R&S®SMCV100B
VECTOR SIGNAL GENERATOR

Specifications in brief
and ordering information

ROHDE & SCHWARZ

Make ideas real

BENEFITS

First multistandard platform for automotive, broadcast, navigation and wireless applications

- ► Modern RF signal generation concept
  - 4 kHz up to 7.125 GHz
  - Direct RF upconversion up to 2.5 GHz
  - Modulation bandwidth up to 240 MHz
- ► Powerful internal baseband generator
  - Real-time broadcast coder
  - Custom digital modulation
  - Internal baseband signal generation with ARB
- ► I/Q streaming capabilities
  - Playback of long I/Q sequences from solid state disk drive for EMC testing
- ► Support of R&S®WinIQSIM2 waveform generation
  - Wireless standards such as 5G NR, LTE, non-cellular IoT, Wi-Fi® (IEEE 802.11)
  - Navigation standards for functional Go/NoGo tests and predefined position fix tests

Maximum flexibility in production

- ► From functional end-of-line testing (EOLT) to application-specific device software testing
- ► Temporary and transferable software licenses
- ► Fully software defined signal generation for easy upgrading at customer site
- ► Standardization of production lines with a single vector signal generator
- ► Minimizes downtime of production lines

User friendly in every detail

- ► Half a rack size, great performance, leading operating concept with block diagrams
- ► 5" touch display (800 × 480 pixel) in a 2 HU instrument
- ► SCPI macro recorder

R&S®LegacyPro: refresh your technology

- ► Remote compatibility and emulation of the R&S®SFE100 broadcast signal generator

SPECIFICATIONS IN BRIEF

Specifications in brief		
Frequency range	with R&S®SMCVB-B103 option (mandatory)	4 kHz to 3 GHz
	with R&S®SMCVB-B103 and R&S®SMCVB-KB106 options	4 kHz to 6 GHz
	with R&S®SMCVB-B103, R&S®SMCVB-KB106 and R&S®SMCVB-KB107 options	4 kHz to 7.125 GHz
Specified level range	peak envelope power (PEP)	
R&S®SMCVB-B103/-KB106/-KB107	standard	
	4 kHz < f ≤ 10 MHz	−110 dBm to +15 dBm
	10 MHz < f ≤ 6 GHz	−127 dBm to +15 dBm
	6 GHz < f ≤ 7.125 GHz	−127 dBm to +15 dBm
	with R&S®SMCVB-K31 option	
	4 kHz < f ≤ 10 MHz	−110 dBm to +20 dBm
	10 MHz < f ≤ 6 GHz	−127 dBm to +20 dBm
	6 GHz < f ≤ 7.125 GHz	−127 dBm to +18 dBm
Spectral purity		
SSB phase noise	standard, without R&S®SMCVB-K709 option; carrier offset = 20 kHz, measurement bandwidth 1 Hz, level = +10 dBm	
	f = 100 MHz	< −110 dBc
	f = 1 GHz	< −100 dBc
	f = 2 GHz	< −100 dBc
	f = 2.5 GHz	< −100 dBc
	2.5 GHz < f ≤ 7.125 GHz	< −95 dBc
Harmonics	CW, I/Q mode (full-scale internal single carrier signal), level ≤ 13 dBm	
	1 MHz < f ≤ 6 GHz	< −30 dBc
Nonharmonics	CW, level > +10 dBm, > 10 kHz offset from carrier and outside the modulation spectrum, internal reference frequency	
	f ≤ 2.5 GHz	< −55 dBc, −60 dBc (typ.)
	2.5 GHz < f ≤ 7.125 GHz	< −55 dBc, −70 dBc (typ.)
Analog modulation	supported analog modulation modes	
	with R&S®SMCVB-K197	AM/FM/φM
	with R&S®SMCVB-K198	PM
I/Q modulation		
RF modulation bandwidth	standard	60 MHz
	R&S®SMCVB-K521	120 MHz
	R&S®SMCVB-K522	160 MHz
	R&S®SMCVB-K523	240 MHz
Baseband signal sources		
ARB waveform generator	standard	1 sample to 64 Msample
	with R&S®SMCVB-K511 option	1 sample to 512 Msample
	with R&S®SMCVB-K512 option	1 sample to 1 Gsample
TS player	file format	TRP, BIN, ETI, T2MI
Broadcast standards	the options are described in the Broadcast Standards specifications (PD 3608.3990.22)	AM, FM RDS/RDBS/DARC, DAB/DAB+, DRM, ATSC 3.0, ATSC-M/H, ATSC/8VSB, DTMB, DVB-T2, DVB-T/H, ISDB-T EEW, ISDB-T$_{SB}$, DVB-S, DVB-S2, DVB-S2X
Digital standards	the options are described in the Digital Standards specifications (PD 5213.9434.22)	5G NR, cellular IoT, LTE Release 8-14, 3GPP FDD HSPA/HSPA+, GSM, WLAN IEEE 802.11a/b/g/n/j/p/ac/ax, AWGN and furthers
GNSS	the options are described in the GNSS and Avionics specifications (PD 3607.6896.22)	GPS, Galileo, GLONASS, BeiDou
Noise generator	AWGN with R&S®SMCVB-K62	−50 dB to +65 dB
	system bandwidth depending on option	60 MHz, 120 MHz, 160 MHz, 240 MHz

Specifications in brief		
Power rating	rated voltage	100 V to 240 V AC (± 10%)
	rated frequency	50 Hz to 60 Hz (± 5%)
	rated current	3.6 A to 1.5 A
	rated power	110 W (measured)
	standby	< 2 W
Dimensions	W × H × D	222 mm × 97 mm × 366 mm (8.74 in × 3.82 in × 14.41 in), 1/2 19", 2 HU
Weight		4.7 kg (10.36 lb)

ORDERING INFORMATION

Designation	Type	Order No.
Base unit		
Vector signal generator [1] including baseband generator with ARB (64 Msample, 60 MHz RF bandwidth), power cable and quick start guide	R&S®SMCV100B	1432.7000.02
Options		
R&S®SMCV-Bxxx = hardware option, R&S®SMCV-Kxxx = software/keycode option		
Frequency options		
4 kHz to 3 GHz	R&S®SMCVB-B103	1433.2002.02
Frequency extension to 6 GHz	R&S®SMCVB-KB106	1433.2202.02
Frequency extension to 7.125 GHz	R&S®SMCVB-KB107	1433.2402.02
RF options		
High output power	R&S®SMCVB-K31	1434.4115.02
Low phase noise	R&S®SMCVB-K709	1434.3590.02
Baseband		
Digital baseband interface	R&S®SMCVB-K19	1434.4073.02
ARB memory extension to 512 Msample	R&S®SMCVB-K511	1434.3519.02
ARB memory extension to 1 Gsample	R&S®SMCVB-K512	1434.3531.02
ARB waveform streaming	R&S®SMCVB-K505	1434.5328.02
Baseband enable broadcast standards	R&S®SMCVB-K519	1434.3690.02
Baseband extension to 120 MHz RF bandwidth	R&S®SMCVB-K521	1434.3554.02
Baseband extension to 160 MHz RF bandwidth	R&S®SMCVB-K522	1434.3577.02
Baseband extension to 240 MHz RF bandwidth	R&S®SMCVB-K523	1434.4050.02
Baseband enhancements		
Additive white Gaussian noise (AWGN)	R&S®SMCVB-K62	1434.3654.02
Improved modulation frequency response	R&S®SMCVB-K547	1434.4138.02
Crest factor reduction	R&S®SMCVB-K548	1434.5640.02
AM/AM, AM/φM	R&S®SMCVB-K197	1434.3619.02
Pulse modulation	R&S®SMCVB-K198	1434.3631.02
Custom digital modulation	R&S®SMCVB-K199	1434.3990.02
Digital standards [2]		
AM/FM /RDS/DARC	R&S®SMCVB-K155	1434.3719.02
DAB/T-DMB	R&S®SMCVB-K156	1434.3731.02
DRM	R&S®SMCVB-K160	1434.3819.02
ATSC/ATSC-MH	R&S®SMCVB-K161	1434.3831.02
ATSC 3.0	R&S®SMCVB-K162	1434.3854.02

[1] The base unit can only be ordered with an R&S®SMCV-B103 frequency option.
[2] Requires R&S®SMCV-K519 option.

Designation	Type	Order No.
DVB-T	R&S®SMCVB-K163	1434.3877.02
DVB-T2	R&S®SMCVB-K164	1434.3890.02
ISDB-T/T$_{SB}$	R&S®SMCVB-K165	1434.3919.02
DTMB	R&S®SMCVB-K166	1434.3931.02
DVB-S/DVB-S2	R&S®SMCVB-K167	1434.3954.02
DVB-S2X	R&S®SMCVB-K168	1434.3977.02
Digital standards using R&S®WinIQSIM2 [3]		
Cellular standards		
GSM/EDGE	R&S®SMCVB-K240	1434.4150.02
EDGE Evolution	R&S®SMCVB-K241	1434.4173.02
3GPP FDD	R&S®SMCVB-K242	1434.4196.02
CDMA2000®	R&S®SMCVB-K246	1434.4238.02
1xEV-DO Rev. A	R&S®SMCVB-K247	1434.4250.02
TD-SCDMA	R&S®SMCVB-K250	1434.4273.02
TD-SCDMA enhanced BS/MS tests	R&S®SMCVB-K251	1434.4296.02
EUTRA/LTE	R&S®SMCVB-K255	1434.4373.02
3GPP FDD HSPA/HSPA+, enhanced BS/MS tests	R&S®SMCVB-K283	1434.4473.02
EUTRA/LTE Release 9 and enhanced features	R&S®SMCVB-K284	1434.4496.02
EUTRA/LTE Release 10 (LTE-Advanced)	R&S®SMCVB-K285	1434.4515.02
1xEV-DO Rev. B	R&S®SMCVB-K287	1434.4550.02
LTE Release 11 and enhanced features	R&S®SMCVB-K412	1434.4650.02
EUTRA/LTE Release 12	R&S®SMCVB-K413	1434.4673.02
Cellular IoT	R&S®SMCVB-K415	1434.4738.02
Verizon 5GTF signals	R&S®SMCVB-K418	1434.4773.02
LTE Release 13 and 14	R&S®SMCVB-K419	1434.4796.02
Cellular IoT enhancements	R&S®SMCVB-K443	1434.4850.02
5G NR	R&S®SMCVB-K444	1434.4873.02
Cellular IoT Release 15	R&S®SMCVB-K446	1434.5705.02
Wireless connectivity standards		
IEEE802.11 (a/b/g/n/j/p)	R&S®SMCVB-K254	1434.4350.02
Bluetooth® EDR	R&S®SMCVB-K260	1434.4396.02
IEEE802.11ac	R&S®SMCVB-K286	1434.4538.02
Bluetooth® 5.0	R&S®SMCVB-K417	1434.4750.02
LORA	R&S®SMCVB-K431	1434.4815.02
IEEE802.11 ax	R&S®SMCVB-K442	1434.4838.02
Navigation standards		
GPS (1 satellite)	R&S®SMCVB-K244	1434.4215.02
Galileo (1 satellite)	R&S®SMCVB-K266	1434.4450.02
GLONASS (1 satellite)	R&S®SMCVB-K294	1434.4596.02
NavIC/IRNSS (1 satellite)	R&S®SMCVB-K297	1434.5734.02
Modernized GPS	R&S®SMCVB-K298	1434.4615.02
BeiDou	R&S®SMCVB-K407	1434.4638.02
Modernized BeiDou, (1 satellite)	R&S®SMCVB-K432	1434.5740.02
Broadcast standards		
DVB-H/DVB-T	R&S®SMCVB-K252	1434.4315.02
DAB/T-DMB	R&S®SMCVB-K253	1434.4338.02
DVB-S2/DVB-S2X	R&S®SMCVB-K416	1434.4715.02
Other standards and modulation systems		
Multicarrier CW signal generation	R&S®SMCVB-K261	1434.4415.02
Additive white Gaussian noise (AWGN)	R&S®SMCVB-K262	1434.4438.02
NFC A/B/F	R&S®SMCVB-K289	1434.4573.02
OFDM signal generation	R&S®SMCVB-K414	1434.4696.02

[3] R&S®WinIQSIM2 requires an external PC.

Designation	Type	Order No.
Other options		
1000BASE-T copper SFP transceiver	R&S®ERST.2	3627.0570.00
Cable for HS digital I/Q interface, optical cable, length: 3 m	R&S®DIGIQ-HS	3641.2948.03
Recommended extras		
19" rack adapter, 2 HU, for one or two instruments	R&S®HZN96	3638.7813.02
USB serial adapter for RS-232 remote control	R&S®TS-USB1	6124.2531.00
Documentation of calibration values	R&S®DCV-2	0240.2193.18
R&S®SMCV100B accredited calibration (ISO 17025, ISO 9000)	R&S®ACASMCV100	3598.5600.03

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