R&S®FSPN
Release Notes

Firmware Version V3.01

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

R&S®FSPN8,   **part number 1322.8003K06,**
R&S®FSPN26,   **part number 1322.8003K24.**

R&S®FSPN8,   **part number 1322.8003K07,**
R&S®FSPN26,   **part number 1322.8003K25,**
R&S®FSPN50,   **part number 1322.8003K49.**

1179.4640.02 | Version 06 | R&S®FSPN

The software makes use of several valuable open source software packages. For information, see the "Open Source Acknowledgment" provided with the product.

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

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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 V3.01:

Version	Function
V3.01	Phase Noise: Ability to clear old traces with trace mode "Clear Write" when starting a new sweep. Traces with other trace modes are not affected. Available via "Trace Config" dialog, and via remote command ':DISPlay:TRACe:CLEar:AUTO ON'.

New function of firmware V3.00:

Version	Contents
V3.00	Supports R&S FSPN8, part number 1322.8003.07, R&S FSPN26, part number 1322.8003.25, R&S FSPN50, part number 1322.8003.49,
V3.00	User interface: New look and feel compatible to R&S FSW.
V3.00	Supports SCPI recorder.
V3.00	Phase Noise: Automatic optimization of level setting. This is the default after preset. Available via auto search dialog, and via remote command '[SENSe:]POWer:RLEVel:MODE AUTO'.
V3.00	Phase Noise: Added noise diagram with preconfigured AM noise traces. Available via "AM Noise Spectrum" display, and via remote command e.g. LAY:ADD? '1', RIGHt, AMNoise
V3.00	Phase Noise: Adjustable trigger level in Phase Noise CW, and for external pulse gating in pulsed measurements.
V3.00	Phase Noise: Extended compatibility to R&S FSUP, R&S FSW-K40, and R&S FSMR3 without B60 with remote command 'SWE:MOD FAST	AVERaged'.
V3.00	PN transient measurements: Support settling time of phase. Results can be queried via remote command '[:CALC]:SETTling:TIME:RESult?'. Note: selection of correct window/trace is required beforehand via remote commands '[:CALC]:SETTling:TIME:DIAG'/'[:CALC]:SETTling:TIME:TRACe' due to remote compatibility with previous firmware releases.
V3.00	New command ':LAYout:WINDow<n>:TYPE?' to query window type.
V3.00	Colors are used to improve the readability of self-test and self-alignment results.

Version	Contents
V3.00	Firmware supports Windows 10 IoT Enterprise LTSC 2021 operating system.

New functions of firmware V2.00SP2:

Version	Function
V2.00SP2	Supports reference board, part number 1325.2193.13.
V2.00SP2	DC Output: Increased voltage resolution to 1 mV.
V2.00SP2	VCO Measurements: Support up to 38001 measurement points.

New functions of firmware V2.00SP1:

Version	Function
V2.00SP1	Supports CPU board, part number 1206.3974.00.

New function of firmware V2.00:

Version	Function
V2.00	Initial support for R&S FSPN8, part number 1322.8003.06, R&S FSPN26, part number 1322.8003.24

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 V3.01:

Version	Function
V3.01	Phase Noise: When level setting "auto" is active, the level setting is set to "high" for signals above -10 dBm and frequencies up to 8 GHz.
V3.01	Phase Noise: When no signal is found and both auto search and signal count are off, "no signal found" is displayed in the status bar and the corresponding bit is set in the SCPI status register 'STATus:QUEStionable:PNOise'.

Modifications of firmware V3.00:

Version	Function
V3.00	Correlation algorithm modified to address the cross-spectral collapse phenomenon.
V3.00	Phase Noise: Modified spur suppression.
V3.00	Phase Noise: For FSPN26/50, lower sideband is now used for signal frequency between 7 and 8 GHz and stop offsets up to 1 GHz.
V3.00	Phase Noise: Up to 100 kHz additional frequency range below minimum device frequency allowed.
V3.00	Phase Noise: The noise diagram with preconfigured PN traces was renamed to "PN Noise Spectrum" in the evaluation bar of the SmartGrid mode.
V3.00	PN transient measurements: Changed color of upper/lower settling time limits to red, in accordance with R&S FSWP-K7 settling time measurements.
V3.00	PN transient measurements: Markers indicate the settling time in each window, and the settling time is displayed in the marker table. Previously, the settling time was displayed in the global info bar.
V3.00	PN transient measurements: If no settling time can be determined, '---' is displayed instead of '0' and '-400: Query Error' is returned via remote command.
V3.00	FSPN26/50: RF attenuation is set to 75 dB during shutdown.

1.3 Improvements

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

Improvements of firmware V3.01:

Version	Function
V3.01	Phase Noise: Optimized IF frequency setting.
V3.01	Phase Noise: In rare cases, the measurement aborted when waiting for an external trigger with no attached signal. The issue is solved.
V3.01	Phase Noise: In rare cases, instabilities occurred when all AM/PN/AM+PN traces were active. The issue is solved.
V3.01	Phase Noise: In rare cases, the measurement did not finish after switching back from VCO characterization measurement. The issue is solved.

Improvements of firmware V3.00:

Version	Function
V3.00	Phase Noise: Supports remote commands 'INIT:CONT 0' and 'INIT:CONT 1' as described in the user manual.
V3.00	VCO measurements: In rare cases, the measurement time was unnecessarily long. This issue is solved.
V3.00	Baseband Noise: With baseband input, RF input coupling was displayed in the overview dialog. This issue is solved.
V3.00	In rare cases, recall of certain savesets caused a firmware lockup. This issue is solved.

Improvements of firmware V2.00SP2:

Version	Function
V2.00SP2	Phase Noise: Increased measurement speed of ultra-small resolution bandwidths.
V2.00SP2	Phase Noise: Optimized IF frequency setting.

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.
V3.00	Phase Noise: Switching the capture range to "40 MHz" does not set the level setting to "high" if the level setting was "auto" before, and a low signal was measured. Workaround: Set the level setting to "high" before you set the capture range to "40 MHz" (remote command 'POW:RLEV:MODE HIGH').
V3.00	Phase Noise: Switching the level setting to "auto" does not deactivate the "40 MHz" capture range. Workaround: Deactivate the "40 MHz" capture range manually (remote command 'SWE:CAPT:RANG NORM').
V2.00	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.
V2.00	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.
V2.00	Persistence Mode in Phase Noise measurements and Transient Analysis measurement: The persistence trace is cleared when the diagram Y-axis scaling parameters change. This can happen in diagram scale mode "auto". To prevent this behavior, set the diagram scale mode to "manual".

2 Modifications to the documentation

The current documentation is up-to-date.

3 Firmware update

The firmware update file for the R&S® FSPN is one file including the firmware version number, e.g. `FSPNSetup_V3.01.exe`. It will be referred to as `FSPNSetup.exe` later in the text. The file can be found on the Rohde & Schwarz web page at:

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

3.1 Providing access to the firmware update file

There are three ways to provide access to the `FSPNSetup.exe` for the R&S FSPN.

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 FSPN.

Using the remote desktop:

1. Connect the R&S FSPN 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 FSPN, 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 `FSPNSetup.exe` from your PC to a new folder, e.g. `C:\FWUpdate`.

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

Using a network drive:

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

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

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

4. You can now access the directory with the `FSPNSetup.exe` from the R&S FSPN 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 `FSPNSetup*.exe` file from the prepared storage location.
     "File Explorer": Instead of using the file manager of the R&S FSPN 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 FSPN 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 `FSPNSetup.exe` communicates with the instrument via LAN. Therefore, the `FSPNSetup.exe` must pass the firewall. If necessary, add it to the firewall rules.

1.   Run `FSPNSetup.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 `FSPNSetup.exe` to the firewall rules, restart the scan by selecting "Rescan".
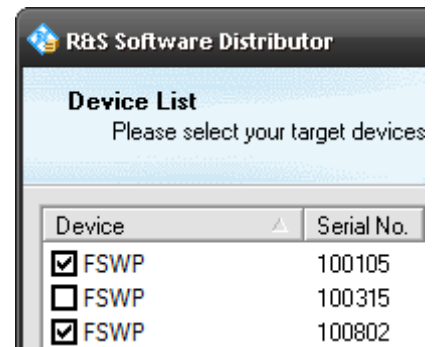
6. Select the instruments you want to update.

   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 FSPN Getting Started manual.

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