

ROHDE & SCHWARZ

SMBV100B

The Rohde & Schwarz SMBV100B is a high-performance vector signal generator designed to deliver outstanding RF characteristics, high output power, and excellent signal purity. With its internal baseband generator supporting up to 500 MHz modulation bandwidth, the SMBV100B is ideal for demanding research and development, production, and aerospace applications.

SPECIFICATIONS

Frequency

Minimum Frequency	8 kHz Hz
Maximum Frequency	6 GHz (option-dependent) Hz
Frequency Resolution	0.01 Hz

Output

Maximum Output Power	+18 dBm (standard) dBm
Output Power Range	-120 dBm to +18 dBm
Phase Noise	<-126 dBc/Hz (typ. -134 dBc/Hz) at 1 GHz carrier, 20 kHz offset

Modulation

Modulation	AM, FM, Phase (ϕ M), Pulse, Vector I/Q (ASK, FSK, PSK, QAM)
Sweep Modes	Frequency, Level, LF
Internal Audio Generator Waveforms	Sine, square, pulse, triangle, trapezoid
Internal Audio Generator Frequency Range	0.1 Hz to 1 MHz (sine)

General

Reference Oscillator	10 MHz (standard); OCXO (optional)
Interfaces	LAN (Gigabit Ethernet), USB 2.0, GPIB (optional)
Display	5-inch color touchscreen, 800 x 480 pixels
Calibration Interval	3 years (recommended)
Warm-Up Time	30 min
Operating System	Linux

Physical

Power Supply	100 V to 240 V AC, 50 Hz to 60 Hz / 400 Hz
Dimensions (W×H×D)	344 mm × 112 mm × 368 mm mm
Weight	6.9 kg kg

Frequency Specifications

Frequency switching speed	< 1.2 ms (ALC on, I/Q off)
Internal reference aging rate	1 x 10 ⁻⁶ per year (standard), 1 x 10 ⁻⁷ per year (with B1 option)
Internal reference temperature stability	1 x 10 ⁻⁶ (0°C to 50°C, standard), 1 x 10 ⁻⁸ (with B1 option)
External reference input frequency	1 MHz to 100 MHz
External reference input amplitude	0 dBm to 16 dBm

Amplitude Specifications

Minimum output power	-120 dBm (standard, settable to -145 dBm with option K22)
Amplitude resolution	0.01 dB
Amplitude accuracy	< 0.5 dB (f < 3 GHz, level > -110 dBm)
Output voltage VSWR	< 1.5 (f < 3 GHz)
Attenuator type	Electronic

Spectral Purity

Harmonics	<-30 dBc (level ≤ 8 dBm)
Non-harmonics	<-70 dBc (carrier 375 MHz to 750 MHz, offset > 10 kHz)
Broadband noise floor	<-140 dBc/Hz (at 15 MHz offset, f = 1 GHz)

Vector Modulation and Baseband

Internal Baseband Generator Bandwidth	120 MHz (standard), up to 500 MHz (with options)
Arbitrary Waveform Memory Depth	64 Msample (standard), up to 1 Gsample (with options)
Waveform sampling rate	up to 600 MHz (with 500 MHz bandwidth option)
Digital-to-Analog Converter (DAC) Resolution	16-bit
Error Vector Magnitude (EVM)	< 0.5% (WCDMA / LTE, typ.)
Adjacent Channel Power Ratio (ACPR)	<-72 dB (WCDMA, test model 1, 64 DPCH, typ.)

Analog Modulation

Frequency Modulation (FM) Maximum Deviation	up to 10 MHz (at 6 GHz)
Amplitude Modulation (AM) Depth Range	0% to 100%
Amplitude Modulation (AM) Rate Range	0 Hz to 50 kHz
Pulse Modulation On/Off Ratio	> 80 dB
Pulse Modulation Minimum Pulse Width	20 ns (with option K22)

Sweep and Operating Modes

Sweep Range	Full frequency and level range
Number of Points	up to 65535

System Connectivity and Interfaces

RF Output Connector Type	N female (50 Ω)
GPIO Interface	IEEE-488 (optional, R&S®SMBVB-B105)
LAN Interface	10/100/1000Base-T (RJ-45)
External Reference Input Connector	BNC female
Reference Output Connector	BNC female

Physical and Environmental Specifications

Operating Temperature Range	0°C to +50°C
Storage Temperature Range	-40°C to +70°C
Rack Unit (RU) Height	3U

Power Requirements

Line Voltage Range	100 V to 240 V AC ($\pm 10\%$)
Line Frequency Range	50 Hz to 60 Hz / 400 Hz
Power Consumption	Typically 120 W, max. 300 W

Hardware and Software Options

R&S®SMBVB-B101	Frequency option 8 kHz to 1 GHz
R&S®SMBVB-B103	Frequency option 8 kHz to 3 GHz
R&S®SMBVB-B106	Frequency option 8 kHz to 6 GHz
R&S®SMBVB-K22	Pulse modulator option
R&S®SMBVB-K23	Pulse generator option
R&S®SMBVB-B1	OCXO reference oscillator option
R&S®SMBVB-B9	Baseband generator option
R&S®SMBVB-K512	1 Gsample ARB memory depth extension
R&S®SMBVB-K524	500 MHz RF modulation bandwidth extension

Interfaces

LXI Compliance	Version 1.5
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Inputs & Outputs

Analog I/Q Inputs Impedance	50 Ω
Analog I/Q Outputs Impedance	50 Ω
User-Configurable BNC Ports	3 (USER 1, USER 2, USER 3 on rear panel)
Pulse Input/Output BNC Connector	1 (PULSE on rear panel)

Environmental

Operating Altitude	Up to 4600 m
Storage Altitude	Up to 12000 m
Relative Humidity (Operating)	Up to 95% at +40 °C, non-condensing (complying with EN 60068-2-30)
Mechanical Resistance (Vibration)	5 Hz to 55 Hz (complying with EN 60068-2-6)

Compliance

EMC Compliance	Complies with EN 55011 (Class A) and EN 61326-1
Electrical Safety Compliance	Complies with IEC 61010-1, EN 61010-1, UL 61010-1

Options

R&S®SMBVB-K31	High Output Power option
R&S®SMBVB-K44	GPS option
R&S®SMBVB-K45	Galileo option
R&S®SMBVB-K46	GLONASS option
R&S®SMBVB-K107	BeiDou option
R&S®SMBVB-K144	5G New Radio option
R&S®SMBVB-K54	WLAN 802.11a/b/g/n option
R&S®SMBVB-K86	WLAN 802.11ac option
R&S®SMBVB-K142	WLAN 802.11ax option

TECHNOLOGY

Vector Signal Generation

APPLICATIONS

RF and Microwave Testing

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