

# R&S®SMB100A

## Release Notes

### Firmware Version 3.20.390.24

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The firmware of the instrument makes use of several valuable open source software packages. For information, see the "Open Source Acknowledgment" on the user documentation CD-ROM (included in delivery).

The following abbreviations are used throughout this document: R&S®SMB100A is abbreviated as R&S SMB100A.

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# 1 Information on the Current Version and History

## General information

This document describes the procedure of applying a firmware update to the R&S®SMB100A 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 3.20.390.24 is suitable for all instruments of type R&S®SMB100A including all frequency ranges and options.

## Identify current firmware version

The current instrument firmware revision is indicated 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. New module revisions as well as improved structure of calibration data may not be supported by older firmware versions.

### Special hint for instruments equipped with firmware prior to 2.15.245.xx

Please first upgrade to 2.15.245.19 before upgrading the device to 3.20.390.24. Afterwards, do not downgrade instruments to firmware versions prior to 2.15.245.19.

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Depending on the previously installed firmware a power off/on cycle may be requested after firmware upgrade. Use front panel keys or main switch to shut down and restart the instrument.

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The functional improvements of the different firmware versions are registered below. New features are described in detail the build-in help system and in the latest version of the operating manual which can be obtained from [www.rohde-schwarz.com](http://www.rohde-schwarz.com).

The R&S®SMB100A provides a continuously growing number of device emulations. The current emulation set is described in chapter 2 "Information on the Current Version and History".

## 1.1 Version 3.20.390.24

Released: January 2016

### New Functionality

RefNo.	Functions
151689	Support of new NRPxS(N) Power Sensors
138026	Support of new frequency options SMB-B140N and SMB-B131

### Modified Functionality

RefNo.	Functions
138134	Calibration value of oscillator can be changed using protection level 2
138071	Improved FM deviation for stereo modulation up to 200 kHz
137801	Sweep will be stopped after modification of the swept value e.g. RF frequency
137541	Factory Preset of "RF OFF Mode" depends on the installed hardware features. Devices with a mechanical step attenuator => "Full Attenuation" Devices without a mechanical step attenuator => "Unchanged"

### Fixed Issues

RefNo.	Improvements
141332	Step attenuator bouncing with ALC mode S&H at RF output
138136	Pulse Train repetition was not updated after editing
138105	In rare cases a message "Command header too long" was incorrectly displayed
137875	RF output power was not adjusted properly after pulse modulator activation
137823	Repeated settings of the RF phase results in an increased setting time

### Known Issues

RefNo.	Known-Issues
12845	Sometimes the SMZ multiplier is not recognized during power on. Workaround: Power up SMB before connecting or powering the SMZ

## 1.2 Version 3.01.203.51

Released: June 2015

### Fixed Issues

RefNo.	Improvements
15132	SMB100N: Support of RFBOARD 1407.7800.

## 1.3 Version 3.01.203.50

Released: May 2015

**Fixed Issues**

RefNo.	Improvements
15002	Improved fill operation for lists (e.g. List Mode) with different column lengths (affects only remote usage).
15022	PULM "DEXC" commands now can be used via SCPI.

**1.4 Version 3.01.203.46**

Released: January 2015

**Modified Functionality**

RefNo.	Functions
14088	Pulse Modulation State and Pulse Video Output State are separated now. Switching Pulse Modulation on/off does not affect Pulse Video Output State.

**Fixed Issues**

RefNo.	Improvements
14177	Low Harmonic Filter cannot be configured via user interface (in 3.01.203.44).
14165	Fixed "Network Settings"-GUI in disconnected state.
14091	Enabling the pulse generator unexpectedly switches ALC to Sample & Hold, even if pulse modulation is off.
13981	Under seldom circumstances internal ALC adjustment fails.

**1.5 Version 3.01.203.44**

Released: November 2014

**New Functionality**

RefNo.	Functions
13562	Error Handling: In level menu, level range warnings can be suppressed in order to avoid error messages in uncritical operating conditions.

**Modified Functionality**

RefNo.	Functions
13230	SMB-B5 Stereo Coder: Characters beyond 80h now are supported in Radio Text and Program Service Name, according to RDS character table.
13229	SMB-B5 Stereo Coder: RDS-Phase (RDS-PH) now is initialized to Zero after power on
13228	Support of additional USB to RS232 adapters, e.g. Keyspan USA-19HS
12488	MMEM:CDIR is set to default value when executing *RST

**Fixed Issues**

RefNo.	Improvements
13705	SMB-B120(L): Under some circumstances, Selftest may fail
13590	SMB-B112: DKD calibration may fail
13276	SMB-B120: Unintended warnings at specific level values

RefNo.	Improvements
13250	Wrong reply to POWer? DEFault on instruments with SMB-B140L together with SMB-B32 options
13187	With SML emulation active, response values of POW? are wrong when default unit is dB $\mu$ V
13186	PSG emulation: Sweep Points value had been off by one
13096	Performance degradation when network configuration dialog is visible
12769	Unintended error message during self test on some instruments

## 1.6 Version 3.01.203.32

Released: May 2014

### New Functionality

RefNo.	Functions
12779	"Display Level as Voltage of EMF" now can be enabled via SCPI: [SOURce<HW>]:POWer:EMF:STATe ON OFF 1 0
12380	Additional NRP-Z Power Sensors are accepted, e.g. NRP-Z211 and NRP-Z221
12361	Warnings regarding overvoltage at modulation inputs can be disabled. Setting is available in modulation dialogs or via remote: "SOURce:INPut:MODext:WIGNore ON OFF 1 0"
12205	Support of RFBOARD 1407.7800
12093	Instrument can be restarted or shut down via user interface (SETUP / Shut down...) to improve off-site operation
11838	Aperture time setting in power viewer available
11768	Multi-Language user interface
11198	State of optional low harmonic filter is displayed permanently
11078	Internal mass memory can be write-protected to prevent critical user data from being stored inside the instrument. Available under SETUP / Security...
10660	Additional emulations for SME02, SME03 and SME06
10350	Firmware can be updated via network, refer to chapter 3.3 "Alternative update procedures"
10315	Additional emulations for SMP02, SMP03 and SMP04
10102	Results of Power Viewer can be logged to file, refer to manual
10101	System can be rebooted and its uptime can be requested via remote control: SYST:REBoot and SYST:UPTime?
9925	Display of current index in List Mode
8577	Self-Test can be executed and verified via *TST?

### Modified Functionality

RefNo.	Functions
13054	Improved setting Time for most instrument settings
12062	SIGNAL VALID connector now is "High" during RF OFF to improve compatibility with BLANK signal of other R&S instruments.
11886	Reference oscillator: The user adjustment value of the internal oscillator DAC value now defaults to zero and can be modified to positive and negative values. The value of zero corresponds to the factory adjustment.
11161	DEV:PRESet now presets LF generator
11249	Power Viewer: Results of NRP-Z8x type sensors by default are displayed as average values, not peak values

RefNo.	Functions
10953	Power Viewer: Sensor frequency now considers RF offset and multiplier settings
10538	Improved display indicator of external reference frequency

### Fixed Issues

RefNo.	Improvements
12849	Some USB-Devices cause instrument to state "Device key not found" when connected during power on. This has been caused by several race conditions in third party driver
12827	NRP-Z5 sensor hub is not detected properly, causing sensors to be assigned to wrong indices.
12822	Under some circumstances, level errors in List Mode on instruments with mechanical attenuator
12779	NRP-Z Power Control: When multiple sensors are connected, sometimes the wrong one is activated for power control
12747	NRP-Z Power Sensors: When instrument is powered on while multiple sensors are connected via a generic USB hub, the assignment of the sensors is random.
12733	SMB-B5 Stereo Coder: The responses to some queries differ between SML emulation and native SML instrument.
12599	Frequency values between 8 and 9kHz are not set properly
12169	Several issues regarding USB and remote control after applying a factory preset without subsequent power cycle
12049	Under some circumstances, *OPC? responds too early on instruments with mechanical attenuator
12043	Power Viewer cannot be enabled after factory preset without power cycle.
11983	SMB-K27 (Pulse Train), table editor: ON-Time and OFF-Time do not accept unit keys
10661	POW:SPC:TARGeT does only accept unit dBm
10398	Several state changes (mostly of minor significance or seldom used) in remote control channels fixed, especially when switching between channels
10338	Informational messages starting with "0, No error" in SCPI error queue
10160	New Sweep Mode "Retrace" provides reset to start value for SINGLE modes
10119	Phase Modulation: By user interface, deviation can only be entered in rad, not in degree.

## 1.7 Version 2.20.382.115

Released: August 2013

### New Functionality

RefNo.	Functions
11611	Instruments up to 6GHz: Lower Limit of RF Frequency has been reduced to 8KHz to support new ITU frequency band.
10798	Improved Support of SMZ Microwave Multipliers

### Modified Functionality

RefNo.	Functions
11800	Added command POW:STAT for Agilent SCPI emulations
11599	On instruments with step attenuator the output signal now is full attenuated during Sample&Hold. Previously the attenuation was 50dB.
10954 10330	SMB-B5 Stereo Coder: After PRESET, all RDS groups now are enabled by default. Previously, if group sequence has not been set explicitly, groups might have been

RefNo.	Functions
	disabled, depending on preliminary events. In this case features like radio text do not work as expected.

### Fixed Issues

RefNo.	Improvements
11602	Unexpected settings conflict in some pulse generator configurations
11122	Pulse/Video output provides unexpected signals after PRESET
10921	Timing problems when programming a specific batch of internal EEPROMs (effects production only)
10807	Pulse Train data has been cut to 1023 elements, should be 2047
10794	SMB-112L: On some instruments, in the frequency range below 23.4 MHz, level has been too low after setting maximum level.
10397	Setting UNIT:POW did not work as expected while EMF setting is active

## 1.8 Version 2.20.382.106

Released: December 2012

### New Functionality

RefNo.	Functions
10460	Support of RF board revision 1406.7371.02
10560	External reference frequency can be switched between 5 and 10MHz (requires RF-Board revision 1406.7220 and higher)
10394	New emulation for Panasonic 8303 signal generator
10332	<b>Support for R&amp;S@SMZ Microwave Multipliers</b>
10316	LF generator: New LF shapes 'Triangle' and 'Inverse Sawtooth'
10314	New emulation for R&S SMT02 and SMT06 generators
9910	SMB-K23 Pulse Generator: New Trigger Mode 'Single'

### Modified Functionality

RefNo.	Functions
10596	SMB-K27 (Pulse Train) Support of repetition factor '0', useful for temporary suppression of pulses.
10391	NRP-Z level control now considers UNIT:POW default unit
10389	SYSTem:LANGUage now is accepted even if emulation is already set
10339	Emulation of R&S SML: STEReo:DIRect command now is supported
10097	Attenuator Fixed Range: A small setting margin ensures that even the limits can be set reliable without error
9910	SMB-K23 Pulse Generator: Trigger Mode identifiers adapted to other triggered modes, e.g. Sweep

### Fixed Issues

RefNo.	Improvements
10782	LF shape 'Sawtooth' not operational on some instruments with RF board revision 1406.7207
10655	NRP-Z firmware update not working in some SMB firmware revisions
10545	EMC32 software did not work in virtual mode with SMB



RefNo.	Improvements
10511	List Mode: Level errors might occur when Power Viewer is active
10369	LF shape 'Sawtooth' not available in AM/FM/PHiM modulations under some circumstances
10368	List Mode: When combined with pulse modulation, spikes might occur between the pulses

## 1.9 Version 2.20.382.70

Released: June 2012

### New Functionality

RefNo.	Functions
10045	<b>Support of Low Harmonic Filter on instruments up to 20GHz (SMB-B25) and up to 40GHz (SMB-B26)</b>
10304	SMB-B5 (Stereo Coder): EON Burst-Length can be modified using direct mode instruction "EON-TA-BURST=x" or "EON-TA-BURST=x,y" with x and y between 4 and 8
10259	New waveform "Sawtooth" for LF Generator (requires RF-Board revision 1406.7207 and higher)
9927	New emulation for R&S SMR microwave instruments

### Modified Functionality

RefNo.	Functions
10249	Improved display update repetition rate
10178	Improved stability and performance of USB-TMC
10163	Improved sweep dwell time of up to 5ms
10098	NRP-Z Power Viewer: User Frequency Sensor can be set to 0Hz (DC)
10059	SMB-B5 (Stereo Coder): Instruction "TRANS=" now carries up to 24 groups
10057	SMB-B5 (Stereo Coder): RDS alternative frequencies do not require position after decimal point any more

### Fixed Issues

RefNo.	Improvements
10303	SMB-B5 (Stereo Coder): Reading back RDS texts containing carriage return characters fails
10265	Sometimes message "Device Key not found" appeared when an NRP-Z Power sensor has been connected during power on
10258	Pulse Train: No Sync Pulse when train contains null pulse
10205	Firmware terminates on instruments without pulse generator (SMB-K23) when pulse modulator dialog is opened
10161	On instruments without step attenuator, a message box displayed during internal adjustment does not behave as expected

## 1.10 Version 2.20.382.35

Released: March 2012

### New Functionality

RefNo.	Functions
9749	<b>New attenuator setting “RF OFF Mode” controls behavior of attenuator when RF is switched off and on</b>
9908	<b>Logarithmic AM for microwave instruments (SMB-B112 and up)</b>
9987	LAN Services can be enabled and disabled individually to prevent unintended access to instrument
9937	Support of IVI-6.1 High Speed LAN instrument protocol (HiSLIP)
9880	SIGNAL VALID can be configured to act as sync signal for pulse generator (SMB-K23)
9557	<b>NRP-Z Level Control: Level can be continuously regulated using NRP-Z power sensors</b>
9536	Frequency indicator can be modified by a multiplication factor (in addition to frequency offset)

### Modified Functionality

RefNo.	Functions
10134	SMB-B5 (Stereo Coder): Direct Commands are scanned in order to keep user interface up to date.
9979	Improved *RST Performance for instruments with SMB-B1(H) (OCXO) and SMB-B5 (Stereo Coder)
9666	Rotary knob combines subsequent actions, significant improvement of variation speed
9543	N5181 emulation: Added instructions for pulse generator

### Fixed Issues

RefNo.	Improvements
10119	Phase Modulation: Deviation could not be entered by means of the unit keys
10018	Pulse Train: ON and OFF times wrong by 10ns under some circumstances
10017	Phase setting: Delta Phase to high at frequencies greater than 6.375GHz
10010	Unintended warning “Pep value greater than defined limit” at frequencies less than 23.4375 MHz
10003	HCOP:DATA? did not work in 2.20.237.xx
10002	Pulse Train: Long trains (several hundred elements) might fail
10000	Pulse Train: Times longer than 655us might fail
9990	X-Voltage not working on microwave instruments (SMB-B112 and up)
9983	On instruments without attenuator the warning dialog regarding internal adjustments did not behave as expected
9974	Improved system stability
9934	ESG Emulation delivers wrong value for SWE:POIN? MAX
9919	viClear() over USBTMC blocks further communication
9918	Communication break after applying viClear() to USBTMC interface
9894	SMB-B5 (Stereo Coder): PS did not accept special characters (like \061)
9864	CW signal for 3ms when setting RF level during level with pulse modulation active
9854	PULM:STAT[?] did not work in SML emulation
9850	Permanent options have been displayed with expiration date December 2002
9781	Under some circumstances error message “wrong datatype” after selftest
9745	Indicators in summary screen have not been updated properly
9722	Level too low by 6dB at exactly 23.4375 MHz with AM on
9678	*CLS did not clear error queue
9663	Some message boxes did not accept ENTER/x1
9594	ESR bit 6 has not been set at GTL

RefNo.	Improvements
9563	Casually, after long periods of power down, some front panel keys did not work
9369	SMB-B5 Stereo Coder: Communication issues when switching RF between AM and FM frequency ranges
9253	Pulse modulation: External input could not be inverted on instruments without pulse generator
9226	Power Viewer indicator could not be configured to display peak values
9168	Socket connection might lose data packages send in a fast sequence
8746	Several issues around the data/time dialog
8684	IEEE488 GTL message potentially overtakes last command header causing the instrument to re-enter the remote state (looks like GTL does not work)
7939	SMB-B5 Stereo Coder: After power on or *RCL some settings are not re-established in a proper way
7705	Some unit keys did not work properly when EMF is active

#### Known Issues

RefNo.	Known-Issues
10119	Phase Modulation: By user interface, deviation can only be entered in rad, not in degree.

## 1.11 Version 2.20.237.31

Released: August 2011 for SMB-B112(L), SMB-B120(L) and SMB-B140(L)

#### New Functionality

RefNo.	Functions
	Support of instruments up to 40 GHz (SMB-B140)

#### Fixed Issues

RefNo.	Improvements
9705	Several issues regarding Pulse Train have been fixed

## 1.12 Version 2.20.237.18

Released: June 2011 for SMB-B112(L) and SMB-B120(L)

#### New Functionality

RefNo.	Functions
	Support of instruments up to 20 GHz (SMB-B120)
9536	New setting "Frequency Multiplier" enables the instrument to modify the displayed frequency value by a user definable factor.
9408	New Setting "RF during power search" modifies instruments behavior when operating with ALC Sample&Hold

**Modified Functionality**

RefNo.	Functions
9379	NRP-Z Power Viewer is switched OFF by *RST to maintain settling time in system applications
7189	Directory /var/user, which is intended for user data storage, is not longer used by some instrument files. Former instrument directories like "Lists" may be removed if appropriate.

**Fixed Issues**

RefNo.	Improvements
9370	Some errors have not been reported in SCPI error queue
9253	Pulse modulation: External input could not be inverted on instruments without pulse generator.
9240	Instruments settings have not been restored after internal adjustments
9230	An expiration date has been stated for permanent options
9207	Some slow USB memory sticks might not have been detected
9168	Ethernet socket connection may loose packages
9051	Several minor issues regarding importing and exporting lists
8476	With EMF State active, the current level unit was not preserved when instrument is powered off.
8151	Attenuator Fix setting has been during power down
8141	The EMF state was not reset by Factory Preset

**1.13 Version 2.15.245.19**

Released: December 2010

**New Functionality**

RefNo.	Functions
	Support of instruments up to 12,75 GHz (SMB-B112)
9036	Impedance of LF-Output can be set to LOW or 600Ohm. This feature is available for instruments with serial number 102400 or higher.
8726	Support of option SMB-K27 "Pulse Train". This feature is available for instruments with serial number 102400 or higher.
8736	Emulation of Agilent ESG 4421 and 4422
8201	Frequency and Level displays can be annotated in <b>SETUP</b> Security
7313	Support of NRP-Z Peak Power Sensors
7075	New attenuator modes "Low Noise" and "Low Distortion"

**Modified Functionality**

RefNo.	Functions
9037	Exporting and importing lists does not require absolute pathnames any more
8749	*RST does not close setting dialogs any more
8649	NRP-Z Power Viewer is enabled automatically
8646	*RST performance improved when powers sensors are connected
8635	Sweep Dwell Time can be set up to 100 seconds
8400	Several significant improvements of LIST MODE, faster learning and support of long lists (20.000)

RefNo.	Functions
8371	Support of wildcards '*' and '?' in mass memory system MMEM

### Fixed Issues

RefNo.	Improvements
8983	Calibration value of OCXO not displayed properly
8697	User step variation of level: Step size issue when level unit other than dBm
8640	Disabling screensaver via remote control fails to reactivate screen
8510	Firmware restart under rare circumstances, forcing IEEE address to factory value
8343	Key '0', ':' and '-' not working properly when used in text mode
8323	CORR:CSET:DATA:SENS:POW:SONC does not work
8284	Telnet connection did not reconnect after interruption
8228	Ethernet Raw connection did not reconnect after interruption
8151	Attenuator Fix setting lost during power down
7436	SYST:PRESET did not work

## 1.14 Version 2.10.116.18

Released: January 2010

### New Functionality

RefNo.	Functions
8133	LF Output can be configured to provide an X-Voltage for RF sweep. See RF sweep configuration menu. This function requires an RF board of part number 1406.7207 or higher.
7882	Keyboard can be deactivated to prevent unauthorized modification of instrument settings. Configuration in <b>SETUP</b> Security or by SYSTem:KLOCK ON OFF
7882	Display can be deactivated to hide instrument settings. Configuration in <b>SETUP</b> Security or by SYSTem:DLOCK ON OFF.
7441	Instrument now can be accessed via Microsoft Windows network
7387	Instrument now can be remote controlled via RS232 by means of a standard external USB to RS232 adaptor. Settings are located in <b>SETUP</b> Remote Channel Settings.
7334	Remote emulation: Support of arbitrary *IDN and *OPT strings.
7301	More than 20 additional remote emulations of Agilent and IFR (Aeroflex) signal generators.

### Modified Functionality

RefNo.	Functions
8073	HP8643 Emulation: Added FM-Preemphasis and LF-Source
8067	SML Emulation: FM Mode is set to High Deviation
7957	Level Unit is saved and restored at power on
7894	Revised and simplified configuration of emulation settings in Remote Channel Settings dialog
7801	Level Limit setting not affected by <b>PRESET</b> to protect devices under test
7781	Revised and simplified network settings dialog including connection state indicator
7775	Improved RF level linearity at frequencies below 250kHz
7758	SMB-B5: Improved modulation reserve when preemphasis is active
7697	Firmware of NRP-Z Power Sensors can be updated via R&S@SMB100A

RefNo.	Functions
7599	Improved behavior of ATT FIX Mode when configured while RF is OFF
7496	Frequency offset can be set up to 67GHz
7472	SMB-B5: RDS Settings are now under the scope of Factory Preset
7449	Improved Security concept (menu <b>SETUP</b> Security Settings)
7383	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
7214	New SCPI command <code>:SYSTem:SHUTdown</code> powers off instrument via remote control
7133	External USB keyboards: Support of international keyboard layouts
7010	Support of up to four power sensors in Power Viewer. New <b>SETUP</b> NRP-Z Info dialog provides properties of all power sensors connected. In Addition, sensor firmware can be updated via instrument.
5996	Improved file selector and file manager

### Fixed Issues

RefNo.	Improvements
7966	SYSTem:KLOCK ON OFF not working
7908	SCPI command PM:SOUR INT,EXT not working as expected
7829	Removed Ext Mod impedance setting for instruments not supporting this feature
7761	Network settings (e.g. IP-Address) were lost when configured while no network is attached
7695	Missing error message when attempting to disable USB mass storage while storage is attached
7664	SMB-B5: Several issues regarding Pilot Phase setting
7638	Pulse generator: PRESET values lead to settings conflict after enabling double pulse
7488	Several issues regarding SCPI MMEM subsystem
7468	List Mode Step: Reset button does not work
7454	Firmware restarts when executing READ:POW? while no sensor is connected
7304	List Mode: Downloading lists by means of SCPI binary format does not work
7294	Coincidental mapping of power sensors in Power-Viewer dialog
7067	External pulse input unintentionally synchronized to internal 100MHz reference frequency
6282	Several minor issues when modifying sweep settings
6277	Mouse pointer disappears even if wheel is handled

## 2 Information on Remote Emulations

The R&S®SMB100A signal generators offer a remote emulation feature that makes it possible to control the instrument by commands other than the built-in native SCPI commands. This feature allows the user to replace signal generators, e.g. from other manufacturers, with the R&S®SMB100A without having to change the remote control code. Further information regarding this feature can be obtained from [www.rohde-schwarz.com](http://www.rohde-schwarz.com).

Firmware version 3.20.390.24 supports the following remote emulations:

Emulated device	Device description	Required options
AF2023	2023 signal generator from Aeroflex / IFR / Marconi	
AF2024	2024 signal generator from Aeroflex / IFR / Marconi	
AF2030	2030 signal generator from Aeroflex / IFR / Marconi	
AF2031	2031 signal generator from Aeroflex / IFR / Marconi	
AF2032	2032 signal generator from Aeroflex / IFR / Marconi	
AF2040	2040 signal generator from Aeroflex / IFR / Marconi	
AF2041	2041 signal generator from Aeroflex / IFR / Marconi	
AF2042	2042 signal generator from Aeroflex / IFR / Marconi	
AN68017	68017 signal generator from Anritsu	B112, B120, B140, B112L, B120L, B140L
AN68037	68037 signal generator from Anritsu	
E4421	E4421 signal generator from Agilent Technologies	
E4422	E4422 signal generator from Agilent Technologies	
E4428	E4428 signal generator from Agilent Technologies	
E8257	E8257 signal generator from Agilent Technologies	B112, B120, B140, B112L, B120L, B140L

E8663	E8663 signal generator from Agilent Technologies	B112, B120, B140, B112L, B120L, B140L
HP8340	8340 signal generator from Hewlett-Packard / Agilent Technologies	B112, B120, B140, B112L, B120L, B140L
HP8341	8341 signal generator from Hewlett-Packard / Agilent Technologies	B112, B120, B140, B112L, B120L, B140L
HP83620	83620 signal generator from Hewlett-Packard / Agilent Technologies	B112, B120, B140, B112L, B120L, B140L
HP83630	83630 signal generator from Hewlett-Packard / Agilent Technologies	B112, B120, B140, B112L, B120L, B140L
HP83640	83640 signal generator from Hewlett-Packard / Agilent Technologies	B112, B120, B140, B112L, B120L, B140L
HP83711	83711 signal generator from Hewlett-Packard / Agilent Technologies	B112, B120, B140, B112L, B120L, B140L
HP83712	83712 signal generator from Hewlett-Packard / Agilent Technologies	B112, B120, B140, B112L, B120L, B140L
HP83731	83731 signal generator from Hewlett-Packard / Agilent Technologies	B112, B120, B140, B112L, B120L, B140L
HP83732	83732 signal generator from Hewlett-Packard / Agilent Technologies	B112, B120, B140, B112L, B120L, B140L
HP8642	8642 signal generator from Hewlett-Packard / Agilent Technologies	
HP8643	8643 signal generator from Hewlett-Packard / Agilent Technologies	
HP8644	8644 signal generator from Hewlett-Packard / Agilent Technologies	
HP8645	8645 signal generator from Hewlett-Packard / Agilent Technologies	



HP8647	8647 signal generator from Hewlett-Packard / Agilent Technologies	
HP8648	8648 signal generator from Hewlett-Packard / Agilent Technologies	
HP8656	8656 signal generator from Hewlett-Packard / Agilent Technologies	
HP8657	8657 signal generator from Hewlett-Packard / Agilent Technologies	
HP8664	8664 signal generator from Hewlett-Packard / Agilent Technologies	
HP8665	8665 signal generator from Hewlett-Packard / Agilent Technologies	
HP8673	8673 signal generator from Hewlett-Packard / Agilent Technologies	B112, B120, B140, B112L, B120L, B140L
N5161	N5161 signal generator from Agilent Technologies	
N5181	N5181 signal generator from Agilent Technologies	
N5183	N5183 signal generator from Agilent Technologies	B112, B120, B140, B112L, B120L, B140L
PA8303	8303 signal generator from Panasonic	
SME02	R&S@SML01 signal generator from Rohde & Schwarz	
SME03	R&S@SML02 signal generator from Rohde & Schwarz	
SME06	R&S@SML03 signal generator from Rohde & Schwarz	
SML01	R&S@SML01 signal generator from Rohde & Schwarz	
SML02	R&S@SML02 signal generator from Rohde & Schwarz	
SML03	R&S@SML03 signal generator from Rohde & Schwarz	

SMP02	R&S@SML01 signal generator from Rohde & Schwarz	
SMP03	R&S@SML02 signal generator from Rohde & Schwarz	
SMP04	R&S@SML03 signal generator from Rohde & Schwarz	
SMR20	R&S@SMR20 signal generator from Rohde & Schwarz	B112, B120, B140, B112L, B120L, B140L
SMR27	R&S@SMR27 signal generator from Rohde & Schwarz	B112, B120, B140, B112L, B120L, B140L
SMR30	R&S@SMR30 signal generator from Rohde & Schwarz	B112, B120, B140, B112L, B120L, B140L
SMR40	R&S@SMR40 signal generator from Rohde & Schwarz	B112, B120, B140, B112L, B120L, B140L
SMT02	R&S@SMT03 signal generator from Rohde & Schwarz	
SMT03	R&S@SMT03 signal generator from Rohde & Schwarz	
SMT06	R&S@SMT03 signal generator from Rohde & Schwarz	
SMY01	R&S@SMY01 signal generator from Rohde & Schwarz	
SMY02	R&S@SMY01 signal generator from Rohde & Schwarz	

## 3 Firmware Update

### 3.1 Update Information

The update procedure requires that the instrument is operational. There is no need to uninstall the current firmware. In most cases 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

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### 3.2 Updating the Firmware

#### Required equipment

**Software:** Firmware update file SMB\_3.20.390.24.rsu

**Hardware:** USB memory stick with enough free space to save the update file (about 60 - 100 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®SMB100A:

- Switch on instrument.
- Wait until instrument is operational.
- Connect USB stick to instrument.
- Wait 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.
- Remove the USB stick and press any front panel key to restart the instrument.



Depending on the previously installed firmware revision it might be required to use the main power switch on the rear panel to shut down and restart the instrument.

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### Check for stereo coder firmware update (SMB-B5)

The option SMB-B5 contains its own local firmware. During reboot the instrument firmware checks whether an update of the stereo coder firmware is required.

- If the stereo coder firmware is already up to date, the instrument starts as usual. Wait until it is operational and continue with internal adjustments.
- If an update is required it is automatically initiated by the new instrument firmware. Follow instructions and wait until firmware confirms success. The update may take several minutes.

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## NOTICE

### Risk of instrument malfunction!

Interrupting the stereo coder firmware update may lead to instrument malfunction. Therefore, do not interrupt the stereo coder firmware update and do not switch off power until instrument confirms success.

During update, RDS Settings will be reset to factory values.

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### Execute internal adjustments

Internal adjustments will be performed automatically during first power on after firmware update. So in general no further action is required. However, Internal adjustments can be initiated manually (e.g. after warming up) by performing the following steps:

- Press the PRESET key on the instrument front panel.
- Press the SETUP key, select Internal Adjustments and execute **Adjust All**.

Adjustments requiring external measurement equipment are not affected by the firmware update.

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## NOTICE

### Risk of damage for device under test!

During adjustment, assemblies **without step attenuator** (SMB-B112L, SMB-B120L and SMB-B140L) temporarily provide high power at the RF plug. This may cause damage to the device under test (DUT). So it is recommended to disconnect the DUT and replace it by a 50 ohm terminating resistor.

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### 3.3 Alternative update procedures

- **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 remotely via LAN**

Since firmware version 3.01.203.32 subsequent updates can also be performed via LAN. This procedure does not require any physical interaction with the instrument and therefore can be executed without having the instrument on-site. To initiate the update copy the firmware update file via FTP to **/home** directory or via SCP to **/home/instrument/update** directory. Update starts automatically after transfer is complete. Please ensure that the required LAN services are enabled in security settings menu (FTP, SSH and Software Update).

- **Update firmware by means of the maintenance system**

The R&S@SMB100A 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.

## 4 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.

## 5 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.

### Up-to-date information and upgrades

To keep your instrument up-to-date and to be informed about new application notes related to your instrument, please send an e-mail to the Customer Support Center stating your instrument and your wish. We will take care that you will get the right information.

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