

KEYSIGHT TECHNOLOGIES (AGILENT HP)

E4400B

The Keysight (formerly Agilent / HP) E4400B is a 1 GHz ESG-A Series analog RF signal generator. It provides excellent frequency and level control along with versatile analog modulation capabilities, making it ideal for receiver and component testing in the RF range. This compiled datasheet presents comprehensive and highly precise specifications for the E4400B model.

SPECIFICATIONS

Frequency

Minimum Frequency	250 kHz Hz
Maximum Frequency	1.0 GHz Hz
Frequency Resolution	0.01 Hz
Phase Offset Resolution	0.1°

Output

Maximum Output Power	+13 dBm dBm
Output Power Range	-136 to +13 dBm
Phase Noise	<-116 dBc/Hz (typically <-120 dBc/Hz) at 20 kHz offset with a 1 GHz carrier

Modulation

Modulation	AM, FM, Phase Modulation, and Pulse Modulation (standard)
Pulse Modulation Input Impedance	50 Ω (nominal)

General

Reference Oscillator	10 MHz (standard or optional high-stability Option 1E5)
Interfaces	GPIO (IEEE-488.2), RS-232
Display	Monochrome backlit LCD

Physical

Dimensions (W×H×D)	426 mm x 133 mm x 432 mm mm
Weight	12.7 kg kg
Connector Location Option	Option 1EM moves all front-panel connectors to the rear panel

Frequency Specifications

Frequency Range	250 kHz to 1000 MHz
Frequency Switching Speed	< 45 ms
Internal Reference Frequency	10 MHz
Reference Aging Rate (Option 1E5)	< ±0.1 ppm/year (or < ±0.0005 ppm/day after 45 days)
Reference Temperature Stability (Option 1E5)	< ±0.05 ppm (0 °C to 55 °C)
External Reference Input Frequency	1, 2, 5, 10 MHz (± 10 ppm)
Reference Output Frequency	10 MHz

Sweep Modes

Operating Modes	Step sweep (frequency, power, or both) and List sweep
Sweep Range	Within instrument frequency and power limits

Amplitude Specifications

Output Power Resolution	0.02 dB
Level Accuracy	±0.5 dB to ±0.9 dB
Output Impedance	50 ohms

Spectral Purity

Harmonics	< -30 dBc (for carrier levels ≤ +4 dBm)
Non-Harmonic Spurious	< -65 dBc (for carrier frequencies < 1000 MHz)
Sub-Harmonics	None (< 1000 MHz)
SSB Phase Noise at 20 kHz Offset (500 MHz carrier)	< -120 dBc/Hz
Residual AM (0.05 to 15 kHz BW)	< 0.01% rms

Frequency Modulation (FM)

FM Maximum Deviation (at 1 GHz)	10 MHz
FM Resolution	0.1% of deviation or 1 Hz, whichever is greater
FM Distortion	< 1% (at 100 kHz deviation, 1 kHz rate)

Amplitude Modulation (AM)

AM Maximum Depth	100%
AM Resolution	0.1%

Pulse Modulation

Pulse Modulation On/Off Ratio	> 80 dB
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Internal Modulation Source

Internal Source Frequency Range (Sine)	0.1 Hz to 50 kHz
Internal Source Frequency Range (Ramp/Triangle/Square)	0.1 Hz to 10 kHz
Internal Source Frequency Resolution	0.1 Hz
LF Output Impedance	50 ohms
LF Output Amplitude Range	0 to 3 Vp-p into 50 ohms
LF Output Frequency Resolution	0.1 Hz

Ports and Connectivity

RF Output Connector Type	Type-N female
Internal Modulation Output Connector	BNC female
External Modulation Input Connector	BNC female
Sweep Out Connector	BNC female

Physical and Power

Power Consumption	< 200 W
Operating Temperature Range	0 °C to 55 °C
Storage Temperature Range	-40 °C to 71 °C
Rackmount Space Requirement	3U (Standard 19-inch rack)

Reference Oscillator

External Reference Input Impedance	50 Ω (nominal)
Reference Output Impedance	50 Ω (nominal)

Power

AC Input Voltage	90 to 254 V
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TECHNOLOGY

Analog RF Signal Generation

APPLICATIONS

RF Receiver Test, Component Test, Local Oscillator Emulation

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