R&S®SMCV100B
Release Notes 5.20.043.49

Firmware Version 5.20.043.49

PAD-T-M: 3574.3288.02/04.00/CI/1/EN

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Contents

1 Information on the current version and history

To ensure the R&S SMCV100B remains highly secure when being updated, only signed updates will be released.

This will make it possible to detect all future unsigned or manipulated updates.

The instrument's behavior can also be configured via "Setup>Security>Security>General>Secure Update Policy".

These settings are password protected.

For more information, see the R&S SMCV100B User Manual.

NOTICE

For instruments shipped with FW version older than 5.00.122.35, ensure that a 50 Ohm termination with 0.5 W / 27 dBm power rating is connected to the "RF 50Ω" output, each time before 'internal adjustments' is executed.

1.1 Version 5.20.043.49

Released November 2023

Firmware package contents

Fixed Issues	
RF: Lo2 unlock message appears if frequency changes from <= 20 MHz to >2.5 GHz and state RF=OFF	1199049

1.2 Version 5.20.043.48

Released July 2023

Firmware package contents

Fixed Issues

RF: Possible firmware freeze during startup at 75% when frequency > 2.5 GHz	1101980

Known Issues	
Audio Player/DRM File Player: file info in select dialog is properly updated	1177451
SMCV manual: Triggering several instruments with a common trigger signal (chapter 5.5.1). Minor outstanding modifications on trigger interfaces and usage.	1093400

1.3   Version 5.20.043.36

Released May 2023

Firmware package contents

New Functionality	
BBCV MCU update avoids possible board detection errors during boot phase	972215
Custom Digital Modulation: added SOQPSK-TG modulation format	763987
Internal adjustments can be configured to start automatically after warm up period and switch off instrument after execution. This facilitates performing adjustments in absence of operator.	1042855
Option: SMCVB-K423 Modernized Glonass supported	923611
Option: SMCVB-K469 (DVB-RCS2) and SMCVB-K476 (DVB-S2X-E) supported	1040197
Option: SMCVB-K470 (5G NR Sidelink) and SMCVB-K471 (5G NR Release 17) supported	1040385
Option: SMCVB-K980 HUMS: New option Health and Usage Monitoring System available	905698
Remote: SGT emulation mode supported	810022
RF Measurement: Added new feature Power Control.	1042906
RF Measurement: Dialogs have been rearranged in order to clarify dependencies and to integrate Power Control.	1072459

Fixed Issues

802.11be: application crash with 320MHz and 140 users	1077114
802.11be: incorrect EHT-STF normalization for 2nd 484 tone RU.	1076573
AWGN: Corrected AWGN update if changing between RF <-> IQ Digital	930521
Corrected behaviour for shown information "RF switched off due to missing external reference"	1076603
Digital IQ HS: BB Input shows correct values if State = On is set after PRESET	858494
DVB-S2: Annex M: TSN (TimeSliceName) of TSL1 (TimeSLice) is configured correctly	1043545
DVB-T2: Corrected AWGN Bandwidth Coupling in case of T2MI = ON operation mode	935510
Level: Level settings updated correctly if FM/PhiM/AM is activated	1083378
Power Sensors: Fill User Correction Data with Sensor uses always 0.0 dBm	1081667
Power Sensors: User Correction fails to fill the first two frequency points correctly	1074502

Known Issues	
SMCV manual: Triggering several instruments with a common trigger signal (chapter 5.5.1). Minor outstanding modifications on trigger interfaces and usage.	1093400

1.4   Version 5.00.122.35

Released November 2022

Firmware package contents

New Functionality	
Dig IQ HS: Multi instrument trigger mode Secondary supported	843846
DVB-S2(x): Test signal for Test GS Packet supported	937418

Fixed Issues	
ARB: Markers with 4-Bit binary Control Liste do not work	938320

Digital IQ HS: Secondary mode: Correct timing alignment of external/internal RF in combined setup with SMW-B13XT supported..	797585
DVB-S: Test Signal PRBS before Conv. Enc. not working	869033
DVB-S2: SCPI missing [:SOURce<hw>:BB:DVBS2:SOURce:IS<Stream>?	930350
FM/PhiM/AM: Info Icon Mod stays grey and shows always Off	949564
Pulse Modulation: non functional parameter Pulse Delay in GUI	936133
Reference Frequency: Preset value of Synchronization Bandwidth changed from Wide to Narrow	968710
Reference Frequency: RF Output deactivation not working by using deactivation setting in reference frequency mode	726299
RF: internal adjustment: level accuracy improved	968534
SFE Emulation Mode: command [SOURce][:IQCoder]:TDMB:SOURce[?] EXT|GEN|TESTsignal does not work	1003832
SFE Emulation Mode: command SYSTem:INFormation? does not work	1003831
SFE Emulation Mode: Missing SCPI command SOURce:DM:TRANsmission:STANdard for DVB-C and J.83B	933252
SFE Emulation Mode: Syntax for TDMB Special Settings is not correct	1003732
SFE/SFE100 Emu-Mode: unsupported command [SOURce]:MODulator[:STATe] returns proper value	978019
T-DMB/DAB: Transmission Mode I,II vs. III,IV signal level inaccuracy removed	976968
T-DMB/DAB: Transmission MODE is not properly set if Source = Test Signal	942588

Known Issues	
DVB-T2: AWGN Bandwidth Coupling does not work properly in case of T2MI = ON operation mode	935510

1.5 Version 5.00.122.24

Released February 2022

Firmware package contents

New Functionality	
5GNR: General: Release 15 option has been renamed for harmonization	816536
AM/FM Audio: Audioplayer supports 44.1kHz and 48kHz sample rates	905780
License Server is supported	936807
Option: SMCVB-K157 DVB-C/ISDB-C and SMCVB-K158 J.83/B supported	845172
T-DMB/DAB: PRBS Test Signal on tab special is supported	865048

Fixed Issues	
ATSC 3.0: If Special Settings is turned OFF, parameter Minor Version on Tab Frame Info : Bootstrap is not set to 0	802240
Audio FM: WAV file is not loaded if unsupported chunk is present in file	895000
Audio FM: WAV file is played with increased pitch	898072
Digital IQ HS: Incompatibilities with IQW	812769
Digital IQ HS: Wrong connector symbol for connected device at BBOut is used in GUI (External RF)	792039
DVB-S: SCPI command READ:IQCoder:DVBS:PACKetlength? returns false value	885606
I/Q Digital: Frequency offset incorrect when enabling or disabling I/Q Digital output	809700
I/Q Digital: Signal disappears when I/Q Mod is changed to Off	865887
IQ Digital: Some situations with active BBOut will lead to signal clipping in baseband	797334
IQ Modulation: level linearity improved	921602
Last Factory Calibration shows No Cal Date	932702
Level: Unwanted transient behavior if switched from ARB=ON->OFF to AM | FM | PhiM | Pulse Modulation = ON	830089
Level: Without option K31 power limit is set to wrong limit after FACTORY PRESET	909747

Reference Frequency Output 10 MHz: rare initializing problems	707077
Reference PLL: sporadic unlock issue after reboot	903800
RF: List Mode: first frequency step is sometimes not executed	933197
RF: sporadic LO2 unlock after execution of selftest	879763
SFE Emulation Mode: Missing SCPI command SOURce:DM:TRANsmission:STANdard for DVB-C and J.83B	933252
Sweep: Power sweep shows peaks when sweeping is processed	808950
TS Player: Pre-selected file is played correctly after activation of plugin	772961

Known Issues	
DVB-T2: AWGN Bandwidth Coupling does not work properly in case of T2MI = ON operation mode	935510

1.6 Version 4.90.002.26

Released March 2021

Firmware package contents

New Functionality	
5GNR: General: First version to support option K470 5G NR Sidelink	739208
Digital IQ HS: BBin/BBout sample rate always 300 MHz (no dependency to K521, K522, K523)	728052
FM Audio: .wv files supported by audioplayer	727148
FM Audio: Audioplayer: Sample rate is shown in file info	792206
General: SSH / SCP is disabled for security reasons	814246
Option: SMCVB-K200 Waveform Package supported	710753
Option: SMCVB-KV20 China Digital Radio waveforms supported	764414
RF: Descriptions of RF error messages updated	646975
RF: External 13 MHz reference frequency supported	781391

Fixed Issues	
ARB: RMS/Peak of waveform considered in level calculation of output path	786138
ATSC 3.0: TS Player: Files are not played from the beginning after Reset Window or after Select other file	804240
Baseband: Sporadic crash if baseband is activated	729523
Custom DigMod: Dependency of sample rate to bandwidth option improper handled	728027
Custom DigMod: Playing Data Lists functional	762501
Digital IQ HS: BBin leveling issue after switching back from internal baseband resolved	741959
Digital IQ HS: BBin supports R&S®IQW as signal source	776838
Digital IQ HS: BBin to BBout bandwidth not limited by bandwidth options	739245
Digital IQ HS: BBout cannot be activated via SCPI command without SMCVB-K19	731143
Digital IQ HS: BBout improper level setting	719417

External frequency sweep: Possible firmware freeze by switching between plug-ins	723094
Frequency setting: First increment step by UI entry uses wrong value	726278
Level: Maximum level is not correct at certain frequency for signals with high crest factor	802483
NRP support: Problems by scanning for sensor	726851
Option: DRM option not recognized at GUI	803134
Option: SMCVB-K242 option dependency revised	726831
Option: SMCVB-K283, K286, K287, K446 option dependency revised	728695
Option: SMCVB-K407 option entry in product definition corrected	779880
RF: Sporadic Lo2 PLL unlocks resolved	794136
Sweep: Operation of learned list in Run Mode not supported	728277

Known Issues	
Digital IQ HS: Common support of R&S IQW	812769
Level: Unexpected high power level at the end of a RF level sweep	787648
TS Player: Query :TSGen:CONFigure:COMMand? does not work	812834

1.7　Version 4.70.176.27

Released: July 2020

Contents
R&S® SMCV100B Firmware

New Functionality	
Frequency options	
SMCVB-B103	4 kHz to 3 GHz
SMCVB-KB106	Frequency Extension to 6 GHz
SMCVB-KB107	Frequency Extension to 7.125 GHz
RF options	
SMCVB-K31	High Output Power
SMCVB-K709	Low Phase Noise
Baseband options	
SMCVB-K505	ARB Waveform Streaming
SMCVB-K511	ARB memory extension to 512 MSample
SMCVB-K512	ARB memory extension to 1 GSample
SMCVB-K521	Baseband extension to 120 MHz RF bandwidth
SMCVB-K522	Baseband extension to 160 MHz RF bandwidth
SMCVB-K523	Baseband extension to 240 MHz RF bandwidth
Baseband enhancements	
SMCVB-K19	Digital baseband interface
SMCVB-K62	Additive White Gaussian Noise (AWGN)
SMCVB-K197	Basic AM/FM/φM
SMCVB-K198	Pulse modulation
SMCVB-K199	Custom digital modulation
SMCVB-K519	Enable broadcast standards
SMCVB-K547	Improved modulation frequency response
SMCVB-K548	Crest factor reduction
Broadcast Standards	

SMCVB-K155	AM/FM/RDS/DARC
SMCVB-K156	DAB/T-DMB
SMCVB-K160	DRM
SMCVB-K161	ATSC / ATSC-MH
SMCVB-K162	ATSC 3.0
SMCVB-K163	DVB-T
SMCVB-K164	DVB-T2
SMCVB-K165	ISDB-T/TSB
SMCVB-K166	DTMB
SMCVB-K167	DVB-S / DVB-S2
SMCVB-K168	DVB-S2X
Digital standards using R&S®WinIQSIM2™	
SMCVB-K240	GSM/EDGE
SMCVB-K241	EDGE Evolution
SMCVB-K242	3GPP FDD
SMCVB-K244	GPS
SMCVB-K246	CDMA2000®
SMCVB-K247	1xEV-DO Rev A
SMCVB-K250	TD-SCDMA
SMCVB-K251	TD-SCDMA Enhanced BS/MS Tests
SMCVB-K252	DVB-H
SMCVB-K253	DAB/T-DMB
SMCVB-K254	802.11a/b/g/n
SMCVB-K255	EUTRA/LTE
SMCVB-K260	Bluetooth® EDR
SMCVB-K261	Multicarrier CW Signal Generation
SMCVB-K262	Additive White Gaussian Noise (AWGN)
SMCVB-K266	Galileo
SMCVB-K283	3GPP FDD HSPA/HSPA+, Enhanced BS/MS Tests
SMCVB-K284	EUTRA/LTE Release 9 and Enhanced Features

SMCVB-K285	EUTRA/LTE Release 10 (LTE-Advanced)
SMCVB-K286	IEEE 802.11ac
SMCVB-K287	1xEV-DO Rev. B
SMCVB-K289	NFC A/B/F
SMCVB-K294	Glonass 1 Satellite
SMCVB-K297	IRNSS 1 Satellite
SMCVB-K298	Modernized GPS
SMCVB-K407	Beidou
SMCVB-K412	LTE Release 11 and Enhanced Features
SMCVB-K413	EUTRA/LTE Release 12
SMCVB-K414	OFDM Signal Generation
SMCVB-K415	Cellular IoT
SMCVB-K416	DVB-S2/DVB-S2X
SMCVB-K417	Bluetooth® 5.0
SMCVB-K418	Verizon 5GTF Signals
SMCVB-K419	LTE Release 13 and 14
SMCVB-K431	LoRa®
SMCVB-K432	Modernized BeiDou
SMCVB-K442	IEEE 802.11ax
SMCVB-K443	Cellular IoT Release 14
SMCVB-K444	5G NR
SMCVB-K446	Cellular IoT Release 15
Waveform libraries	
SMCVB-KV10	DAB/T-DMB waveforms
SMCVB-KV11	DRM waveforms
SMCVB-KV12	DRM+ waveforms
SMCVB-KV13	HD Radio waveforms
SMCVB-KV14	XM Radio waveforms
SMCVB-KV15	DVB-T2 waveforms
SMCVB-KV16	ATSC 3.0 waveforms

SMCVB-KV17	Digital TV interferer waveforms
SMCVB-KV18	Cable interferer waveforms
SMCVB-KV19	Satellite interferer waveforms
Transport stream libraries for broadcast standards	
SMCVB-KS10	DAB/T-DMB stream library
SMCVB-KS11	DAB+ stream library
SMCVB-KS12	ISDB-T stream library
SMCVB-KS13	ATSC / ATSC & Mobile DTV stream library
SMCVB-KS14	DVB-T2 MI stream library
SMCVB-KS15	EMC stream library
SMCVB-KS16	DRM stream library
SMCVB-KS17	Basic stream library
SMCVB-KS18	Extended SDTV stream library
SMCVB-KS19	Extended HDTV stream library
SMCVB-KS20	HEVC stream library

Modified Functionality / Changed Behavior

None

Improvements

None

Known Issues

AWGN: Bandwidth coupling for ATSC 3.0 not supported	725709
Custom DigMod: Dependency of sample rate to bandwidth option improper handled	728027
Digital I/Q Output: inproper level setting	719417
DVB-S2: Very low symbol rates not supported (<0.25 MS/s)	724520
External frequency sweep: Possible firmware freeze by switching in between plug-ins	723094
Frequency setting: First increment step by UI entry uses wrong value	726278

IP Data Input: Sporadical packet loss problems by RTP usage	724612
Level Sweep: Interruptions in case of using instrument trigger mode	725485
List is not played if Run Mode is Learned	728277
NRP support: Problems by scanning for sensor	726851
Reference Frequency Output 10 MHz: rare initializing problems	707077
Reference Frequency: RF Output deactivation not working by using deactivation setting in reference frequency mode	726299
System: Factory preset causes restart	727192
Trigger: Not active in case of not present baseband plug-in	724847
TS Player: Extended switching time from TRP to ETI streams	721094
Sweep: Operation of learned list in Run Mode not supported	728277

1.8   Version 4.70.060.47

Released: April 2020

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SMCVB-K163	DVB-T
SMCVB-K164	DVB-T2
SMCVB-K165	ISDB-T/TSB
SMCVB-K166	DTMB
SMCVB-K167	DVB-S / DVB-S2
SMCVB-K168	DVB-S2X
SMCVB-K240	GSM/EDGE
Digital standards using R&S®WinIQSIM2™	
SMCVB-K241	EDGE Evolution
SMCVB-K242	3GPP FDD
SMCVB-K244	GPS
SMCVB-K246	CDMA2000®
SMCVB-K247	1xEV-DO Rev A
SMCVB-K250	TD-SCDMA
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SMCVB-K286	IEEE 802.11ac
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SMCVB-K298	Modernized GPS
SMCVB-K407	Beidou
SMCVB-K412	LTE Release 11 and Enhanced Features
SMCVB-K413	EUTRA/LTE Release 12
SMCVB-K414	OFDM Signal Generation
SMCVB-K415	Cellular IoT
SMCVB-K416	DVB-S2/DVB-S2X
SMCVB-K417	Bluetooth® 5.0
SMCVB-K418	Verizon 5GTF Signals
SMCVB-K419	LTE Release 13 and 14
SMCVB-K431	LoRa®
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SMCVB-K443	Cellular IoT Release 14
SMCVB-K444	5G NR
Waveform libraries	
SMCVB-KV10	DAB/T-DMB waveforms
SMCVB-KV11	DRM waveforms
SMCVB-KV12	DRM+ waveforms
SMCVB-KV13	HD Radio waveforms
SMCVB-KV14	XM Radio waveforms
SMCVB-KV15	DVB-T2 waveforms
SMCVB-KV16	ATSC 3.0 waveforms
SMCVB-KV17	Digital TV interferer waveforms
SMCVB-KV18	Cable interferer waveforms
SMCVB-KV19	Satellite interferer waveforms
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SMCVB-KS14	DVB-T2 MI stream library
SMCVB-KS15	EMC stream library
SMCVB-KS16	DRM stream library
SMCVB-KS17	Basic stream library
SMCVB-KS18	Extended SDTV stream library
SMCVB-KS19	Extended HDTV stream library
SMCVB-KS20	HEVC stream library

Modified Functionality / Changed Behavior

None

Improvements

None

Known Issues

None

2 Modifications to the documentation

The current documentation is up-to-date.

3 Firmware update

3.1 Validity information

Device	Order Number
R&S® SMCV100B Vector Signal Generator	1432.7000K02

3.2 Downgrade

Generally it is not recommended to use an earlier version than the latest version available. In some cases the older versions do not support the hardware used in your instrument. Before installing this firmware, check if this could happen:

► Start System Config / Setup / Instrument Assembly / Version/Options
► In the tab "Firmware", you find the Downgrade Info.
► If the version to be installed is greater or equal than the "Min. Version", the hardware will be supported after downgrading. (However, this cannot be guaranteed for all software options)
► If the version to be installed is lesser than the "Min. Version", not all of the modules will be supported. **Your instrument will not work after downgrading!**
► Downgrading may fail using standard rsu-Files (eg. due to changes in the instrument configuration file). In this case, press PRESET-Button during power-on or install ISO image available from service department. Update information

3.3 Updating 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 Storage must be enabled in security settings. Press the SETUP key, select Security and check USB Storage setting

3.4 Updating the Firmware

Required Equipment

Software: Firmware update file SMCVB_5.20.043.49.rsu

Hardware: USB memory stick with enough free space to save the update file (about 700 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 to the root directory
● Wait until copy procedure has finished and remove USB stick

Install new firmware on R&S®SMCV100B:

● Connect USB stick to instrument
● Switch on instrument, if instrument is powered off
● Wait a few seconds until "Process Software Update?" message box appears. Confirm by touching the YES Button or 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 USB stick and touch the Reboot button
● The instrument now reboots.

Execute internal adjustments (only if indicated)

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

● Press [PRESET] on the instrument front panel.

● Press [SETUP], select "Internal Adjustments…" and execute "Adjust All".
   This procedure updates all internal instrument adjustments and will take several minutes.

NOTICE

Risk of DUT damage

During internal adjustments, the instrument temporarily applies high power at the RF output, High power at the RF output may destroy a connected DUT (device under test).

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

3.5 Alternative update procedures

The USB firmware update is recommended for most situations. However, alternative methods for updating the firmware are available:

3.5.1 Firmware update over LAN

Instrument settings are preserved during the update, including user data and network settings.

- Get access to the file system of the instrument using ftp (other methods like samba share is also supported, see application note 1GP72 for details).
  Enter   ftp://<ip address or host name> in the file manager
- Copy **SMCVB_5.20.043.49.rsu** to directory update
- The update procedure starts immediately
- Execute internal adjustments, if indicated

3.5.2 Firmware update using ISO image

NOTICE

Potential loss of data!

User data and user specific instrument settings will be lost during this procedure. Instrument serial number, software license keys and all adjustments requiring external measuring equipment are not affected.

3.5.2.1 Required equipment

Software:

- ISO image for firmware update **SMCVB_5.20.043.49.iso**
  Please contact the service department to get this file!

Hardware:

- **External** USB CD or DVD ROM burner with USB cable.
- 1 CD Recordable.
- PC with burn program that can burn ISO images onto CD.

About ISO image

This is a standardized file format for creating CD images. A CD image is a single file encapsulating the whole data of a CD including directories and files. Unpacking the image to a CD restores the original data. Almost any CD burning program is able to write CDs based on ISO images.

3.5.2.2   Update procedure

Burn ISO image onto a CD

On most computers, burning an ISO image can be initiated by simply double clicking the ISO image file. If this is not the case, the manual procedure is similar to the following instructions. Nero Burning ROM (StartSmart) is used in this example.

- Connect the external USB CD/DVD drive to the PC
- Insert a recordable CD
- Start Nero StartSmart
- Select medium „CD"
- Select „Create Data CD"
- From the **Files menu**, open file **SMCVB_5.20.043.49.iso**
- Click "Burn"
- When finished, close Nero and disconnect external USB CD/DVD drive

Install new firmware on R&S®SMCV100B

- Instrument must be switched off
- Connect the external USB CD/DVD drive to the R&S®SMCV100B
- Switch on Instrument
- The instrument boots from external drive
- Follow the instructions on screen
- Disconnect the external USB device
- Reboot instrument
- Execute internal adjustments, if indicated

NOTICE

If the CD refuses to boot please ensure that you have burned the ISO-image as an "image" and not as a single file. Check the CD regarding presence of several files.

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:

Bild 4-1: QR code to the Rohde & Schwarz support page