

ROHDE & SCHWARZ

SME03/3E

The Rohde & Schwarz SME03/3E is a high-performance RF signal generator with a frequency range from 5 kHz to 3.0 GHz. This variant features digital modulation capabilities (including the SME-B3 Digital Modulation Coder option, hence the '3E' designation), making it ideally suited for testing digital mobile radio receivers. It combines traditional analog modulation (AM, FM, ϕ M, pulse) with digital formats such as GMSK, GFSK, QPSK, $\pi/4$ -DQPSK, and FSK, and is known for its excellent spectral purity, fast frequency settling times, and highly precise level control.

SPECIFICATIONS

Frequency

Minimum Frequency	5 kHz Hz
Maximum Frequency	3.0 GHz Hz
Frequency Resolution	0.1 Hz

Output

Maximum Output Power	+13 dBm (up to +19 dBm with overrange) dBm
Output Power Range	-144 dBm to +13 dBm
Phase Noise	<-116 dBc/Hz (at 20 kHz offset, 1 GHz carrier)

Modulation

Modulation	AM, FM, Phase Modulation (ϕ M), Pulse Modulation, Digital Modulation (I/Q, GMSK, GFSK, QPSK, $\pi/4$ -DQPSK, OQPSK, FSK, MSK)
Sweep Modes	RF Sweep, LF Sweep, Level Sweep

General

Reference Oscillator	10 MHz (standard crystal oscillator; high-stability oven-controlled crystal oscillator available as option SME-B1)
Interfaces	GPIB (IEEE-488.2)
Display	LCD backlit graphic screen
Instrument Setup Memory	50 complete instrument configurations

Physical

Power Supply	100 V to 240 V AC (nominal), 47 Hz to 440 Hz
Dimensions (W×H×D)	427 mm × 177 mm × 525 mm (without handles/feet) mm
Weight	18 kg kg

Frequency & Reference Specifications

Frequency Settling Time	< 10 ms
Reference Frequency Temperature Stability	< 2×10^{-6} (0 °C to 55 °C)
Reference Frequency Aging Rate	< 1×10^{-6} / year
External Reference Input Frequency	10 MHz (or 1 MHz to 16 MHz in 1 MHz steps)
External Reference Input Level	0.1 V to 2 V RMS
External Reference Output Frequency	10 MHz

Amplitude & Level Specifications

Level Resolution	0.1 dB
Level Uncertainty	< 0.5 dB (for levels > -127 dBm, $f < 1.5$ GHz)
Output Impedance	50 Ω
Voltage Standing Wave Ratio (VSWR)	< 1.5 (for $f \leq 1.5$ GHz), < 1.8 (for $f > 1.5$ GHz)
Overload Protection Level	50 W (RF), 35 V (DC)
Level Settling Time	< 25 ms

Spectral Purity

Harmonics	< -30 dBc (at levels $\leq +10$ dBm)
Non-harmonics	< -76 dBc (at >10 kHz carrier offset, $f < 1.5$ GHz)
Residual FM	< 1 Hz (RMS, $f = 1$ GHz, 0.3 kHz to 3 kHz bandwidth)
Residual AM	< 0.02% (RMS, 0.03 kHz to 20 kHz bandwidth)
Wideband Noise	< -140 dBc/Hz (at >10 MHz carrier offset)

Analog Modulation Capabilities

AM Depth Range	0 to 100%
AM Resolution	0.1%
AM Distortion	< 1% (at 30% depth, $f = 1$ kHz)
AM Frequency Response	DC to 50 kHz (DC-coupled, 3 dB bandwidth)
FM Resolution	10 Hz to 100 Hz (deviation-dependent)
FM Distortion	< 0.1% (at 1 kHz, 40 kHz deviation)
Phase Modulation Deviation Range	80 rad (for $f < 1.5$ GHz), 160 rad (for $f \geq 1.5$ GHz)
Phase Modulation Distortion	< 1% (at 1 kHz, 10 rad deviation)
Phase Modulation Frequency Response	DC to 100 kHz (DC-coupled, 3 dB bandwidth)
Pulse Modulation On/Off Ratio	> 80 dB
Pulse Modulation Rise/Fall Time	< 20 ns
Pulse Repetition Frequency Range	DC to 10 MHz
Internal Modulation Source Frequencies	0.1 Hz to 500 kHz

Digital & Vector Modulation Capabilities

Digital Modulation Symbol Rate Range	200 Hz to 1.5 MHz (with Option SME-B3)
I/Q Modulator Bandwidth	DC to 5 MHz (3 dB bandwidth)
I/Q Input Connectors	BNC female, 50 Ω (front panel)

Rear & Front Panel Interfaces

RF Output Connector	N-type female, 50 Ω (front panel)
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Physical, Power & Environmental

Operating Temperature Range	0 °C to +55 °C
Storage Temperature Range	-40 °C to +70 °C

Internal Modulation Source

LF Generator Frequency Range	0.1 Hz to 500 kHz
LF Generator Frequency Resolution	0.1 Hz
LF Generator Waveforms	Sine, square, triangular
LF Generator Output Voltage Range	1 mV to 1 V
LF Generator Distortion	< 0.1% (0.1 Hz to 100 kHz)
LF Generator Output Connector	BNC female

Interfaces & Software

Command Set	SCPI
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Power Supply

Power Supply Voltage Range	90 V to 260 V (AC)
Power Supply Frequency Range	47 Hz to 440 Hz

LF Generator

LF Generator Output Impedance	< 10 Ω
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Interfaces

GPIO Interface Standard	IEEE 488.2
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Inputs & Outputs

External Reference Input Impedance	50 Ω
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TECHNOLOGY

RF Analog and Vector Signal Generation

APPLICATIONS

Receiver testing for digital and analog mobile radio networks

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