

ROHDE & SCHWARZ

SMG

The Rohde & Schwarz SMG is a classic, high-performance analog RF signal generator designed for versatile testing applications up to 1 GHz. Offering exceptional spectral purity, fast switching speeds, and precise modulation capabilities, the SMG remains a reliable standard in laboratory and production environments.

SPECIFICATIONS

Frequency

Minimum Frequency	100 kHz Hz
Maximum Frequency	1000 MHz Hz
Frequency Resolution	1 Hz

Output

Maximum Output Power	+13 dBm (up to +19 dBm with overrange) dBm
Output Power Range	-140 dBm to +13 dBm (settable to +19 dBm)
Phase Noise	<-126 dBc/Hz (typical -131 dBc/Hz) at 20 kHz offset (500 MHz carrier)

Modulation

Modulation	AM, FM, Phase (ϕ M), Pulse (with SMG-B3 option)
Sweep Modes	Frequency sweep, RF level sweep (digital step sweep)
Internal Fixed AF Frequencies	40 Hz, 150 Hz, 300 Hz, 400 Hz, 1 kHz, 3 kHz, 6 kHz, 15 kHz
Internal AF Synthesizer Option SMG-B2 Frequency Range	10 Hz to 100 kHz
External Modulation Input Impedance	100 kOhm

General

Reference Oscillator	10 MHz crystal standard (high stability ovenized reference optional via SMG-B1)
Interfaces	GPIB (IEEE-488)
Display	Liquid crystal display (LCD) for all settings
Memory Storage	50 complete instrument settings

Physical

Power Supply	100 V / 115 V / 120 V / 200 V / 220 V / 240 V AC ($\pm 10\%$), 47 Hz to 440 Hz
Dimensions (W×H×D)	435 mm x 147 mm x 460 mm mm
Weight	16 kg kg

Frequency Specifications

Frequency Switching Speed	< 15 ms
Internal Reference Frequency	10 MHz
External Reference Input Frequency	10 MHz

Amplitude Specifications

Amplitude Resolution	0.1 dB
Output Impedance	50 Ω
Output Voltage SWR	< 1.5 (for output levels $\leq$ 0 dBm)

Spectral Purity

Harmonics	<-30 dBc (for output levels $\leq$ 10 dBm)
Non-Harmonics (Spurious)	<-70 dBc (carrier frequencies > 125 MHz, offset > 10 kHz)
Sub-harmonics	None (for carrier frequencies < 500 MHz), <-40 dBc (for carrier frequencies > 500 MHz)
Residual FM	< 2 Hz (at 500 MHz carrier, 0.3 kHz to 3 kHz bandwidth)
Residual AM	< 0.02% (0.03 to 20 kHz, RMS)
Broadband Noise	<-140 dBc/Hz (at >10 MHz offset from carrier)

Analog Modulation

AM Depth Range	0% to 99%
AM Modulation Rate Range	10 Hz to 50 kHz
AM Distortion	< 1% (at 1 kHz rate and 30% modulation depth)
FM Maximum Deviation	Up to 1600 kHz (carrier frequency dependent)
FM Modulation Rate Range	10 Hz to 100 kHz
FM Distortion	< 0.5% (at 1 kHz rate and 40 kHz deviation)
Phase Modulation Rate Range	10 Hz to 20 kHz
Internal Modulation Frequencies	40 Hz, 150 Hz, 300 Hz, 400 Hz, 1 kHz, 3 kHz, 6 kHz, 15 kHz

System Connectivity and Interfaces

RF Output Connector	N female (front panel)
External Reference Input Connector	BNC female (rear panel)
Reference Output Connector	BNC female (rear panel)

Physical and Environmental Specifications

Operating Temperature Range	0 °C to +55 °C
Storage Temperature Range	-40 °C to +70 °C
Rack Unit Height	3 RU

Power Requirements

Power Consumption	Approx. 75 VA
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Hardware and Software Options

Oven-controlled Crystal Reference Option	SMG-B1 (aging < 1 x 10 ⁻⁹ / day)
Pulse Modulator Option	SMG-B3
AF Generator Option	SMG-B2 (synthesized internal AF generator)

Protection

Overvoltage Protection Max Power	50 W (from 50 Ω source)
Overvoltage Protection Max DC Voltage	35 V

RF Output

Level Uncertainty	< 1 dB (for levels > -127 dBm)
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Sweep

Sweep Spacing	linear or logarithmic
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Reference Oscillator

External Reference Input Level	0.1 V to 2 V rms
Reference Output Level	approx. 1 V rms (into 50 Ohm)

TECHNOLOGY

RF Analog Signal Generator

APPLICATIONS

RF transmitter testing, receiver characterization, general laboratory RF testing

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.