R&S®SMCVB-KV13
HD Radio™ Waveforms
User Manual

1179278302
Version 04

ROHDE&SCHWARZ
Make ideas real

This document describes the following software option:

- R&S®SMCVB-KV13 HD Radio™ Waveforms (1434.5434.xx)

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

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1 Welcome to the R&S SMCVB-KV13 option

The R&S SMCVB-KV13 is a waveform library that provides waveform files in accordance with HD Radio™ Technology.

This user manual contains a reference description of the functionality that the waveform library provides. All functions not discussed in this manual are described in the R&S SMCV100B user manual. The latest version is available at:

www.rohde-schwarz.com/manual/SMCV100B

1.1 Key features

The R&S SMCVB-KV13 features:

- Numerous waveform files in accordance with HD Radio™ Technology
- Efficient use with dedicated waveforms

1.2 Installation

Installation of the waveform library and playing of HD Radio™ waveforms does not require additional licensing at the license holder. The option R&S SMCVB-KV13 already provides licensed HD Radio™ waveforms.

Required options

The equipment layout for processing files of waveform libraries includes:

- R&S SMCV100B base unit, including arbitrary waveform generator (64 MSample ARB memory, 60 MHz RF bandwidth)
- Waveform library option (R&S SMCVB-KVxx)

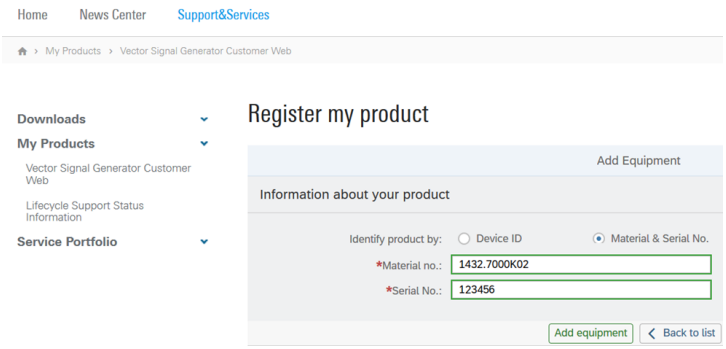
For more information on ARB options, see chapter "Using the arbitrary waveform generator (ARB)" in the R&S SMCV100B user manual.

To access R&S SMCV100B libraries

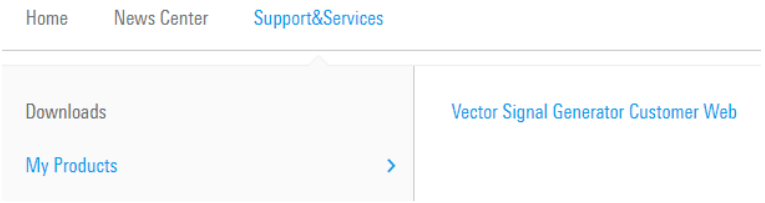
R&S SMCV100B stream and waveform libraries are available for download for registered users on the "Vector Signal Generator Customer Web" at the global Rohde & Schwarz information system (GLORIS).

1. For access, register at https://gloris.rohde-schwarz.com:
   In section "How to register", follow the instructions provided in the introduction video "How to register for GLORIS".
2. For access to the "Vector Signal Generator Customer Web", register the R&S SMCV100B:
   a) In the menu "Support&Services", select "My Products" > "Register my product".

b) To register the R&S SMCV100B, click "Add Equipment".
c) In the section "Information about your product", specify order number ("Material no.") and serial number ("Serial No.") of the R&S SMCV100B.



3. After product registration, log in at GLORIS.
4. In the menu bar, select "Support&Services > My Products > Vector Signal Generator Customer Web".



The "R&S SMCV100B Customer Web" page opens.

5. In the selection field "Product Selection for VSG", select "R&S®SMCV100B".

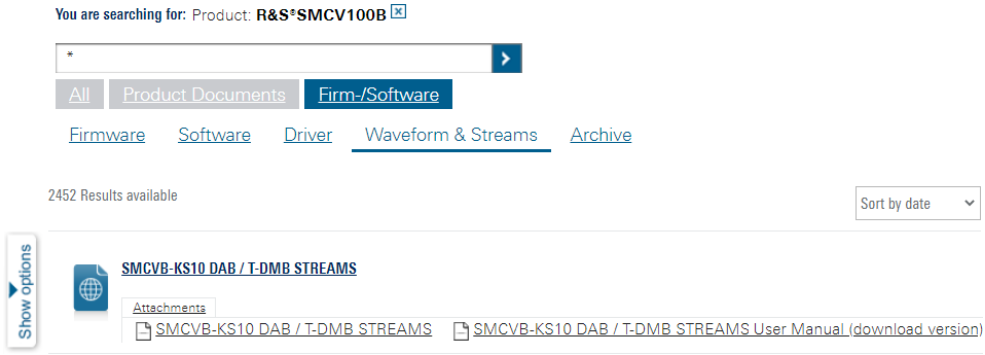
A webpage opens and displays search results for products related to the R&S SMCV100B.

To download a library file

This procedure describes how to download library files. It provides a step-by-step description for download of a stream library file. The download of waveform library files is analogous.

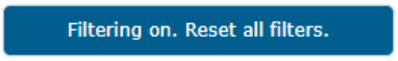
1. Access the "Product Related Documents" web page as described in "To access R&S SMCV100B libraries" on page 5.
2. In the search navigation bar, select "Firm-/Software" > "Waveform & Streams".

   The search lists all information related to stream and waveform libraries of the R&S SMCV100B:
   - R&S SMCVB-KSxx results relate to stream libraries.
   - R&S SMCVB-KVxx results relate to waveform libraries.

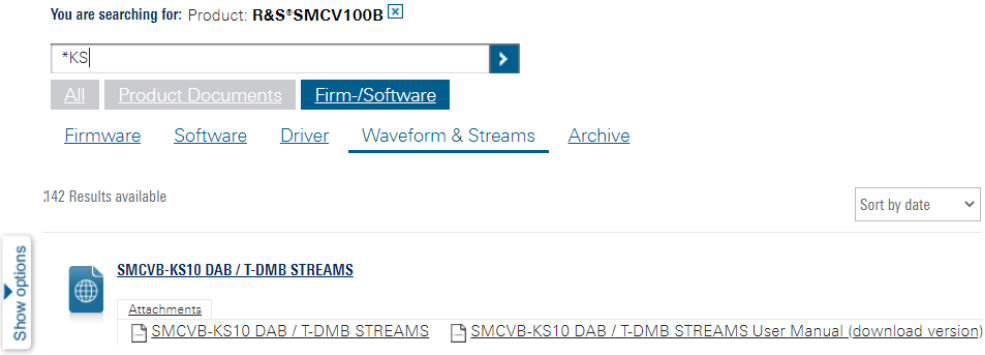


3. Optionally, deactivate the filtering to display all waveform and stream library content.

   a) On the left menu, select "Show options".
   b) Click "Filtering on. Reset all filters.".



4. Optionally, to filter for stream library content enter **KS* in the search input field.



5. In the search result list, navigate to the required library.
6. To download required library files, click the download link in the "Attachments" section of library product page.

For example, for DAB/T-DMB streams, click the download link "R&S SMCVB-KS10 DAB / T-DMB STREAMS".

A download dialog opens to select and save files of the stream library.

To save a library file

You can save the library file to several storage locations:

- External storage device (HDD, memory stick): Use external USB storage device to save large files or complete libraries. Connect the storage device to one of the USB 3.0 connectors on the rear panel of the R&S SMCV100B. If detected correctly, you can access the files on the R&S SMCV100B in the `/usb/` directory in file-select dialogs.
  The R&S SMCV100B supports the following storage formats: ext2/ext3/ext4, FAT16/FAT32, NTFS (read-only), ISO9660, UDF
- Internal memory (SSD): Use the internal memory to save single files to the user directory `/var/user/` of the R&S SMCV100B, for example, using FTP via a LAN connection.

To load and play a waveform library file

1. Load the waveform file from its storage location:
   - External storage device (HDD, memory stick): Load the file from the `/usb/` directory.
   - Internal memory (SSD): Load the file from the user directory `/var/user/`

   Note: Library files are encrypted files. Loading the library file at the R&S SMCV100B requires installation of the corresponding library option. See "Required options" on page 5.
2. To load the file at the R&S SMCV100B, select the file in the dialog "Baseband" > "ARB" > "Load Waveform".
3. To select the file, navigate to the storage location (1).
4. Select "ARB" > "State" > "On".

   The R&S SMCV100B processes the waveform file.
5. In the block diagram, select "RF" > "On"

   The waveform file is modulated onto the RF carrier and output at the RF 50 Ω connector.

For more information on loading waveform files, see chapter "How to create, generate and play waveform files" in the R&S SMCV100B user manual.

1.3 What's new

Compared to the previous version the documentation provides updated installation instructions to access, download and play waveform library files, see Chapter 1.2, "Installation", on page 5.

1.4 Documentation overview

This section provides an overview of the R&S SMCV100B user documentation. Unless specified otherwise, you find the documents at:

www.rohde-schwarz.com/manual/smcv100b

1.4.1 Getting started manual

Introduces the R&S SMCV100B and describes how to set up and start working with the product. Includes basic operations, typical measurement examples, and general information, e.g. safety instructions, etc. A printed version is delivered with the instrument.

1.4.2 User manuals and help

Separate manuals for the base unit and the software options are provided for download:

- Base unit manual
  Contains the description of all instrument modes and functions. It also provides an introduction to remote control, a complete description of the remote control commands with programming examples, and information on maintenance, instrument interfaces and error messages. Includes the contents of the getting started manual.
- Software option manual
  Contains the description of the specific functions of an option. Basic information on operating the R&S SMCV100B is not included.

The contents of the user manuals are available as help in the R&S SMCV100B. The help offers quick, context-sensitive access to the complete information for the base unit and the software options.

All user manuals are also available for download or for immediate display on the Internet.

1.4.3 Service manual

Describes the performance test for checking compliance with rated specifications, firmware update, troubleshooting, adjustments, installing options and maintenance.

The service manual is available for registered users on the global Rohde & Schwarz information system (GLORIS):

https://gloris.rohde-schwarz.com

1.4.4 Instrument security procedures

Deals with security issues when working with the R&S SMCV100B in secure areas. It is available for download on the internet.

1.4.5 Printed safety instructions

Provides safety information in many languages. The printed document is delivered with the product.

1.4.6 Data sheets and brochures

The data sheet contains the technical specifications of the R&S SMCV100B. It also lists the options and their order numbers and optional accessories.

The brochure provides an overview of the instrument and deals with the specific characteristics.

See www.rohde-schwarz.com/brochure-datasheet/smcv100b

1.4.7 Release notes and open source acknowledgment (OSA)

The release notes list new features, improvements and known issues of the current firmware version, and describe the firmware installation.

The software makes use of several valuable open source software packages. An open-source acknowledgment document provides verbatim license texts of the used open source software.

See www.rohde-schwarz.com/firmware/smcv100b

1.4.8 Application notes, application cards, white papers, etc.

These documents deal with special applications or background information on particular topics.

See www.rohde-schwarz.com/application/smcv100b

1.4.9 Videos

Find various videos on Rohde & Schwarz products and test and measurement topics on YouTube: https://www.youtube.com/@RohdeundSchwarz

2 Available waveform files

The R&S SMCVB-KV13 waveform library contains three folders with the available waveform files. For details on the waveform files, contact iBiquity Digital Corporation.

- AM folder 11
- CC folder 13
- FM folder 16

2.1 AM folder

Contains the following waveform files, listed in alphabetical order:

IB_AM_e1_awgn.wv

IB_AM_e1a_CW_dc.wv

IB_AMr001_e1_cw_0_m10.wv

IB_AMr001_e1_cw_2_6.wv

IB_AMr001_e1_cw_m1_m2.wv

IB_AMr001_e1_cw_m30_0_30.wv

IB_AMr001_e1_cw_m7p5_10.wv

IB_AMr201_e1awfc52.wv

IB_AMr201_e1awfr1190.wv

IB_AMr208_e1awfa05.wv

IB_AMr208_e1awfa07.wv

IB_AMr208_e1awfa10.wv

IB_AMr208_e1awfb01.wv

IB_AMr208_e1awfb02.wv

IB_AMr208_e1awfb03.wv

IB_AMr208_e1awfb04.wv

IB_AMr208_e1awfb05.wv

IB_AMr208_e1awfb102.wv

IB_AMr208_e1awfb104.wv

IB_AMr208_e1awfb111.wv

IB_AMr208_e1awfb113.wv

IB_AMr208_e1awfb119.wv

IB_AMr208_e1awfb121.wv

IB_AMr208_e1awfb124.wv
IB_AMr208_e1awfb126.wv
IB_AMr208_e1awfb128.wv
IB_AMr208_e1awfb130.wv
IB_AMr208_e1awfb131.wv
IB_AMr208_e1awfb132.wv
IB_AMr208_e1awfb134.wv
IB_AMr208_e1awfb135.wv
IB_AMr208_e1awfb145.wv
IB_AMr208_e1awfb243.wv
IB_AMr208_e1awfc00.wv
IB_AMr208_e1awfc04.wv
IB_AMr208_e1awfc06.wv
IB_AMr208_e1awfc08.wv
IB_AMr208_e1awfc10.wv
IB_AMr208_e1awfc11.wv
IB_AMr208_e1awfc19.wv
IB_AMr208_e1awfc20.wv
IB_AMr208_e1awfc23.wv
IB_AMr208_e1awfc24.wv
IB_AMr208_e1awfc26.wv
IB_AMr208_e1awfc27.wv
IB_AMr208_e1awfc29.wv
IB_AMr208_e1awfc30.wv
IB_AMr208_e1awfc31.wv
IB_AMr208_e1awfc32.wv
IB_AMr208_e1awfr1221.wv
IB_AMr208_e1awfr1249.wv
IB_AMr208_e1awfr1260.wv
IB_AMr208a_e1awfb00.wv
IB_AMr208a_e1awfb138.wv
IB_AMr208a_e1awfc33.wv
IB_AMr208a_e1awfc34.wv

IB_AMr208b_e1awf1123.wv

IB_AMr208c_e1awf1124.wv

IB_AMr208c_e1awfa11.wv

IB_AMr220_e1awfc28.wv

IB_AMr230_e1awfr1005.wv

IB_AMr230_e1awfr1187.wv

IB_AMr230_e1awfr1261.wv

IB_AMr230a_e1awfr1001.wv

IB_AMr230a_e1awfr1002.wv

IB_AMr230b_e1awfc102.wv

IB_AMr230d_e1awfr12.wv

IB_AMr430_e1wfr1016.wv

IB_AMr430_e1wfr1017.wv

IB_AMr430_e1wfr1018.wv

IB_AMr430_e1wfr1019.wv

IB_AMr430_e1wfr1020.wv

IB_AMr430_e1wfr1021.wv

IB_AMr430_e1wfr1022.wv

IB_AMr430_e1wfr1023.wv

IB_AMr430_e1wfr1024.wv

IB_AMr430_e1wfr1025.wv

IB_AMr430_e1wfr1026.wv

IB_AMr430_e1wfr1027.wv

IB_AMr430_e1wfr1028.wv

IB_AMr440_e1wfr1116.wv

IB_AMr440_e1wfr1117.wv

2.2 CC folder

Contains the following waveform files, listed in alphabetical order:

CC_TTN_FMr440a_e1wfr001.wv

CC_TTN_FMr440a_e1wfr002.wv

CC_TTN_FMr440a_e1wfr003.wv

CC_TTN_FMr440a_e1wfr004.wv
CC_TTN_FMr440a_e1wfr005.wv
CC_TTN_FMr440a_e1wfr006.wv
CC_TTN_FMr440a_e1wfr007.wv
CC_TTN_FMr440a_e1wfr008.wv
CC_TTN_FMr440a_e1wfr009.wv
CC_TTN_FMr440a_e1wfr010.wv
CC_TTN_FMr440a_e1wfr011.wv
CC_TTN_FMr440a_e1wfr012.wv
CC_TTN_FMr440a_e1wfr013.wv
CC_TTN_FMr440a_e1wfr014.wv
CC_TTN_FMr440a_e1wfr015.wv
CC_TTN_FMr440a_e1wfr016.wv
CC_TTN_FMr440a_e1wfr017.wv
CC_TTN_FMr440a_e1wfr018.wv
CC_TTN_FMr440a_e1wfr019.wv
CC_TTN_FMr440a_e1wfr019b.wv
CC_TTN_FMr440a_e1wfr020.wv
CC_TTN_FMr440a_e1wfr020b.wv
CC_TTN_FMr440a_e1wfr021.wv
CC_TTN_FMr440a_e1wfr022.wv
CC_TTN_FMr440a_e1wfr023.wv
CC_TTN_FMr440a_e1wfr024.wv
CC_TTN_FMr440a_e1wfr025.wv
CC_TTN_FMr440a_e1wfr026.wv
CC_TTN_FMr440a_e1wfr027.wv
CC_TTN_FMr440a_e1wfr028.wv
CC_TTN_FMr440a_e1wfr029.wv
CC_TTN_FMr440a_e1wfr030.wv
CC_TTN_FMr440a_e1wfr031.wv
CC_TTN_FMr440a_e1wfr032.wv
CC_TTN_FMr440a_e1wfr033.wv
CC_TTN_FMr440a_e1wfr034.wv

CC_TTN_FMr440a_e1wfr035.wv
CC_TTN_FMr440a_e1wfr036.wv
CC_TTN_FMr440a_e1wfr037.wv
CC_TTN_FMr440a_e1wfr038.wv
CC_TTN_FMr440a_e1wfr039.wv
CC_TTN_FMr440a_e1wfr040.wv
CC_TTN_FMr440a_e1wfr041.wv
CC_TTN_FMr440a_e1wfr042.wv
CC_TTN_FMr440a_e1wfr043.wv
CC_TTN_FMr440a_e1wfr044.wv
CC_TTN_FMr440a_e1wfr045.wv
CC_TTN_FMr440a_e1wfr046.wv
CC_TTN_FMr440a_e1wfr047.wv
CC_TTN_FMr440a_e1wfr048.wv
CC_TTN_FMr440a_e1wfr049.wv
CC_TTN_FMr440a_e1wfr049b.wv
CC_TTN_FMr440a_e1wfr050.wv
CC_TTN_FMr440a_e1wfr050b.wv
CC_TTN_FMr440a_e1wfr051.wv
CC_TTN_FMr440a_e1wfr051b.wv
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CC_TTN_FMr440a_e1wfr056.wv
CC_TTN_FMr440a_e1wfr057.wv
CC_TTN_FMr440a_e1wfr058.wv
CC_TTN_FMr440a_e1wfr065.wv
CC_TTN_FMr440a_e1wfr070.wv
CC_TTN_FMr440a_e1wfr071.wv
CC_TTN_FMr440a_e1wfr072.wv

2.3 FM folder

Contains the following waveform files, listed in alphabetical order:

CC_FMr440_e1wfr015_HighDataRate.wv

CC_FMr440d_e1wfr011.wv

CC_FMr440d_e1wfr012.wv

CC_FMr440d_e1wfr013.wv

CC_FMr440d_e1wfr014.wv

IB_FM_e1_awgn.wv

IB_FM_e1_CW_dc.wv

IB_FMr001_e1_cw_0_100.wv

IB_FMr001_e1_cw_0_m100.wv

IB_FMr001_e1_cw_0_m200.wv

IB_FMr001_e1_cw_10_20.wv

IB_FMr001_e1_cw_50_100.wv

IB_FMr001_e1_cw_m275_0_275.wv

IB_FMr001_e1_cw_m50_0.wv

IB_FMr001_e1_cw_m80_m90.wv

IB_FMr201_e1wfc52.wv

IB_FMr201_e1wfr1189.wv

IB_FMr208_e1wfr1122.wv

IB_FMr208_e1wfr1185.wv

IB_FMr208_e1wfr1246.wv

IB_FMr208_e1wfr1247.wv

IB_FMr208_e1wfr1248.wv

IB_FMr208c_e1wfa05.wv

IB_FMr208c_e1wfa25.wv

IB_FMr208c_e1wfa98.wv

IB_FMr208c_e1wfa99.wv

IB_FMr208c_e1wfc00.wv

IB_FMr208c_e1wfc03.wv

IB_FMr208c_e1wfc08.wv

IB_FMr208c_e1wfc09.wv

IB_FMr208c_e1wfc10.wv

IB_FMr208c_e1wfc201.wv
IB_FMr208c_e1wfc203.wv
IB_FMr208c_e1wfc204.wv
IB_FMr208c_e1wfc206.wv
IB_FMr208c_e1wfc209.wv
IB_FMr208c_e1wfc210.wv
IB_FMr208c_e1wfc211.wv
IB_FMr208c_e1wfc227.wv
IB_FMr208c_e1wfc230.wv
IB_FMr208c_e1wfc27.wv
IB_FMr208c_e1wfc28.wv
IB_FMr208c_e1wfc30.wv
IB_FMr208c_e1wfc46.wv
IB_FMr208c_e1wfc546.wv
IB_FMr208c_e1wfc547.wv
IB_FMr208c_e1wfc548.wv
IB_FMr208c_e1wfc90.wv
IB_FMr208d_e1wfa141.wv
IB_FMr208d_e1wfc208.wv
IB_FMr208d_e1wfc538.wv
IB_FMr208d_e1wfc540.wv
IB_FMr208d_e1wfc542.wv
IB_FMr208d_e1wfc549.wv
IB_FMr208e_e1wfc12.wv
IB_FMr208e_e1wfc13.wv
IB_FMr208g_e1wfc94.wv
IB_FMr208i_e1wfa58.wv
IB_FMr208j_e1wfa105.wv
IB_FMr208j_e1wfa106.wv
IB_FMr208j_e1wfa107.wv
IB_FMr208j_e1wfa109.wv
IB_FMr208j_e1wfa11.wv
IB_FMr208j_e1wfc31.wv

IB_FMr208j_e1wfc89.wv
IB_FMr220_e1wfa108.wv
IB_FMr220a_e1wfc100.wv
IB_FMr220a_e1wfc101.wv
IB_FMr220a_e1wfc553.wv
IB_FMr220a_e1wfc555.wv
IB_FMr220b_e1wfr1119.wv
IB_FMr220c_e1wfr1191.wv
IB_FMr230_e1wfc14.wv
IB_FMr230_e1wfr1061.wv
IB_FMr230_e1wfr143.wv
IB_FMr230a_e1wfa153.wv
IB_FMr230a_e1wfc102.wv
IB_FMr230a_e1wfr1000.wv
IB_FMr230a_e1wfr1001.wv
IB_FMr230a_e1wfr1003.wv
IB_FMr230a_e1wfr1004.wv
IB_FMr230a_e1wfr1005.wv
IB_FMr230a_e1wfr1006.wv
IB_FMr230a_e1wfr1007.wv
IB_FMr230a_e1wfr1008.wv
IB_FMr230a_e1wfr1009.wv
IB_FMr230a_e1wfr1011.wv
IB_FMr230a_e1wfr1012.wv
IB_FMr230a_e1wfr1013.wv
IB_FMr230a_e1wfr1037.wv
IB_FMr230b_e1wfr1002.wv
IB_FMr230b_e1wfr1010.wv
IB_FMr230b_e1wfr1024.wv
IB_FMr230c_e1wfd204.wv
IB_FMr230c_e1wfr1022.wv
IB_FMr230c_e1wfr1032.wv
IB_FMr230d_e1wfa78.wv

IB_FMr230d_e1wfr1025.wv

IB_FMr230f_e1wfr1023.wv

IB_FMr430_e1wfr1070.wv

IB_FMr430_e1wfr1071.wv

IB_FMr430_e1wfr1072.wv

IB_FMr430_e1wfr1073.wv

IB_FMr430_e1wfr1074.wv

IB_FMr430_e1wfr1075.wv

IB_FMr430_e1wfr1080.wv

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