

Products: R&S Spectrum Analyzer FSH

Resolving Security Issues When Working with the R&S[®] FSH in Secure Areas

Based upon the user's security requirements, this document describes the Rohde&Schwarz options available to address the user's spectrum analysis needs. It also covers the different memory types and locations where user information can be stored in the spectrum analyzer R&S[®] FSH.

For secure environments, it describes an approach to physically remove the user data from the spectrum analyzer.



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1 Overview

In many cases it is imperative that the R&S® FSH spectrum analyzer be used in a secured environment. Generally these highly secured environments will not allow any test equipment to leave the area unless it can be proven that no user information will leave with the test equipment. Security concerns can arise when spectrum analyzers need to leave a secured area to be calibrated or serviced.

This document describes the types of memory and their usage in the R&S® FSH spectrum analyzer. It also addresses methods of ensuring that no user data will leave the secured area should the product be removed for calibration or service needs.

2 Instrument Models Covered

R&S FSH Handheld Spectrum Analyzers

R&S® FSH
FSH3 - Model 03
FSH3 - Model 13
FSH3 - Model 23
FSH6 - Model 06
FSH6 - Model 26
FSH18 - Model 18

3 Battery Information

The R&S® FSH spectrum analyzer is fitted with a nickel metal hydride battery. The operating time is approx. four hours at room temperature if the battery is fully charged. The battery is charged via the separate power supply unit, which is connected to the jack on the righthand side of the carrying handle.

See FSH Operating Manual for more detail.

4 Types of Memory in the R&S® FSH Spectrum Analyzer and Their Security Concerns

EEPROM

The front-end board of the R&S® FSH spectrum analyzer has one EEPROM device. This device holds 1 kByte or 2 kByte (depending on the spectrum analyzer model) and contains information related to the installed hardware, such as serial number, hardware options, correction constants, etc. The EEPROM does not hold user data nor can the user access the EEPROM storage.

The EEPROM is not a security concern.

Video - SRAM

The main board of the R&S® FSH spectrum analyzer has one 512 kByte SRAM memory device which contains the video (display) memory. The (Video-)SRAM is volatile memory and it loses its memory as soon as the instrument is switched off **and** the separate power supply unit power is removed. The (Video-)SRAM will be unreadable within one minute after the power is removed from the instrument.

The (Video-)SRAM memory is not a security concern.

Measurement - SRAM

The main board of the R&S® FSH spectrum analyzer has one 2 MByte SRAM memory device which contains intermediate measurement data and one 256 kByte SRAM memory device which contains the measurement control data.

The SRAM is volatile memory and it loses its memory as soon as the instrument is switched off **and** the separate power supply unit power is removed. The SRAM will be unreadable within one minute after the power is removed from the instrument.

The (Measurement-)SRAM memory is not a security concern.

SRAM

The main board of the R&S® FSH spectrum analyzer has one SRAM memory device which contains the active instrument and measurement setup and the current measurement data. This SRAM device holds 1 MByte or 8 MByte (depending on the spectrum analyzer model) and is backed-up by the battery of the R&S® FSH spectrum analyzer. Therefore, it does not lose its information when the instrument is switched off and the power supply unit is removed.

The SRAM memory has to be cleared by the Master Preset procedure (see below).

FLASH

The main board of the R&S® FSH spectrum analyzer has one FLASH device. This device holds 4 MByte or 8 MByte (depending on the spectrum analyzer model) and contains the following information:

- Instrument Firmware
- Factory Default Settings (Display type and contrast, installed options, baud rate, language, length unit etc.)
- **User General Settings** (Display type and contrast, installed options, baud rate, language, length unit etc.)
- **User Data** (Cable models, transducers, limit lines, channel tables, user standards)
- **User Calibration Data** (DTF calibration data, Tracking Generator calibration data, etc.)
- **Saved User Data Sets**

The FLASH memory has to be cleared by the Master Preset procedure (see below).

Note: The instrument firmware and factory default settings section of the FLASH memory will not be erased by the Master Preset procedure. The instrument firmware and factory default settings memory section does not hold any user data.

5 Information Storage in the R&S® FSH Spectrum Analyzer

DATA	EEPROM Not a security concern	Video SRAM Not a security concern	Meas. SRAM Not a security concern	SRAM Master preset required	FLASH Master preset required
Hardware Info, Serial Number, Product Options and Cal-Correction Constants	X				
Display memory (Video memory) Screen Images		X			
Measurement control data Intermediate meas. data			X		
Active instrument setup Active meas. data				X	
Operating System and Instrument Firmware; Factory default settings					X
Limit Lines, Transducer, Cable models User saved data sets User calibration data (DTF, TG)					X

6 Memory Clearing Procedure

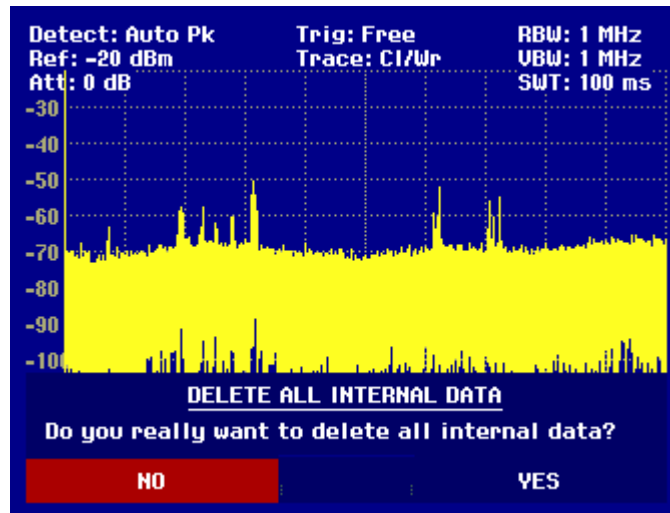
Since the Video- and Measurement-SRAM are erased when the instrument is switched off and the power supply unit is removed from the spectrum analyzer they do not pose a security risk. No user data is written to the EEPROM memory; hence, it is deemed that it does not pose a risk either.

The SRAM and the FLASH memory are the memory devices that do not lose their memory when power is removed and can contain user data. Therefore, these memory devices must be cleared before leaving the secured area.

R&S® FSH Spectrum Analyzer - Master preset procedure

To remove any **classified** user data from the R&S® FSH spectrum analyzer perform the following steps:

- Remove user settings by restoring the factory defaults via SETUP and GENERAL (F1 softkey), then select FACTORY and confirm with YES.
- Clear any user data, user calibration data and stored instrument settings by pressing the PRESET button for 5 seconds (with the instrument switched ON). Confirm the master preset with YES by pressing the softkeys F4 or F5:



- Turn the instrument off and remove the power supply unit. This will clear any data in the video- and measurement SRAM.

The R&S® FSH spectrum analyzer can now leave the secured area.

Calibration and the validity of the spectrum analyzer's calibration after memory clearing

The calibration ensures a user that their measurements are traceable to a government standard. Rohde & Schwarz highly recommends that users follow the calibration cycle suggested for their instrument.

The EEPROM is the only location used to hold permanent adjustment values required to maintain the validity of the spectrum analyzer's calibration. Hence, performing the memory clearing procedures described above does not affect the validity of the instrument's calibration.

Additional Information

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