

# R&S®SMBV100B

## Vector Signal Generator

### Instrument Security Procedures



1178903202

# 1 Overview

It is often imperative that R&S SMBV100B vector signal generators are used in a secured environment. Generally these highly secured environments do not allow any test equipment to leave the area unless it can be proven that no user information leaves with the test equipment. Security concerns can arise when devices need to leave a secured area, e.g. to be calibrated or serviced.

This document describes the types of memory and their usage in the R&S SMBV100B. It provides a statement regarding the volatility of all memory types and specifies the steps required to declassify an instrument through memory clearing or sanitization procedures. These sanitization procedures are designed for customers who need to meet the requirements specified by the US Defense Security Service (DSS).

## 2 Instrument Models Covered

*Table 2-1: vector signal generator models*

Product name	Order number
R&S SMBV100B	1423.1003K02

## 3 Security Terms and Definitions

### Clearing

The term "clearing" is defined in Section 8-301a of DoD 5220.22-M, "National Industrial Security Program Operating Manual (NISPOM)". Clearing is the process of eradicating the data on media so that the data can no longer be retrieved using the standard interfaces on the instrument. Therefore, clearing is typically used when the instrument is to remain in an environment with an acceptable level of protection.

### Sanitization

The term "sanitization" is defined in Section 8-301b of DoD 5220.22-M, "National Industrial Security Program Operating Manual (NISPOM)". Sanitization is the process of removing or eradicating stored data so that the data cannot be recovered using any known technology. Instrument sanitization is typically required when an instrument is moved from a secure to a non-secure environment, such as when it is returned for service of calibration.

The memory sanitization procedures described in this document are designed for customers who need to meet the requirements specified by the US Defense Security Service (DSS). These requirements are specified in the "Clearing and Sanitization Matrix" in Section 14.1.16 of the ISFO "Manual for the Certification and Accreditation of Classified Systems under the NISPOM".

### Instrument declassification

The term "instrument declassification" refers to procedures that must be undertaken before an instrument can be removed from a secure environment, for example when the instrument is returned for calibration. Declassification procedures include memory sanitization or memory removal, or both. The declassification procedures described in this document are designed to meet the requirements specified in DoD 5220.22-M, "National Industrial Security Program Operating Manual (NISPOM)", Chapter 8.

## 4 Types of Memory and Information Storage in the R&S SMBV100B

The R&S SMBV100B contains various memory components.

The following table provides an overview of the memory components that are part of your instrument. For a detailed description regarding type, size, usage and location, refer to the subsequent sections.

### Standard configuration (no option R&S SMBVB-B80 installed)

**Table 4-1: Types of memory and information storage**

Memory type	Size	Content / Function	Volatility	User data	Sanitization procedure
SDRAM (CPU board)	4 GByte	Temporary information storage for operating system and instrument firmware, or RAM disk for user data	Volatile	Yes	Turn off instrument power.
SDRAM (Baseband generator board)	8 GByte	Temporary information storage for arbitrary waveforms	Volatile	Yes	Turn off instrument power.
EEPROM/Flash (one per module)	256 Byte up to 4 MByte	Module-specific data: <ul style="list-style-type: none"> <li>Board identification data</li> <li>Board internal correction data</li> </ul>	Non-volatile	No	None required (no user data)
Flash (CPU board)	8 MByte	BIOS	Non-volatile	No	None required (no user data)
microSD memory card (CPU board)	1 GByte	<ul style="list-style-type: none"> <li>Operating system</li> <li>Instrument firmware</li> <li>Instrument internal correction data</li> <li>Instrument states, e.g. <a href="#">USB port</a>, <a href="#">LAN services</a> and set-ups</li> </ul>	Non-volatile	No	None required (no user data)
mSata memory module (IFB.BV interface board)	62 GByte	<ul style="list-style-type: none"> <li>User data</li> <li>Instrument setups</li> </ul>	Non-volatile	Yes	<a href="#">Sanitize internal memory procedure</a>

### With the optional R&S SMBVB-B80 removable mass memory installed

Table 4-2: Types of memory and information storage

Memory type	Size	Content	Volatility	User data	Sanitization procedure
SDRAM (CPU board)	4 GByte	Temporary information storage for operating system and instrument firmware, or RAM disk for user data	Volatile	Yes	Turn off instrument power.
SDRAM (Baseband generator board)	8 GByte	Temporary information storage for arbitrary waveforms	Volatile	Yes	Turn off instrument power.
EEPROM/ Flash (one per module)	256 Byte up to 4 MByte	Module-specific data: <ul style="list-style-type: none"> <li>Board identification data</li> <li>Board internal correction data</li> </ul>	Non-volatile	No	None required (no user data)
Flash (CPU board)	8 MByte	BIOS	Non-volatile	No	None required (no user data)
microSD memory card (CPU board)	1 GByte	<ul style="list-style-type: none"> <li>Operating system</li> <li>Instrument firmware</li> <li>Instrument internal correction data</li> <li>Instrument states, e.g. <a href="#">USB port</a>, <a href="#">LAN services</a> and set-ups</li> </ul>	Non-volatile	No	None required (no user data)
Removable CFAST memory card (optional R&S SMBVB-B80 removable mass memory)	64 GByte	<ul style="list-style-type: none"> <li>User data</li> <li>Instrument setups</li> </ul>	Non-volatile	Yes	Remove CFAST memory card

## 4.1 Volatile Memory

The volatile memory in the instrument does not have battery backup. It loses its contents when power is removed from the instrument. The volatile memory is not a security concern.

Removing power from this memory meets the memory sanitization requirements specified in the Clearing and Sanitization Matrix in section 5.2.5.5.5 of the ISFO Process Manual for the Certification and Accreditation of Classified Systems under the NIS-POM.

## 4.2 Non-Volatile Memory

The R&S SMBV100B contains no user-accessible non-volatile memory, except for the mSata memory module and the removable CFAST memory card.

The R&S SMBV100B is equipped with either the mSata memory module, or with the removable CFAST memory card (R&S SMBVB-B80 removable mass memory).

All other non-volatile memories of the R&S SMBV100B are not a security concern.

### mSATA memory module

(excludes CFAST memory card R&S SMBVB-B80).

- If the volatile mode is disabled (default setting on the instrument):  
The R&S SMBV100B saves user data and instrument setups permanently on the mSATA memory module.  
**Sanitization procedure:** [Sanitize internal memory](#) procedure.
- If the volatile mode is enabled:  
The R&S SMBV100B redirects user data and instrument setups to the volatile memory (SDRAM).  
**Sanitization procedure:** Turn off instrument power.

Find more about setting the volatile mode in sections "Protecting Data" and "Disk & Memory Security Settings" of the user manual [www.rohde-schwarz.com/manual/smbv100b](http://www.rohde-schwarz.com/manual/smbv100b).

### Removable CFAST memory card (R&S SMBVB-B80)



Do not remove the CFAST memory card during operation as data can get lost.

- If a CFAST memory card is inserted:  
The CFAST memory card holds user data and instrument setups and is non-volatile. Hence, user data is not erased when power is removed from the instrument.  
**Sanitization procedure:** Remove the CFAST memory card from the instrument.
- If no CFAST memory card is inserted:  
The R&S SMBV100B enables the volatile mode automatically. The R&S SMBV100B redirects user data and instrument setups to the volatile memory (SDRAM). Without a CFAST memory card, it is not possible to disable the volatile mode in the "Setting Security Parameters" settings dialog.  
**Sanitization procedure:** Turn off instrument power.

## 5 Secure Erase Procedures

Because the volatile memory types are erased when power is removed from the R&S SMBV100B, they do not pose a security risk. The flash memories on the CPU board contain no user data. Therefore, it is deemed that they do not pose a risk either.

The mSata memory module on the interface board does not lose its contents when power is removed. It can contain user data.

### Sanitize internal memory

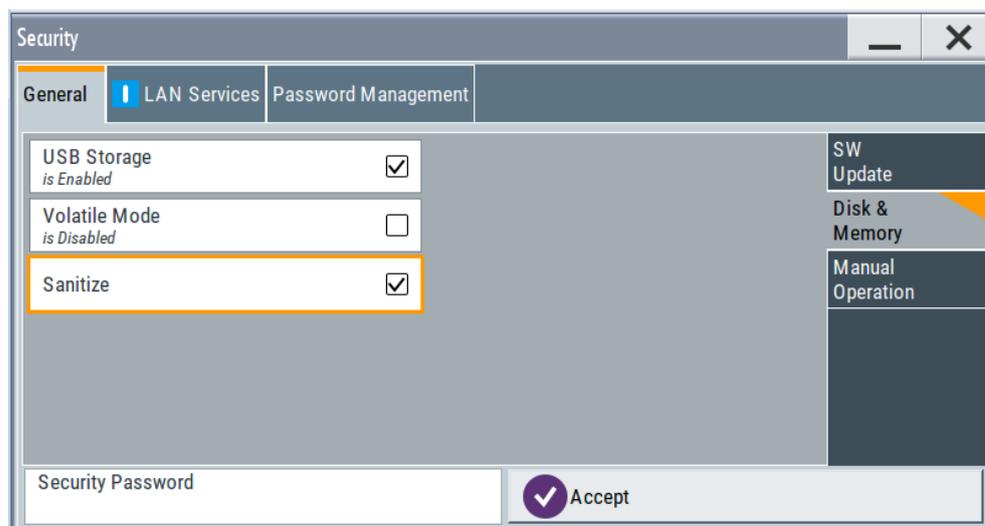
You can sanitize the mSata memory module by executing the sanitizing procedure provided on the instrument:

**NOTICE****Risk of instrument damage when interrupting the sanitizing procedure**

The R&S SMBV100B must not be switched off or disconnected from mains while the sanitizing procedure is running.

Access:

1. Select "System Config > Setup > Security > General".
2. Select "Disk & Memory".



3. Enable "Sanitize".
4. Enter the "Security Password".
5. Confirm with "Accept".

**Note:** The default password is 123456. For more information, see section "Using Security Settings" in the R&S SMBV100B user manual (see [www.rohde-schwarz.com/manual/smbv100b](http://www.rohde-schwarz.com/manual/smbv100b)).

The Secure Erase Procedure meets the memory sanitization requirements specified in the Clearing and Sanitization Matrix in section 14.1.16 of the ISFO Process Manual for the Certification and Accreditation of Classified Systems under the NISPOM.

## 6 Instrument Declassification

Before you can remove the vector signal generator from a secured area (for example to perform service or calibration), all classified user data needs to be removed. You can declassify the vector signal generator as follows:

1. No R&S SMBVB-B80 installed  
**Sanitization procedure:** as per [Chapter 5, "Secure Erase Procedures"](#), on page 5.
2. R&S SMBVB-B80 installed
  - a) CFAST memory card inserted.  
**Sanitization procedure:** Remove CFAST memory card.
  - b) No CFAST memory card inserted.  
**Sanitization procedure:** Turn off the instrument.

Following these steps removes all user data from the vector signal generator. The vector signal generator without the CFAST memory card can now leave the secured area.

These declassification procedures meet the needs of customers working in secured areas.

Once the vector signal generator is outside the secured area, inserting a second non-classified removable CFAST memory card (without any user data) allows the vector signal generator to function properly for service or other needs.

Before reentering the secured area, remove the non-classified CFAST memory card. When the vector signal generator is back within the secured area, the original classified removable CFAST memory card can be reinstalled.



To hold classified user data in secure areas, use the removable CFAST memory card.  
To hold non-classified user data in non-secure areas, use a second CFAST memory card.

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### Validity of instrument calibration after declassification

The EEPROM is the only memory type used to hold permanent adjustment values required to maintain the validity of the R&S SMBV100B's calibration. Therefore, replacing one removable CFAST memory card with another, does not affect the validity of the instrument's calibration.

## 7 Special Considerations for USB Ports and LAN Services

There are special considerations for R&S SMBV100B USB ports and LAN services to avoid unauthorized data access in a high-security location.

The access states of the USB ports and LAN services are saved according to [Table 4-1](#).

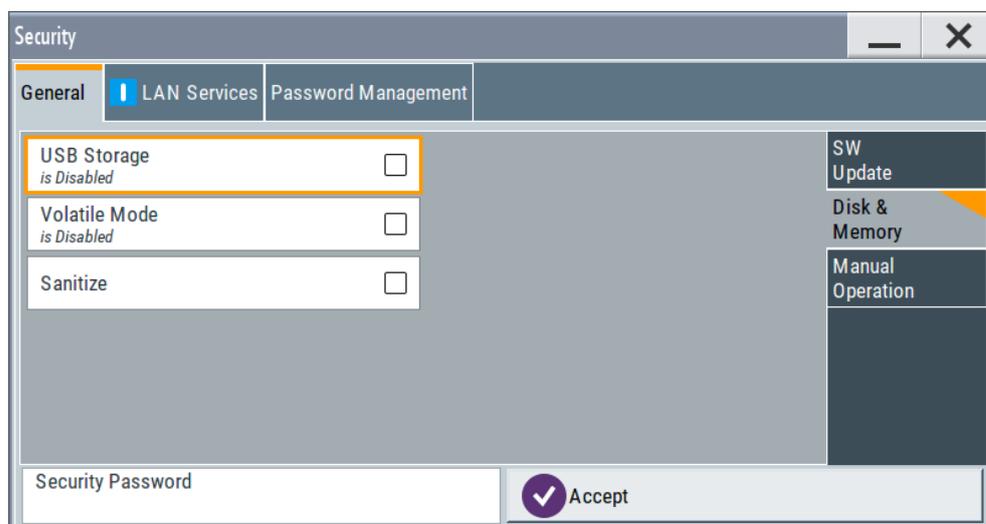
## 7.1 Special Considerations for USB Ports

USB ports can pose a security risk in high-security locations. Generally, this risk comes from small USB pen drives, also known as memory sticks or key drives. They can be easily concealed and can quickly read/write several GByte of data. To protect the instrument against unauthorized data access, you can disable the USB interface.

### Disabling USB ports for writing user data

To disable the write capability on the USB ports of the R&S SMBV100B:

1. Select "System Config > Setup > Security > General".
2. Select "Disk & Memory".
3. Disable "USB Storage".
4. Enter the "Security Password".
5. Confirm with "Accept".



When disabled, no USB storage device is accepted by the instrument. After a reboot of the instrument, the write capability on any USB memory device is disabled. Other non-memory USB devices (such as keyboards and mice) are not affected.



Remove all USB memory devices before disabling the USB storage. If any USB memory device remains connected, disabling is blocked, and the instrument returns a warning message.

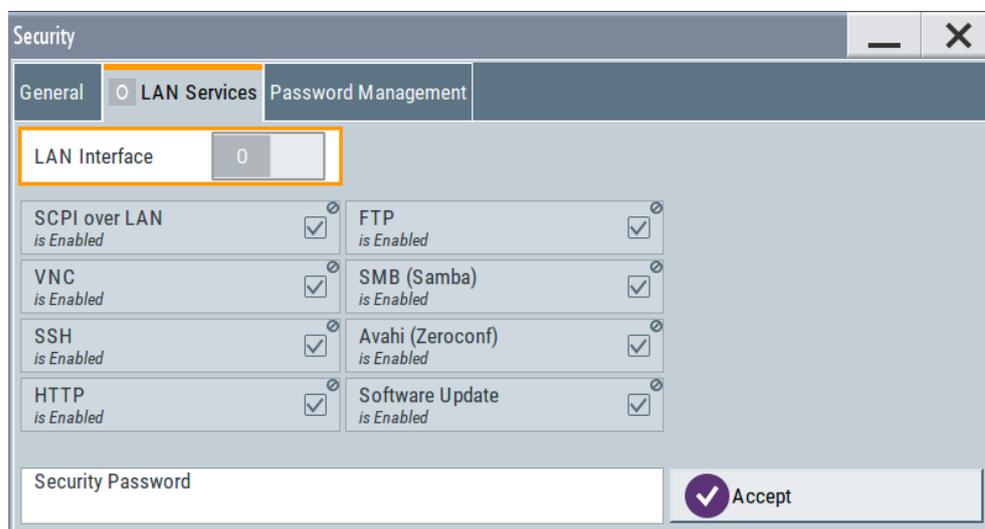
## 7.2 Special Considerations for LAN Ports

To protect the instrument against unauthorized data access in a high-security location, you can disable the LAN interface.

### Disabling LAN ports

To disable the LAN ports of the R&S SMBV100B:

1. Select "System Config > Setup > Security > LAN Services".
2. Disable the "LAN Interface".
3. Enter the "Security Password".
4. Confirm with "Accept"



When disabled, no LAN connection can be established with the instrument.

For information concerning the security features, refer also to the R&S SMBV100B user manual.

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