

# R&S®SMBV100A

## Vector Signal Generator

### Release Notes

### Firmware Version 2.20.360.114

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The following abbreviations are used throughout this document:

R&S®SMBV100A is abbreviated as R&S SMBV100A.

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# 1 Information on the Current Version and History

## General information

This document describes the procedure to apply a firmware update to the R&S® SMBV100A Vector Signal Generator. It furthermore describes the differences between the several firmware versions. The most current firmware version can be obtained from [www.rohde-schwarz.com](http://www.rohde-schwarz.com).

## Instruments covered

This firmware version is suitable for all instruments of type **R&S® SMBV100A**, including all module revisions, options and firmware licenses.

## Identify current firmware version

The current instrument firmware revision is displayed during the startup sequence of the instrument. In addition, it is provided in the **SETUP** Software/Options dialog and it is part of the SCPI \*IDN instrument identification string.

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### NOTICE

#### Potential malfunction of assembly!

It is strongly recommended to **do no firmware downgrade below** the version the device was originally delivered with. Improved module revisions as well as modified structure of calibration data may not be supported by previous firmware versions.

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## 1.1 Special hints for particular instruments and firmware versions

### Instruments with firmware less than 2.20.160.51

To update these instruments to the current firmware version, the update procedure based on **Update firmware by means of the maintenance system**, as described in chapter 2.3.

## 1.2 Version 2.20.360.114

Released : May 2011

### New Functionality

- SMBV-K85, LTE Release 10 (Advanced)

- SMBV-K87, 1xEV-DO Rev. B
- SMBV-K96, GNSS extension to 24 satellites
- SMBV-K266, Galileo waveforms (generated with WinIQSIM2)
- SMBV-K285, LTE Release 10 (generated with WinIQSIM2)
- SMBV-K287, 1xEV-DO Rev. B (generated with WinIQSIM2)
- SMBV-K353, DAB+ Streams
- SMBV-K354, T-DMB/DAB Streams
- NRP-Z Level Control: Level can be continuously regulated using NRP-Z power sensors
- New remote control interface IVI-6.1 High Speed LAN instrument protocol (HiSLIP)
- New remote control emulation Rohde & Schwarz SMY

#### Modified Functionality

- 3GPP: Increased the dynamic range of dynamic power control to 60 dB if the power step size is at least 1 dB
- Pulse generator: New parameter 'Use SIGNAL VALID as Pulse Sync'
- Listmode: The current index will be displayed now

#### Fixed Issues

- All digital modulations
  - Data list are interpreted in a wrong way.
  - If Pulse is selected for a marker, the tooltip for the parameter 'Divider' shows the unit Hz. Only GSM/Edge, Bluetooth, Tetra, IEEE 802.11 a/b/g/n; IEEE 802.16, GPS, Galileo, Glonass, Sirius, XM-Radio, DVB, DAB/T-DMB, Custom digital modulation, ARB, MCCW are affected.
  - The error message 'External clock deviation or no connection!' appears, if switching between a digital standard that selects external clock and a digital standard that select internal clock.
- 3GPP: The selected data list is not displayed in 3GPP downlink channel table
- ARB
  - The SCPI command SOURce1:BB:ARbitrary:WAVEform:DATA did not work
  - If the trigger mode is single, the graphics display showed always the I and Q signal. Only instruments with SMBV-B50 or SMBV-B51 are affected.
- Custom digital modulation: For OQPSK the symbol rate is limited to 37.5 MHz due to technical reason
- Pulse modulation: Wrong level while using ALC Table mode.
- All sweeps: While using mode 'Extern Start/Stop' 10% to 20% of the triggers will be ignored

- RF Level Sweep: Missing online help for parameter 'Use Digital Attenuation'
- Maintenance System: Update packages generated with the 'backup internal memory to usb' could not be installed.
- Remote control via USB: If using viClear() the remote control interface does not accept new commands furthermore.

## 1.3 Version 2.20.230.115.1

**Released : March 2012**

### **Fixed Issues**

- In rare cases, the SMBV100A does not boot and hangs with a black screen.

## 1.4 Version 2.20.230.115

**Released : November 2011**

### **New Functionality**

- SMBV-K86, IEEE 802.11 ac
- SMBV-K93, GPS P-Code
- SMBV-K94, Glonass
- SMBV-K200, Waveform Package
- SMBV-K286, IEEE 802.11 ac (WinIQSIM2)
- SMBV-K294, Glonass (WinIQSIM2)

### **Modified Functionality**

- Remote control emulation E4428, E4438, N5161, N5181, N5162, N5182:
  - Build up of the necessary directory structure in /var/user and accordingly /hdd, if the emulation is activated.
  - Added multi tone arb functionality
- Remote control emulation AF2050, AF2051, AF2052: Added functionality of custom digital modulation

### **Fixed Issues**

- IEEE 802.11 a/b/g (WLAN): If trigger mode is Single, the Signal Duration could not be changed.
- Tetra: In rare cases the filter factors were wrong or not set.

- Custom Digital Modulation: If user filter is used the packet length was too short in rare cases.
- Digital Baseband Output and AWGN: The noise bandwidth was too small
- Save/Recall: The SCPI commands \*SAV <number> and \*RCL <number> did not work
- RF Frequency Sweep, Level Sweep and LF Frequency Sweep:
  - Dwell time was wrong on first step after reset sweep.
  - Mode Auto, shape Triangle: The dwell time on the first step was twice the value set in the sweep parameters.
  - In rare cases the modes Single, Extern Single and Extern Start/Stop did not work, after Listmode was active.
  - In rare cases after reset sweep the message “Value out of range” appeared and the sweep did hang-up.
- Listmode:
  - Mode Extern Single: Did not work.
  - Mode Extern Step: The instrument triggered on the positive slope always, regardless of the trigger slope setting.
- Multi Carrier CW: The focus frame was truncated on the Accept button.
- Remote control emulation E4428, E4438, N5161, N5181, N5162, N5182:
  - Corrected SCPI command MEM:DATA <string>, <block>
  - Corrected resolution of the MSUS file area.
- General:
  - In rare cases the message “LO power low” appeared, regardless if LO coupling is used.
  - The tooltip did not appear in all file selector dialogs.
  - In rare cases the firmware crashed while navigation in a combobox.
  - When using VNC to control the R&S SMBV100A the up-shift key did not work in the file manager.

## 1.5 Version 2.20.160.89

**Released : June 2011**

### **New Functionality**

- SMBV-K84, Dig. Std. LTE Release 9, enhanced features

### Modified Functionality

- Digital standard GPS and Galileo: Relative satellite power dynamic range increased from 20 to 21 dB.
- Digital standard GPS and Galileo: Maximum value of additional delay in multipath increased to 2.99999 chips.
- Level Sweep: New parameter 'Using Digital Attenuation'. This parameter could be used to realize a level sweep without blanking the RF output. Please note: To use this functionality it is necessary to activate any IQ modulation.
- NRP-Z Power Viewer: The state of the NRP-Z sensor will be set to OFF after preset.

### Fixed Issues

- Digital standard GPS and Galileo: A software issue is fixed in Auto Localization Mode for long duration simulation
- Digital standard 3GPP/FDD: The code domain wasn't updated, if the compressed mode was changed.
- Digital standard EUTRA/LTE: If in the dialog Trigger/Marker/Clock the signal duration unit is set to Frame, then the firmware crashed if the signal duration was varied.
- User Correction: While creating a new user correction list, the firmware crashed.
- User Correction: After Preset the name of the user correction list was set to 'none'.
- Dialog Software/Options: The title of the third column of the tables 'Software Options (Internal)' and 'WinIQSIM (External Software Options)' corrected to 'Expiration Date'.
- Dialog Software/Options: Online help corrected.

## 1.6 Version 2.20.160.51.2

Released : May 2011

### Fixed Issues

- Dig. Std. IEEE 802.16 WIMAX: The parameter 'sequence length' did not show a value.
- Writing the TCXO calibration value to EEPROM did fail in rare cases.
- SMBV-B1: Writing the OCXO calibration value to EEPROM could erase the serial number of the SMBV-B1.
- Instruments without SMBV-B10, SMBV-B50 or SMBV-B51 fails internal adjustment, when executed.
- Operating time does not count correctly.



## 1.7 Version 2.20.160.51

**Released : April 2011**

### **New Functionality**

- SMBV-B1H, OCXO High Stability
- SMBV-K18, Dig. Baseband Connectivity
- SMBV-K44, Dig. Std. GPS
- SMBV-K65, Dig. Std. Assisted GPS
- SMBV-K66, Dig. Std. Galileo 6 satellites
- SMBV-K91, Dig. Std. GNSS extension to 12 satellites
- SMBV-K92, Dig. Std. GNSS enhanced (e.g. moving scenarios, multipath)
- New automatic level control state Sample & Hold High Accuracy (S&H High Accuracy). This mode improves the level accuracy and increases the frequency and level setting time up to 20 ms.
- Dig. Std. 3GPP
  - General Uplink:
    - i) Instead of specifying the level of the total signal (i.e. the average power), it is possible now to specify the level during specific parts of the signal, like e.g. during the PRACH message part or during the first slot with active DPCCH by specifying a “level reference”.
    - ii) The scheduling of uplink signals now can be visualized in a “scheduling list”.
  - HSDPA Downlink:
    - i) The leveling for H-Set fixed reference channels was simplified by introducing the possibility of configuring the total HS-PDSCH power.
  - HSPA+ Downlink:
    - i) The modulation and number of HS-PDSCH channelization codes in H-Set fixed reference channels now can be randomly varied over time, as needed for type 3i enhanced performance requirements tests.
    - ii) The generation of the “other user’s channels” (OCNS) for type 3i enhanced performance requirements tests is possible now.
- New remote control emulation
  - Agilent  
E4421, E4422
  - Rohde & Schwarz  
SMT03

**Modified Functionality**

- Dig. Std. 3GPP
  - General Uplink:
    - i) The 1024 chips delay of the uplink signal can be switched off now, if needed.
  - HSDPA Uplink:
    - i) The scheduling of HS-DPCCH transmissions now is possible in a more flexible way.
    - ii) Real time generation of the HS-DPCCH channel now is possible also in case the HS-DPCCH is scheduled by the HS-DPCCH scheduling table.
    - iii) HSUPA Uplink:
      - iv) The generation of E-DPDCH channels now can be restricted to the I or Q branch, if needed.
      - v) The scheduling of E-DCH packets now is possible in a more flexible way. The former DTX patterns have been replaced by an E-DCH scheduling table. This does not apply for E-DCH fixed reference channels (FRCs) with enabled HARQ Simulation.
      - vi) The E-DPCCH and E-DPDCH channels now are generated in real time if UL-DTX or dynamic power control is activated.
  - HSPA+ Uplink:
    - i) UL-DTX now is possible also for other channels than DPCCH. The configuration of two UL-DTX cycles is possible and all dependencies between the transmissions of the channels are taken into account, in line with 3GPP TS 25.214.
    - ii) Now dynamic power control is possible also in combination with UL-DTX. The application of externally received power control commands is made in compliance with 3GPP TS 25.214; UL-DPCCH gaps are taken into account.
    - iii) Real time generation of the HS-DPCCH channel now is possible also if the HS-DPCCH contains HSPA+ content.
- NRP-Z Power Viewer is enabled automatically
- \*RST performance improved when power sensors are connected

**Fixed Issues**

- Remote Control via USB: File transfer with MMEM files for files greater than 4 MByte.
- Dig. Std. 3GPP
  - General
    - i) The code allocation for compressed mode method SF/2 was incorrect.

- ii) Switching between external and internal trigger will freeze or reboot the R&S® SMBV100A.
- General Uplink
  - i) The PCPCH Channel Coding was not working correctly.
  - ii) Data sources were read out at the wrong positions in case of uplink compressed mode method SF/2.
- General Downlink:
  - i) In certain cases the TFCI state of DPCH channels was configured to be off (DTX) after selecting a reference measurement channel.
  - ii) The generation of AICH and AP-AICH channels was incorrect.
- Custom Digital Modulation: Under certain conditions, when using control lists or data lists the R&S® SMBV100A will freeze or reboot.

## 1.8 Version 2.15.085.78

**Released : July 2010**

### **Modified Functionality**

- Several enhancements for LTE/EUTRA (see separate release notes)

### **Fixed Issues**

- The OCXO calibration value shows the wrong value after preset and power on.
- Under rare conditions sporadic errors occurs while accessing eeproms.

## 1.9 Version 2.15.085.70

**Released : June 2010**

### **Modified Functionality**

- Selftest: Enhancement for BBGEN boards

### **Fixed Issues**

- FM Stereo
  - Deviation not working as expected
  - SPDIF not working as expected
- Reference Oscillator: Adjustment DAC value isn't restored after power on
- Baseband Synchronization Mode: Master and Slave settings are not restored after power on

- Baseband Clock Settings: Measured clock doesn't display in Slave Mode

## 1.10 Version 2.15.085.47

Released : May 2010

### New Functionality

- SMBV-K53, Dig. Std. T-DMB/DAB
- SMBV-K56, Dig. Std. XM Radio
- SMBV-K57, FM Stereo / RDS
- SMBV-K58, Dig. Std. Sirius Radio
- SMBV-K68, Dig. Std. TETRA Release 2
- SMBV-K253, T-DMB/DAB (WinIQSIM2 required)
- SMBV-K268, Dig. Std. TETRA Release 2 (WinIQSIM2 required)
- ARB : Sequencing with play lists
- New remote control emulation
  - Aeroflex  
AF2023, AF2024, AF2030, AF2031, AF2032, AF2040, AF2041, AF2042,  
AF2050, AF2051, AF2052
  - Agilent  
E4428, E4438, E8257, E8267, E8663, N5161, N5162, N5181, N5182, N5183
  - HP  
HP8642, HP8643, HP8644, HP8645, HP8647, HP8648, HP8656, HP8657,  
HP8664, HP8665
  - Rohde & Schwarz  
SML01, SML02, SML03
- Frequency and Level displays can be annotated in **SETUP** Security.
- Level unit is preserved during power off.
- Keyboard can be deactivated to prevent unauthorized modification of instrument settings. Configuration in **SETUP** Security or by SYSTem:KLOCK ON|OFF.
- Display can be deactivated to hide instrument settings. Configuration in **SETUP** Security or by SYSTem:DLOCK ON|OFF.
- Instrument now can be remote controlled via RS232 by means of a standard external USB to RS232 adaptor. Settings are located in **SETUP** Remote Channel Settings.
- New sweep mode "External Start/Stop" for RF-, LF- and Level-Sweeps

### Modified Functionality

- Setting time for ALC OFF TABLE IQ-Mode change to 2.5 ms
- ARB/multi segment mode : several improvements (single trigger with different clock rates)
- ARB/multi carrier mode : support of clipping
- External triggering: choice between "sync to external trigger" (with skipping first samples, default) and outputting from first sample (new).
- All digital standards: setups can now be saved in differential format
- Custom Dig Mod : new modulation AQPSK
- AWGN : C/N range extended to +40 dB
- Internal Graphics can be controlled remotely (eg. SOUR:BB:GRAP:SMAR:STAT ON;SOUR:BB:GRAP:STAT ON)
- Bluetooth: Upgraded to Core Specification 4.0 and Low Energy Enhancements
- Several enhancements for LTE/EUTRA (see separate release notes)
- Revised and simplified configuration of emulation settings in Remote Channel Settings dialog.
- Level Limit setting not affected by **PRESET** to protect devices under test (7801)
- Improved behavior of ATT FIX mode when configured while RF is OFF
- Revised and simplified network settings dialog including connection state indicator. Option "Peer to Peer" removed since this feature is covered by the "Auto(DHCP)" mode now.
- To avoid unintentional instrument settings, values entered by keyboard or front panel will be discarded when input is aborted without confirmation by **ENTER** or unit key.
- New **SETUP** NRP-Z Info dialog provides properties of all power sensors connected.
- Firmware of NRP-Z Power Sensors can be updated via R&S® SMBV100A.
- New SCPI command :*SYSTem:SHUTdown* powers off instrument via remote control.
- Optimized file dialog (tree view)

### Fixed Issues

- IEEE 802.11n: MAC Header and FCS Config dialog too wide.
- MultiCarriesCW: Dialog size is zero
- Graphic: Phase offset not visible.
- Remote control: PM:SOUR INT,EXT not working as expected
- Remote control: SYSTem:KLOCK ON|OFF not working
- SCPI: octal pattern (eg. Using with data sources) not working.

- CDMA2000: Minor changes in online help.
- Custom Digital Modulation: Minor changes in online help.
- Multi Carrier CW: Minor changes in online help.
- Graphic: Minor changes in online help.
- Sporadic lockups in raw ethernet channel.
- Several issues regarding SCPI MMEM subsystem.
- Network settings (e.g. IP-Address) were lost when configured while no network is attached
- Missing error message when attempting to disable USB mass storage while storage is attached
- List Mode Step: Reset button does not work
- List Mode: Downloading lists by means of SCPI binary format does not work

## 1.11 Version 2.05.269.110

**Released : April 2010**

### **Fixed Issues**

- **General:** Sporadic LO power low error messages

## 1.12 Version 2.05.269.109

**Released : March 2010**

### **Modified Functionality**

- New mode "Variable Attenuated" for I/Q outputs and internal I/Q modulation (to be used for high-linear level settings)

### **Fixed Issues**

- Sporadic errors accessing the hardware under rare circumstances. Typically the internal adjustment failed but was successful on second try. (8339)

## 1.13 Version 2.05.269.104

Released : December 2009

### Fixed Issues

- **ARB:** Support of new SDRAM-Module (only for internal purpose) (8024)
- **Listmode:** Output level to low for frequency up to 1MHz and high power mode (8148)

## 1.14 Version 2.05.269.96

Released : August 2009

### Modified Functionality

- **ARB:** Support of HDD Streaming
- **Custom Digital Modulation:** Support of User Filter
- **GSM Edge:** Support of sequence mode 'Unframed'

### Fixed Issues

- **Remote Control:** Files transferred with the SCPI Mass Memory system were not accessible (7746)
- **AWGN:** Mode 'Noise only' did not work without active baseband (7633)
- **ARB:** Multisegment waveforms did not work for more than 32 segments (7854)

## 1.15 Version 2.05.269.53

Released : April 2009

### Fixed Issues

- **General:** Maintenance system did not boot
- **General:** Reference frequency differs by 16 Hz under rare conditions with SMBV-B1

## 1.16 Version 2.05.269.46

**Released : March 2009**

### **New Functionality**

- SMBV-K41 (EDGE+)
- SMBV-K60 (Bluetooth)
- SMBV-K241 (EDGE+ with WinIQSIM2)
- SMBV-K244 (GPS with WinIQSIM2)
- SMBV-K260 (Bluetooth with WinIQSIM2)
- SMBV-K352 (Playback of HD-Radio Waveforms)
- New remote emulation modes for Aeroflex/IFR 205x and R&S SML

### **Modified Functionality**

- **Listmode:**
  - Max value of dwell time increased
  - The mode STEP now can be remote controlled:
    - `[:SOURce]:LIST:INDex <nr>` addresses the specified index
    - `[:SOURce]:LIST:TRIGger:EXEC` executes a single list step
- **Network :** APIPA/Zeroconf to support automatic configuration in networks DHCP
- Accelerated operation of LTE and Wimax
- **Enhanced connectivity:** FTP and SAMBA file access possible to folder `/var/smbv/share`
- Common password for VNC, FTP and SAMBA (user=instrument, password=instrument)
- Operation of digital standards without hard disc optimized
- Frequency Offset has been extended to 67 GHz

## EUTRA/LTE

### **Downlink**

- TDD special subframes: automatic adjustment of parameters is now fully supported

### **Uplink**

- PUSCH allocations are now displayed correctly in the time plan for frequency hopping type.
- PUCCH allocations and PUCCH region is displayed in the time plan.
- PRACH is displayed in the time plan.



## 3GPP-FDD

### New Features

- HSUPA / HSPA+ Uplink
  - Fixed reference channels (FRC): Transport block size and channel allocation now is user configurable (User-FRC).
  - Uplink test models according to TS34.121 tables C.10.1.4, C.11.1.3, C.11.1.4
- HSPA+ Uplink
  - Uplink DPCCH slot format 4
  - UL-DTX mode for CPC simulation (“DPCCH Gating”)
- HSPA+ Downlink
  - F-DPCH slot formats 1 to 9 (“Enhanced F-DPCH”)
  - Fixed reference channel H-Set 12 for Dual Cell HSDPA tests (“DC-HSDPA”)
  - Downlink test models for Home base station tests (“Home NodeB”)

### Changes

- Support for old release 4 uplink DPCCH slot formats 4 and 5 is discontinued.

### Problems eliminated

- Uplink compressed mode: The configuration of TG pattern 2 was not recognized correctly.

## Wimax

### New features

- 2 Antenna STC modes (Matrix A and B) for AMC2x3
- Power offset of Baseband B
- MIMO UL Basic IE added to UL-MAP

### Bugfixes

- Fixed bug in HARQ CRC
- Fixed pilot carrier bug for 4 Antenna STC modes
- Fixed dedicated pilot flag in DL-MAP for PUSC

### Fixed Issues

- **Baseband:** Baseband phase offset does not work with SMBV-B50 and SMBV-B51 (7270)
- **LO Coupling:** Switching to LO coupling lead into the error message “General database error” (7144)
- **Network:** Sometimes LAN not available after power on due to failing DHCP (6728)
- **Save/Recall:** Storing files using MMEM instructions failed if the file already exist (affects SAV/RCL) (7197)
- **Screen Saver:** Backlight has not been switched off (7117)
- **User Correction:** User correction not effective after power off/on cycle (7206)

- **Rotary Knob:** Debouncing by using optimized time constants (7447)
- **Remote Control:** MMEM:CDIR did not work for LIST:CAT? (7474)
- **Remote Control:** BB:xxx:TRIGger:ARM:EXECute causes sporadic crash (7388)
- **Remote Control:** Binary transmission of list mode data erroneous (7304)
- **AM:** Displays PEP value up to 6 dB wrong (7124)
- **General:** „Device key missing” after power on under rare conditions (7222)
- **General:** POW did not work as expected (7105)
- **General:** Shutdown shows no reaction for some seconds after pressing power key  
-> Progress bar (7482)

## 1.17 Version 2.05.200.22

**Released : January 2009**

### **Fixed Issues**

- **GSM/EDGE:** GSM slot attenuation sometimes wrong with new BBGEN boards (problem has occurred only in factory; delivered devices are NOT affected)

## 1.18 Version 2.05.200.19

**Released : November 2008**

### **New Functionality**

- Support of option SMBV-B50 Baseband generator (ARB only, 120 MHz RF BW)
- Support of option SMBV-B51 Baseband generator (ARB only, 60 MHz RF BW)

### **Modified Functionality**

- **Analog Modulation AM/FM/PhiM:** Added impedance switching

### **Fixed Issues**

- **General:** The message box device key missing appears
- **Save/Recall:** Save/Recall does not work correct (7041)

## 1.19 Version 2.05.200.09

**Released : September 2008**

### **New Functionality**

- Support of option SMBV-K46 Dig. Std. CDMA2000 incl. 1 x EV-DV
- Support of option SMBV-K49 Dig. Std. IEEE 802.16
- Support of option SMBV-K50 Dig. Std. TD-SCDMA
- Support of option SMBV-K51 Dig. Std. TD-SCDMA enhanced BS/MS Tests
- Support of option SMBV-K54 Dig. Std. IEEE 802.11 n
- Support of option SMBV-K62 Additive White Gaussian Noise

### **Fixed Issues**

- **3GPP FDD:** Clipping does not work (6893)
- **DVB:** The dialog System Configuration fitted to the display size of the SMBV (6838)
- **IEEE 802.11g:** The dialog MAC Header and FCS Configuration fitted to the display size of the SMBV (6842)
- **Listmode:** Listmode stops if the list range will be changed (6920)
- **Remote Control:** Queue overflow after syst:err? (6948)
- **Remote Control:** Reads via MMEM does not work (6974)
- **User Correction:** User Correction with Power Sensor not possible (7030)

## 1.20 Version 2.05.178.09

**Released : August 2008**

### **New Functionality**

- Support of option SMBV-K47 Dig. Std. 1xEV-DO
- Support of option SMBV-K52 Dig. Std. DVB
- Support of option SMBV-K55 Dig. Std. EUTRA/LTE

### **Modified Functionality**

- **Reference Oscillator:** The RF output could be deactivated, if no external reference is connected (6830)
- **Analog I/Q Output Settings:** The I/Q level resolution is changed from 1 mV to 1  $\mu$ V (6829)
- **Baseband Phase:** Valid range is  $\pm 900.99$  degrees (6746)

- **Network:** The network settings will be displayed as read only, if IP address mode is DHCP (6727)
- **RF Menu:** New subgroups “Mod Gen” and “Sweeps” (6683)

## 1.21 Version 2.05.150.10

**Released : July 2008**

### **New Functionality**

- Initial SMBV firmware version

## 2 Firmware Update

### 2.1 Update Information

The update procedure requires that the instrument is operational. There is no need to uninstall the current firmware. Instrument settings are preserved during the update, including user data and network settings.



To perform this procedure, USB Device must be enabled in security settings. Press the **SETUP** key, select **Security** and check **USB Device** setting

### 2.2 Updating the Firmware

#### Required equipment

**Software:** Firmware update file **SMBV\_2.20.360.114.rsu**

**Hardware:** USB memory stick with enough free space to save the update file (about 60 - 70 MByte).

The memory stick does not need to be bootable and previous data on the stick is not affected. Several update files may reside on the stick in parallel. During update procedure the stick is not modified by the instrument.

#### Prepare Memory Stick

- Download update file to a PC.
- Connect USB stick to PC and copy the update file **into the root directory**.
- Wait until copy procedure has finished and remove USB stick.

#### Install new firmware on R&S® SMBV100A:

- Switch on instrument.
- Wait until instrument is operational.
- Connect USB stick to instrument.
- Wait a few seconds until message box appears. Confirm by pressing the rotary knob.
- Select firmware version using the arrow keys and press knob to start update.
- Wait until "Software update successful" message box appears. This may take several minutes.
- Press any front panel key to shut down instrument and remove USB stick.
- Restart instrument by pressing the power button.

## Execute internal adjustments

Internal adjustments can be initiated manually (e.g. after warming up) by performing the followings steps:

- Press the **PRESET** key on the instrument front panel.
- Press the **SETUP** key, select Internal Adjustments and execute **Adjust All**. This procedure updates all internal instrument adjustments and will take several minutes.

Adjustments requiring external measurement equipment are not affected by the firmware update and need not to be performed.

## 2.3 Alternative update procedures

Depending on the **current firmware version** additional methods for updating the firmware are available:

- **Apply USB memory stick while instrument is powered off**  
The previously described firmware update procedure can also be initiated by applying the USB memory stick while instrument is powered off. In this case the update procedure is triggered during startup sequence right after the operating system is ready but before the instruments firmware starts. So this procedure is recommended if for some reason the instruments firmware is not operational. User data is preserved.
- **Update firmware be means of the maintenance system**  
The R&S® SMBV100A is equipped with a maintenance system which does not depend on the instruments operating system and firmware. It is activated by pressing the rotary knob right after power on when the instrument indicates “Press rotary knob for maintenance”. Enter security key if requested (default is ‘123456’), select “Install Firmware Package” and follow instructions. This procedure reinitializes the instruments mass memory storage, so **user data is irretrievably lost**. After reboot execute **SETUP** Factory Preset to complete instrument initialization.
- **Recover factory firmware version**  
Factory firmware configuration of the instrument can be recovered using the “Factory Recover” option of the maintenance system. **User data is irretrievably lost**. After reboot execute **SETUP** Factory Preset to complete instrument initialization.

## 3 Open Source Acknowledgement

This instrument firmware makes use of valuable open source software packages. The most important of them are listed together with their corresponding open source license information in a separate Open Source Acknowledgement document. This document also contains the verbatim license texts and can be downloaded from [www.rohde-schwarz.com](http://www.rohde-schwarz.com).

The OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>) includes cryptographic software written by Eric Young (eay@cryptsoft.com) and software written by Tim Hudson (tjh@cryptsoft.com).

LINUX® is a trademark of Linus Torvalds.

Rohde & Schwarz would like to thank the open source community for their valuable contribution to embedded computing.

## 4 Customer Support

### Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz equipment, contact one of our Customer Support Centers. A team of highly qualified engineers provides telephone support and will work with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz equipment.

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