

# R&S®SMCV100B

## Release Notes 4.90.002.26

**Firmware Version 4.90.002.26**

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1432.9310.00 | Version 03 | R&S®SMCV100B |

The software makes use of several valuable open source software packages. For information, see the "Open Source Acknowledgment" provided with the product.

The following abbreviations are used throughout this document: R&S®SMCV100B is abbreviated as R&SSMCV100B

PA0-TM-3574\_3288\_02/04\_00/CI/EN

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# 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.

## 1.1 Version 4.90.002.26

Released March 2021

### Firmware package contents

| New Functionality   |        |
|---|--------|
| <b>5GNR: General: First version to support option K470 5G NR Sidelink</b>                       | 739208 |
| <b>Digital IQ HS: BBin/BBout sample rate always 300 MHz (no dependency to K521, K522, K523)</b> | 728052 |
| <b>FM Audio: .wv files supported by audioplayer</b>   | 727148 |
| <b>FM Audio: Audioplayer: Sample rate is shown in file info</b>                                 | 792206 |
| <b>General: SSH / SCP is disabled for security reasons</b>                                      | 814246 |
| <b>Option: SMCVB-K200 Waveform Package supported</b>  | 710753 |
| <b>Option: SMCVB-KV20 China Digital Radio waveforms supported</b>                               | 764414 |
| <b>RF: Descriptions of RF error messages updated</b>  | 646975 |
| <b>RF: External 13 MHz reference frequency supported</b>  | 781391 |
| Fixed Issues  |        |
| <b>ARB: RMS/Peak of waveform considered in level calculation of output path</b>                 | 786138 |

|   |        |
|---|--------|
| <b>ATSC 3.0: TS Player: Files are not played from the beginning after Reset Window or after Select other file</b> | 804240 |
| <b>Baseband: Sporadic crash if baseband is activated</b>  | 729523 |
| <b>Custom DigMod: Dependency of sample rate to bandwidth option improper handled</b>                              | 728027 |
| <b>Custom DigMod: Playing Data Lists functional</b>   | 762501 |
| <b>Digital IQ HS: BBin leveling issue after switching back from internal baseband resolved</b>                    | 741959 |
| <b>Digital IQ HS: BBin supports R&amp;S®IQW as signal source</b>  | 776838 |
| <b>Digital IQ HS: BBin to BBout bandwidth not limited by bandwidth options</b>                                    | 739245 |
| <b>Digital IQ HS: BBout cannot be activated via SCPI command without SMCVB-K19</b>                                | 731143 |
| <b>Digital IQ HS: BBout improper level setting</b>  | 719417 |
| <b>External frequency sweep: Possible firmware freeze by switching between plug-ins</b>                           | 723094 |
| <b>Frequency setting: First increment step by UI entry uses wrong value</b>                                       | 726278 |
| <b>Level: Maximum level is not correct at certain frequency for signals with high crest factor</b>                | 802483 |
| <b>NRP support: Problems by scanning for sensor</b>   | 726851 |
| <b>Option: DRM option not recognized at GUI</b>   | 803134 |
| <b>Option: SMCVB-K242 option dependency revised</b>   | 726831 |
| <b>Option: SMCVB-K283, K286, K287, K446 option dependency revised</b>   | 728695 |
| <b>Option: SMCVB-K407 option entry in product definition corrected</b>  | 779880 |
| <b>RF: Sporadic Lo2 PLL unlocks resolved</b>  | 794136 |
| <b>Sweep: Operation of learned list in Run Mode not supported</b>   | 728277 |

#### Known Issues

|  |        |
|--|--------|
| <b>Digital IQ HS: Common support of R&amp;S IQW</b>                      | 812769 |
| <b>Level: Unexpected high power level at the end of a RF level sweep</b> | 787648 |
| <b>TS Player: Query :TSGen:CONFigure:COMMand? does not work</b>          | 812834 |

## 1.2 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

|  |        |
|--|--------|
| <b>AWGN: Bandwidth coupling for ATSC 3.0 not supported</b>   | 725709 |
| <b>Custom DigMod: Dependency of sample rate to bandwidth option improper handled</b>                                     | 728027 |
| <b>Digital I/Q Output: improper level setting</b>  | 719417 |
| <b>DVB-S2: Very low symbol rates not supported (&lt;0.25 MS/s)</b>   | 724520 |
| <b>External frequency sweep: Possible firmware freeze by switching in between plug-ins</b>                               | 723094 |
| <b>Frequency setting: First increment step by UI entry uses wrong value</b>  | 726278 |
| <b>IP Data Input: Sporadic packet loss problems by RTP usage</b>   | 724612 |
| <b>Level Sweep: Interruptions in case of using instrument trigger mode</b>   | 725485 |
| <b>List is not played if Run Mode is Learned</b>   | 728277 |
| <b>NRP support: Problems by scanning for sensor</b>  | 726851 |
| <b>Reference Frequency Output 10 MHz: rare initializing problems</b>   | 707077 |
| <b>Reference Frequency: RF Output deactivation not working by using deactivation setting in reference frequency mode</b> | 726299 |
| <b>System: Factory preset causes restart</b>   | 727192 |
| <b>Trigger: Not active in case of not present baseband plug-in</b>   | 724847 |
| <b>TS Player: Extended switching time from TRP to ETI streams</b>  | 721094 |
| <b>Sweep: Operation of learned list in Run Mode not supported</b>  | 728277 |

### 1.3 Version 4.70.060.47

Released: April 2020

## Contents

## R&amp;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-K511            | ARB memory extension to 512 MSample        |
| SMCVB-K512            | ARB memory extension to 1 GSsample         |
| 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                                   |
| 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                                  |
| 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   | Glomass 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-K442   | IEEE 802.11ax                        |
| 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       |
| 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

**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  |             |
|-----------------|-------------|
| Package         | Version     |
| Factory Version | 4.90.002.03 |
| Min. Version    | 4.70.176.35 |

- ▶ 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\_4.90.002.26.rsu

**Hardware:** USB memory stick with enough free space to save the update file (about 200 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  on the instrument front panel.
- Press , 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\_4.90.002.26.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\_4.90.002.26.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\_4.90.002.26.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

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**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.

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## 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](http://www.rohde-schwarz.com/support) or follow this QR code:



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