# R&S®FSMR3000 Release Notes

## Firmware Version V1.20

**These Release Notes are for following models of the R&S® FSMR3000 Measuring Receiver:**

**R&S® FSMR3008,      order no. 1345.4004.08**
**R&S® FSMR3026,      order no. 1345.4004.26**
**R&S® FSMR3050,      order no. 1345.4004.50**

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1179.4092.02 | Version 05 | R&S®FSMR3000 |

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®FSMR3000 is abbreviated as R&S FSMR3000.

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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 function of firmware V1.20:**

| Version | Function |
|---------|----------|
| V1.20 | Support for SCPI-command "CALC:MARK:FUNC:DEM ON/OFF" to switch demodulation online output in the measuring receiver application. |
| V1.20 | New softkey "Relative Config" added to "Meas Config" menu of Tuned RF Level measurement mode. This makes the relative measurement more conveniently accessible. Therefore the "Tuned RF Level Settings" dialog has a new tab "Relative". |
| V1.20 | Support for SCPI-commands<br>:CALC:MARK:FUNC:ADEMod:FM:AVERage?<br>:CALC:MARK:FUNC:ADEMod:FM:PHOLd:RESult?<br><br>to get the average and peak hold values of the detector values of the demodulation measurement in the measuring receiver application. |
| V1.20 | RF Frequency measurement mode in measuring receiver application introduced for tuning and alignment of signal generators. |
| V1.20 | R&S FSMR3-B1: Additional 8 MHz 3 dB Gauss filter available for spectrum analyzer mode. The bandwidth can only be selected by entering the numeric value directly. |
| V1.20 | R&S FSMR3-B60: 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'. |
| V1.20 | R&S FSMR3-B60: 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 |
| V1.20 | R&S FSMR3-B60: Adjustable trigger level in Phase Noise CW. |
| V1.20 | R&S FSMR3-B60: New command ':LAYout:WINDow<n>:TYPE?' to query window type. |
| V1.20 | R&S FSMR3-K70: LSB first bit ordering is now supported as demodulation parameter. |

### New function of firmware V1.10:

| Version | Function |
| --- | --- |
| V1.10 | Support for Splitter Sensors R&S®NRP-Z27/Z37. |
| V1.10 | Support for R&S FSMR3-K50 - Spurious Measurements. |
| V1.10 | Support for R&S FSMR3-B3 - Audio Input and analysis. |
| V1.10 | Support for Settling Time Measurements in FSMR3-K7 AM/FM/PM modulation analysis. |
| V1.10 | New result window "Phase vs Time" (unit rad) in I/Q Analyzer available. |
| V1.10 | Additional 6 MHz 3dB-Gauss filter available for spectrum analyzer mode. The bandwidth can only be selected by entering the numeric value directly. |
| V1.10 | Additional unit "dBm/Hz (Power)" available in amplitude dialog. |
| V1.10 | Trace colors of active traces are indicated in the trace config dialog. |

### New function of firmware V1.01 SP1:

| Version | Function |
| --- | --- |
| V1.01 SP1 | Support for CPU board, part number 1206.3974.00. |
| V1.01 SP1 | Support for reference board, part number 1325.2193.13. |

### New function of firmware V1.01:

| Version | Function |
| --- | --- |
| V1.01 | Support for options:<br><br>R&S FSMR3-K6   - Pulse measurement application<br>R&S FSMR3-K7   - AM/FM/PM modulation analysis<br>R&S FSMR3-K980 - Health and utilization monitoring service (HUMS) |
| V1.01 | Basic instruments: Last service date, last calibration date, next calibration due date and recommended calibration interval are indicated in the R&S support dialog. |

### New function of firmware V1.00:

| Version | Function |
| --- | --- |
| V1.00 | Support for:<br><br>• R&S FSMR3008<br>• R&S FSMR3026<br>• R&S FSMR3050 |
| V1.00 | Support for options:<br><br>R&S FSMR3-B1  - Spectrum Analyzer<br><br>R&S FSMR3-B4  - OCXO precision frequency reference<br><br>R&S FSMR3-B8  - Resolution bandwidth up to 80 MHz<br><br>R&S FSMR3-B8E- Resolution bandwidth up to 40 MHz |

R&S FSMR3-B10 - External generator control

R&S FSMR3-B13 - Highpass filter for harmonic measurements

R&S FSMR3-B18 - Spare solid state drive

R&S FSMR3-B24 - RF preamplifier

R&S FSMR3-B60 - Phase noise analyzer with cross correlation

R&S FSMR3-B65 - LO inputs for residual phase noise measurements

R&S FSMR3-B80 - 80 MHz analysis bandwidth


R&S FSMR3-K15 - VOR/ILS measurements

R&S FSMR3-K30 - Noise figure measurements

R&S FSMR3-K33 - Security write protection for solid state drive.

R&S FSMR3-K40 - Phase noise measurements

R&S FSMR3-K70 - Vector signal analysis

R&S FSMR3-K70M - Multi-Modulation vector signal analysis

R&S FSMR3-K70P - BER PRBS measurements

## 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 V1.20:**

| Version | Function |
|---------|----------|
| V1.20 | User defined values and measured values of the signal summary display of the measuring receiver application are displayed in different colors. User defined values are displayed in white color and all measured and calculated values are displayed with the color of trace 1. |
| V1.20 | Active transducers will not be taken into account in the AUDIO measurement of the measuring receiver application. |
| V1.20 | The "RECAL" function of the Tuned RF Level measurement is only available, if a recalibration is possible. |
| V1.20 | If a Low Pass filter, a High Pass filter or a time constant of a Deemphasis filter is set by remote control in the measuring receiver application, the filter type will be activated automatically. |
| V1.20 | The default measurement time of demodulation measurements (FM/AM/PM) in the measuring receiver application was changed from 80 us to 100 ms. |
| V1.20 | The SCPI command SENSe:CORRection:PLOss:INPut now also accepts decimal numbers. |
| V1.20 | If more than one power sensor is connected to the FSMR3000, the global info bar of the RF Power measurement of the measuring receiver application only shows the power sensor, which is used by the measuring receiver application. |
| V1.20 | The SCPI command :CALC:MARK:FUNC:ADEM:CARR? Is no longer available in the RF Power measurement of the measuring receiver application. To get the power sensor result, the SCPI command :FETC:PMET? has to be used. |
| V1.20 | Default unit of THD and DISTORTION in measuring receiver application changed from dB to %. |
| V1.20 | If averaging is active in the Tuned RF Level measurement of the measuring receiver application, an average restart is performed, if a measurement range was changed. |
| V1.20 | The demodulation bandwidth in the measuring receiver application is limited to the adjusted RF frequency in auto mode. The maximum of the demodulation bandwidth is the double of the adjusted RF frequency. If the mode is set to manual, all available bandwidths can be adjusted. |
| V1.20 | Following SCPI commands are not available in the RF Power mode of the measuring receiver measurements:<br>:CALCulate:MARKe:FUNCtion:ADEMod:RFFRequency:RESult?<br>:CALCulate:MARKer:FUNCtion:ADEMod:FERRor:RESult?<br>:CALCulate:MARKer:FUNCtion:ADEMod:CARRier:RESult? |
| V1.20 | The "RF Level Autorange" function will not be switched off after the unit or the reference level offset was changed. |

| | |
|---|---|
| V1.20 | The "Auto Averaging Table" of the Tuned RF Level measurement remains unchanged after preset. To reset the values, a new softkey "Restore Default Ranges" was introduced in the dialog. |
| V1.20 | In the Tuned RF Level measurement of the measuring receiver application, no x-axis gestures are available in the RF spectrum window to avoid frequency changes by mistake. |
| V1.20 | RF attenuation is set to 75 dB during shutdown. |
| V1.20 | R&S FSMR3-B60: Correlation algorithm modified to address the cross-spectral collapse phenomenon. |
| V1.20 | R&S FSMR3-B60: Modified spur suppression. |
| V1.20 | R&S FSMR3-B60: For FSMR3026 and FSMR3050, lower sideband is now used for signal frequency between 7 and 8 GHz and stop offsets up to 1 GHz. |
| V1.20 | R&S FSMR3-B60: Up to 100 kHz additional frequency range below minimum device frequency allowed. |
| V1.20 | R&S FSMR3-K7: Increased the number of digits to the right of the carrier offset decimal value in the result summary window. |
| V1.20 | R&S FSMR3-K70: Predefined digital standards for Bluetooth now set the bit ordering to LSB first. |

**Modifications of firmware V1.10:**

| Version | Function |
|---|---|
| V1.10 | If the preset mode is set to MREC, the default RF input coupling mode is set to DC. Otherwise AC is the default coupling mode. |
| V1.10 | The mini soft frontpanel appears on the right side of the screen now. |
| V1.10 | Colors are used to improve the readability of selftest and self alignments results. |
| V1.10 | The default date format was changed to "YYYY-MM-DD" in the GUI. |

**Modifications of firmware V1.01 SP1:**

| Version | Function |
|---|---|
| V1.01 SP1 | Displayed resolution of the carrier offset in the measurement receiver application increased to 0.001 Hz. |

## 1.3 Improvements

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

**Improvements of firmware V1.20:**

| Version | Function |
|---------|----------|
| V1.01 | If the online output is activated in the demodulation measurement of the measuring receiver application, the predefined Low Pass and High Pass filter bandwidths in the AF filter dialog were not available. After switching to spectrum analyzer mode and back again, the predefined Low Pass and High Pass filter bandwidth were not shown in the dialog. This issue is solved. |
| V1.10 | The correction value table of the Tuned RF Level measurement of the measuring receiver application was not saved properly. Both after recall of a saved dataset and warmboot, it was not possible to restore the saved entries shown in the table. This issue is solved. |
| V1.10 | R&S FSMR3-B1: Corrected remote command SENS:ADJ:CONF:TRIG OFF for automatic level measurements with active external trigger. |
| V1.10 | R&S FSMR3-B1: The SCPI recorder did not record the remote command for adding/replacing an I/Q-Vector display in I/Q Analyzer mode correctly. This issue is solved. |
| V1.10 | R&S FSMR3-B60: Supports remote commands 'INIT:CONT 0' and 'INIT:CONT 1' as described in the user manual. |
| V1.10 | R&S FSMR3-K7: The predefined standard files were not installed on the device. This issue is solved. |

## 1.4 Known issues

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

**Known issues of firmware V1.10:**

| since | Function |
|-------|----------|
| 1.10 | When a splitter sensor R&S®NRP-Z27/Z37 is used, the insertion loss is corrected via a transducer factor. The Phase Noise application (B60) does not support transducer factors to correct the additional attenuation. Lower power levels will be shown. |

## 1.5 Microsoft Windows 10

The R&S FSMR3000 uses the Windows 10 IoT Enterprise LTSB operating system, which is the embedded version of Windows 10 with long term support for Windows patches.

# 2  Modifications to the documentation

The current documentation is up-to-date.

# 3 Firmware update

## 3.1 Validity information

The R&S FSMR3000 installer is valid for:

| Device | Order Number |
|---|---|
| R&S FSMR3008 | 1345.4004.08 |
| R&S FSMR3026 | 1345.4004.26 |
| R&S FSMR3050 | 1345.4004.50 |

## 3.2 Update information

The firmware update file for the R&S FSMR3000 is one file including the main firmware version number, e.g. FSMR3000Setup_V1.10.exe. It will be referred to as FSMRSetup.exe later in the text.

## 3.3 Performing the Firmware Update on the Instrument

There are three ways to make the FSMR3000Setup.exe setup file visible to the device:

**Using a memory stick:**

1.  Copy the file to a directory of the memory stick.
2.  Insert the memory stick into one of the USB sockets of the R&S FSMR3000.

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

1.  Connect the R&S FMR3000 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. The IP address consists of 4 numbers between 0 and 255.
    (To get the TCP/IP address of the R&S FSMR3000, press the "Setup" key, then select "Network + Remote".)
4.  Ensure that the "local resources" > "drives" option is selected.
5.  Press the "Connect" button.
6.  Log on to the instrument (user name: "instrument" and default password "894129").
7.  Copy the FSMR3000Setup.exe from your PC to a new folder, e.g. C:\FWUpdate.
8.  You can now access this directory with the FSMR3000Setup.exe from the R&S FSMR3000 analyzer firmware.

**Using a network drive:**

1.  Connect your R&S FSMR3000 to your LAN and establish a connection to one of your servers. (Ask the local IT administrator for support.)

2.  Copy the FSMR3000Setup.exe from your PC to a directory on this server.
3.  You can now access the directory with the FSMR3000Setup.exe file from the R&S FSMR3000 analyzer firmware.

**Performing the update on the instrument:**

Update the firmware by performing the following steps:

1.  Switch the instrument on and wait until the analyzer has resumed operation.
2.  Press the "SETUP" key, then select "System Config" > "Firmware Update" tab.
3.  A file browser is displayed to select the proper FSMR3000*.exe setup file.
4.  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).
5.  Select "Install" to close the dialog.
6.  Select "Next" to display the selection of the firmware packages. By default, all applications are installed. Ensure that the required applications are selected.
7.  Select "Install".
8.  The firmware is 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.
9.  Press the "SETUP" key, then select "Alignment" > "Start Self Alignment" to invoke the alignment procedure.

## 3.4  Performing the Firmware Update from a Windows PC

The R&S FSMR3000 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 `FSMR3000Setup.exe` on your PC.

2.  Select "Remote Installation".

3.  Select "Next."



4.  Select the packages to install.

5.  Select "Next".

   **Note:**

   FOR FIREWALL USERS: The `FSMR3000Setup.exe` communicates with the instruments via LAN. Therefore, the `FSMR3000Setup.exe` file must pass the firewall. Add it to the firewall rules, then restart the scan using "Rescan".
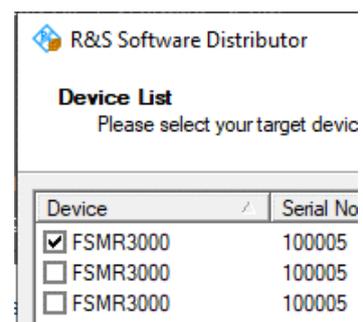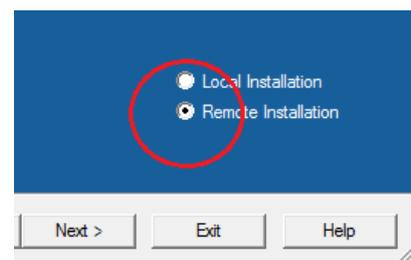
6. The setup procedure scans your LAN subnet and displays all found instruments

7. Select the instruments you want to update.

**NOTICE**

Be careful and check twice if you have selected the correct instruments. Depending on your company's network structure, also instruments of other departments are included!

8. Select "Help" to display additional help.
   Select "Install" to start the installation.

9. Confirm the message to reboot the instrument to activate the firmware update.
   The instrument then restarts automatically.

10. After the restart, the firmware installation is complete and the "UNCAL" flag appears. A self alignment is necessary.

11. Press the "SETUP" key, then select "Alignment" > "Start Self Alignment" to invoke the alignment procedure.

## 3.5 Installing firmware options

### 3.5.1 Firmware options within the FSMR3000setup.exe File

The R&S FSMR3-K6, R&S FSMR3-K15, R&S FSMR3-K30, R&S FSMR3-K40, R&S FSMR3-K70 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 the installation is requested.

**NOTICE**

The functionality of R&S FSMR3-K70M, R&S FSMR3-K70P are integrated within R&S FSMR3-K70 and are activated by their own key code.

### 3.5.2 Enabling options by entering option key codes

**NOTICE**

Skip this section if the option key was entered once.

To activate application software packages, you must enter a license key for validation.

If an 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. Open a Remote Desktop Connection to the instrument via ethernet or connect an external monitor and keyboard/mouse]
2. Select "SETUP".
3. Go to the tab "Versions + Options"
4. Press the button "Install Option".
   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. Open a Remote Desktop Connection to the instrument via ethernet or connect an external monitor and keyboard/mouse]
2. Select "SETUP".
3. Go to the tab "Versions + Options"
4. Press the button "Install Option by XML".
   A file browser is displayed.
5. Select the path to the XML file (e.g. network drive or USB stick)
6. 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.

# 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