP-K980: For very large HUMS database sizes, the remote commands 'DIAGnostic:HUMS[:ALL]?' and 'DIAGnostic:HUMS:SAVE' may fail. In this case, use SNMP and REST.
V1.92	Phase Noise: Ultra-small resolution bandwidths: ● If function is enabled, and function is enabled in an instrument saveset, recall of the saveset fails. ● If function is enabled in saveset used for startup recall, every second preset acts as if startup recall had been disabled.
V1.80	License key installation via the R&S License Manager webpage often shows a red error message in the last line. Nevertheless, the license key is properly installed on the device, which can be seen after the reboot.
V1.70	R&S FSWP-K6P Pulse Stability measurements: Bandwidths below 400 kHz (Gauss) and 2 MHz (Flat) are not supported with the Low Noise digitizer mode.
V1.70	Persistence Mode in Phase Noise measurements and Transient Analysis measurement: The persistence trace is cleared when the diagram Y-axis scaling parameters change. This may be the case in diagram scale mode "auto". To prevent this behavior, set the diagram scale mode to "manual".
V1.20	R&S FSWP-K6: ● After recalling a Pulse channel that was saved after a RUN SINGLE operation, the RUN SINGLE button is lit but no measurement is running. ● The "view" trace behaves like a "clear write" trace. ● After aborting a measurement via SCPI (:ABORt) the status bar still shows "Measuring...".

1.5   "Missing smartcard" message

For FSWP phase noise analyzer produced November 2017 or later, the message "Missing smartcard or smartcard not initialized" may appear after starting the device.

This only happens if a firmware below V1.60 is used. Either because a downgrade to a version below V1.60 had been performed, or the solid state drive was exchanged with a version below V1.60.

Solution: Please install firmware V1.60 or higher. The device will boot as usual.

2 Modifications to the documentation

The latest documentation is available for download from the Rohde & Schwarz website at:

http://www.rohde-schwarz.com/manual/fswp

3 Firmware update

The firmware update file for the R&S® FSWP is one file including the firmware version number, e.g. `FSWPSetup_V2.00.exe`. It will be referred to as `FSWPSetup.exe` later in the text. The file can be found on the Rohde & Schwarz web page at:

https://www.rohde-schwarz.com/firmware/fswp

3.1 Providing access to the firmware update file

There are three ways to provide access to the `FSWPSetup.exe` for the R&S FSWP.

Using a USB storage device:

1. Copy the file to a directory of the storage device.

2. Insert the storage device in one of the USB connectors of the R&S FSWP.

Using the remote desktop:

1. Connect the R&S FSWP to your LAN.

2. Start the remote desktop on your PC (`C:\winnt\system32\mstsc.exe`).

3. Enter the required connection settings:

   – TCP/IP address of the instrument you want to update.
     To get the TCP/IP address of the R&S FSWP, select [Setup] > "Network + Remote". The IP address consists of 4 numbers between 0 and 255.

   – Enable the "local resources" > "drives" option.

4. Select "Connect".

5. Log in to the instrument using the user name: "instrument" and the default password "894129".

6. Copy the `FSWPSetup.exe` from your PC to a new folder, e.g. `C:\FWUpdate`.

7. You can now access this directory with the `FSWPSetup.exe` from the R&S FSWP firmware.

Using a network drive:

1. Connect the R&S FSWP to your LAN.

2. Establish a connection to one of your servers. (Ask the local IT administrator for support).

3. Copy the `FSWPSetup.exe` from your PC to a directory on this server.

4. You can now access the directory with the `FSWPSetup.exe` from the R&S FSWP firmware.

3.2 Performing the firmware update on the instrument

1. Switch on the instrument and wait until the analyzer is ready for operation.

2. If a measurement is running, stop it by pressing the highlighted [Run Cont] or [Run Single] key. Do not update the firmware during a running measurement.

3. Select [Setup] > "System Config" > "Firmware Update" tab.

4. In the file selection dialog box, select the `FSWPSetup*.exe` file from the prepared storage location.
   "File Explorer": Instead of using the file manager of the R&S FSWP firmware, you can also use the Microsoft Windows File Explorer to manage files.

5. Select "Install".

6. Select "Next".
   A selection list of the available firmware packages is displayed.

7. By default, all applications are installed. Make sure the required applications are selected.

8. Select "Install" to start the update.

   After the firmware update, the R&S FSWP reboots automatically.

   Depending on the previous firmware version, a reconfiguration of the hardware can be required during the first startup of the firmware. The reconfiguration starts automatically, and a message box informs you about the process. When the reconfiguration has finished, the instrument again reboots automatically.

   Note: Do not switch off the instrument during the reconfiguration process!

   Now the firmware update is complete.

9. After the firmware update, the "UNCAL" status is displayed in the status bar. Perform a self-alignment ([SETUP] > "Alignment" > "Start Self Alignment").

3.3 Performing the firmware update from a Windows PC

You can also update the firmware using a LAN connection between the instrument and a Windows PC.

Note for firewall users

The `FSWPSetup.exe` communicates with the instrument via LAN. Therefore, the `FSWPSetup.exe` must pass the firewall. If necessary, add it to the firewall rules.

1. Run `FSWPSetup.exe` on your PC.

2. Select "Remote Installation".

3.   Select "Next".

4.   Select the packages to install.

5.   Select "Next".

Your LAN subnet is scanned to find all available instruments. If the required instrument is not found, check your firewall settings. After adding the FSWPSetup.exe to the firewall rules, restart the scan by selecting "Rescan".

6.   Select the instruments you want to update.

You can select up to 5 instruments to update in parallel.

7.   If necessary, select "Help" to display additional help.

8.   If necessary, select "Options" for further options.

9.   Select "Install" to start the installation.

10.   Confirm the message to reboot the instrument to activate the firmware update.

The instrument restarts automatically.

3.4   Operation with and without administrator rights

You can operate the analyzer with or without administrator rights. Some administrative tasks (e.g. network configuration) require administrator rights. Updating the firmware is also possible without 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 is predefined with the user name "NormalUser" and the default password "894129". Use standard Windows functionality to deactivate the auto-login mechanism and activate the "NormalUser" account. Also refer to the R&S FSWP Getting Started manual.

3.5   Installing firmware options

3.5.1   Firmware options included in basic instrument

The R&S FSWP-K4, R&S FSWP-K7, R&S FSWP-K19, R&S FSWP-K33 and R&S FSWP-K980 application software packages are included in the basic instrument firmware. Therefore, they do not have a separate item in the installer to be selected.

3.5.2   Other firmware options within the FSWPSetup.exe file

The following optional application software packages have their own installation items and are therefore added to the selection list during the firmware update. Ensure that the checkbox is checked ☑ if you want to install them.

- FSWP-K6 Pulse measurements (with additional suboptions FSWP-K6P and FSWP-K6S)
- FSWP-K30 Noise figure measurements
- FSWP-K50 Spurious measurements
- FSWP-K60 Transient measurements (with additional suboptions FSWP-K60C and FSWP-K60H)
- FSWP-K70 Vector signal analysis (with additional suboptions FSWP-K70M and FSWP-K70P)

3.5.3 Enabling Options by Entering Option Key Codes

To activate application software packages, you must enter a license key for validation. You only have to enter the option key once per option.

If an XML-file with an option key was sent to you, see the installation description below.

The license key is in the device certificate or delivered as a part of the software package.

To enable an option using an option key

1. Select [SETUP] > "System Config" > "Versions + Options" tab.

2. Select "Install Option".

   A dialog box is displayed.

3. Enter the option key number using the keypad.

4. Press [ENTER].

   After a successful validation, the "Option Key valid" message is displayed. If the validation fails, the option software is not installed.

5. Repeat the activation process for all options you want to install.

6. Reboot the device.

7. Check whether the options are available on the instrument ([SETUP] > "System Config" > "Versions + Options" tab).

To enable options via an XML-file

1. Select [SETUP] > "System Config" > "Versions + Options" tab.

2. Select "Install Option by XML".

   A file browser is displayed.

3. Select the path to the XML file (e.g. network drive or USB storage device).

4. Press "Select".

   After a successful validation, the "Option Key valid" message is displayed. If the validation fails, the option software is not installed.

5. Repeat the activation process for all options you want to install.

6. Reboot the device.

 Check whether the options are available on the instrument ([SETUP] > "System Config" > "Versions + Options" tab).

4 Customer support

Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz product, contact our customer support center. A team of highly qualified engineers provides support and works with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz products.

Contact information

Contact our customer support center at www.rohde-schwarz.com/support or follow this QR code:

Figure 4-1: QR code to the Rohde & Schwarz support page