

KEYSIGHT TECHNOLOGIES (AGILENT HP)

E4431B

The Keysight (Agilent/HP) E4431B is a 250 kHz to 2 GHz digital RF signal generator from the ESG-D series. It provides versatile analog and digital modulation capabilities, an internal baseband generator with 40 MHz sample rate, and extensive support for custom and standard communications formats, making it highly suitable for R&D, manufacturing, and troubleshooting applications.

SPECIFICATIONS

Frequency

Minimum Frequency	250 kHz Hz
Maximum Frequency	2 GHz Hz
Frequency Resolution	0.01 Hz

Output

Phase Noise	< -116 dBc/Hz (1 GHz carrier, 20 kHz offset)
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Modulation

Modulation	AM, FM, Phase, Pulse, Custom Digital (FSK, MSK, PSK, QAM)
Sweep Modes	Step, List (Frequency and Power)

General

Reference Oscillator	10 MHz
Interfaces	GPIB, RS-232

Physical

Dimensions (W×H×D)	426 × 133 × 432 mm
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Frequency Characteristics

Internal Reference Frequency	10 MHz
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Amplitude / Output Characteristics

Amplitude Resolution	0.02 dB
Output Impedance	50 Ω
Reverse Power Protection (RF)	50 W
Reverse Power Protection (DC)	50 V

Connectivity & Interfaces

RF Output Connector	Type-N (female)
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Power

Power Consumption	200 W maximum
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Environmental

Operating Temperature	0 °C to 55 °C
Storage Temperature	-40 °C to 71 °C
Operating Humidity	5% to 95% RH, non-condensing (up to 40°C)
Maximum Altitude	4,600 m (15,000 ft)

Spectral Purity

Harmonics	< -30 dBc (output ≤ +4 dBm)
Non-harmonics (Spurious, 250 kHz to 1 GHz)	< -65 dBc
Non-harmonics (Spurious, 1 GHz to 2 GHz)	< -59 dBc

Performance

Frequency Switching Speed	< 45 ms
Amplitude Switching Speed	< 30 ms
VSWR	< 1.5:1 (typical, output < 0 dBm)

Internal Modulation Source

LF Generator Frequency Range	0.1 Hz to 50 kHz
LF Generator Waveforms	Sine, square, ramp, triangle, pulse, noise

Inputs & Outputs

External I/Q Inputs	BNC female, 50 Ω (front panel)
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Compliance

Safety Compliance	IEC 61010-1, EN 61010-1, CSA C22.2 No. 1010.1
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TECHNOLOGY

Digital RF / Microwave

APPLICATIONS

Research & Development, Manufacturing, Wireless Communications Testing

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