

KEYSIGHT TECHNOLOGIES (AGILENT HP)

E8251A

The Keysight (Agilent) E8251A is a high-performance analog RF/microwave signal generator belonging to the PSG-A series. Operating over a broad frequency range of 250 kHz to 20 GHz with ultra-fine 0.01 Hz resolution, it provides outstanding level accuracy, dual internal modulation generators, and high output power options, making it a benchmark tool for testing high-power devices and accurate device characterization.

SPECIFICATIONS

Frequency

Minimum Frequency	250 kHz Hz
Maximum Frequency	20 GHz Hz
Frequency Resolution	0.01 Hz
Frequency Range	250 kHz to 20 GHz
Frequency Extension Limit	Up to 110 GHz with Agilent 83550 Series millimeter-wave source modules
Frequency Switching Speed	< 15 ms (typical)

Output

Maximum Output Power	+13 dBm (+20 dBm with Option 1EA) dBm
Output Power Range	+13 dBm standard, +20 dBm with Option 1EA at 20 GHz
Phase Noise	-110 dBc/Hz @ 20 kHz offset, 10 GHz carrier

Modulation

Modulation	AM, FM, Phase (Φ M), Pulse
Sweep Modes	Digital Sweep (List and Step)

General

Interfaces	GPIB (IEEE-488.2), 10Base-T LAN, RS-232
Display	Color LCD
Standard Warranty	1-Year standard (5-Year optional)

Physical

Power Supply	90 to 264 VAC, 47 to 440 Hz, 250 W maximum
Dimensions (W×H×D)	178 mm H x 426 mm W x 515 mm D mm
Weight	< 21 kg kg

Amplitude

Level Accuracy	±0.7 dB to ±0.9 dB
Maximum Output Power (Standard)	+13 dBm at 20 GHz
Maximum Output Power (Option 1EA)	+20 dBm at 20 GHz

Spectral Purity

Standard Phase Noise (10 GHz Carrier, 1 kHz offset)	-85 dBc/Hz
Standard Phase Noise (10 GHz Carrier, 20 kHz offset)	-110 dBc/Hz
Option UNJ Phase Noise (10 GHz Carrier, 1 kHz offset)	-98 dBc/Hz
Option UNJ Phase Noise (10 GHz Carrier, 10 kHz offset)	-110 dBc/Hz
Harmonics	<-30 dBc (for carrier frequencies < 20 GHz at standard power, typical)
Spurious (Non-Harmonics)	< -60 dBc (for carrier frequencies > 10 to 20 GHz)

Analog Modulation

Internal Modulation Waveforms	Sine, square, triangle, positive/negative ramp, Gaussian Noise, Uniform Noise, Swept Sine, Dual Sine
Internal Modulation Rate Range	Up to 1 MHz
Modulation Signal Source	Dual internal generators

Sweep and Operating Modes

Sweep Mode Capabilities	List and Step digital sweeps with user flatness correction at the test port
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Output Power

Step Attenuator	0 to 115 dB in 5 dB steps (Option 1E1)
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Environmental

Operating Temperature Range	0 to 55 °C
Storage Temperature Range	-40 to 71 °C

Pulse Modulation

Pulse Modulation Rise/Fall Time	< 10 ns (6 ns typical)
Pulse Modulation On/Off Ratio	> 80 dB

Amplitude Modulation (AM)

AM Rate (3 dB Bandwidth)	DC to 100 kHz
Maximum AM Depth	90%

Frequency Modulation (FM)

FM Maximum Deviation	10 MHz (at 20 GHz)
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Power Requirements

Power Consumption	< 250 W
AC Voltage Compatibility	90 to 267 V AC
AC Frequency Compatibility	45 to 440 Hz

Frequency Reference

Internal Reference Aging Rate	< ±1 x 10 ⁻⁸ /day (standard); < ±5 x 10 ⁻¹⁰ /day (Option UNJ)
External Reference Input	1, 2, 5, 10 MHz (within ±1 ppm)

Inputs & Outputs

RF Output Connector	Precision 3.5 mm male
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TECHNOLOGY

Analog RF/Microwave

APPLICATIONS

RF & Microwave Testing, Device Characterization, Radar & Receiver Testing

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