

KEYSIGHT TECHNOLOGIES (AGILENT HP)

E4428C

The Keysight (formerly Agilent) E4428C ESG analog signal generator is designed to deliver excellent spectral purity, level accuracy, and analog modulation performance for general-purpose RF testing up to 6 GHz. It offers robust AM, FM, Phase, and Pulse modulation capabilities, coupled with an integrated high-stability OCXO reference oscillator, making it ideal for receiver testing, local oscillator substitution, and interference simulation.

SPECIFICATIONS

Frequency

Minimum Frequency	250 kHz Hz
Maximum Frequency	6 GHz (option dependent) Hz
Frequency Resolution	0.01 Hz

Output

Phase Noise	-134 dBc/Hz (typical @ 20 kHz offset, 1 GHz carrier)
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Modulation

Modulation	AM, FM, Phase (ØM), Pulse
Sweep Modes	Frequency step, amplitude step, arbitrary list

General

Interfaces	GPIB, LAN, RS-232, Auxiliary I/O
Display	Color LCD

Physical

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

Frequency Option 503 Range	250 kHz to 3 GHz
Frequency Option 506 Range	250 kHz to 6 GHz

Amplitude Characteristics

Level Accuracy (fc < 3 GHz, > -110 dBm)	±0.6 dB
Output Impedance	50 ohms (nominal)
Maximum Reverse Power Protection (fc < 2 GHz)	50 W (nominal)
Maximum Reverse Power Protection (2 to 6 GHz)	25 W (nominal)
Maximum Reverse DC Voltage	50 VDC (nominal)

Spectral Purity

SSB Phase Noise (1 GHz carrier, 20 kHz offset)	-134 dBc/Hz (typical)
Nonharmonics (Carrier 250 to 500 MHz)	<-75 dBc (at offsets > 10 kHz)
Nonharmonics (Carrier 500 MHz to 1 GHz)	<-69 dBc (at offsets > 10 kHz)
Nonharmonics (Carrier 1 to 2 GHz)	<-63 dBc (at offsets > 10 kHz)
Nonharmonics (Carrier 2 to 4 GHz)	<-57 dBc (at offsets > 10 kHz)
Nonharmonics (Carrier 4 to 6 GHz)	<-51 dBc (at offsets > 10 kHz)
Harmonics (Carrier > 1 MHz)	<-30 dBc (for output power < +4 dBm)

Frequency Modulation (FM)

FM Maximum Deviation	Up to 8 MHz
FM Modulation Frequency Response	DC to 10 MHz

Internal Modulation Source

Internal Waveforms Available	Sine, square, positive ramp, negative ramp, triangle, Gaussian noise, uniform noise, swept sine, dual sine
Internal Modulation Frequency Resolution	0.1 Hz

Sweep Capabilities

Sweep Trigger Sources	Free run, trigger key, external, GPIB, LAN
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Connectivity & Rear Panel Interfaces

RF Output Connector Type	Type-N female
External Reference Input Connector	BNC female
External Reference Input Frequency Requirements	1, 2, 5, 10 MHz
Internal Reference Output Connector	BNC female
Internal Reference Output Frequency	10 MHz
GPIB Interface Port	IEEE-488.2
LAN Interface Port	10BaseT RJ-45

Power & Physical Specifications

Power Consumption	< 200 W
Rack Unit Height	3U

Environmental & Compliance

Operating Temperature Range	0 to 55 °C
Storage Temperature Range	-40 to 71 °C
Operating Humidity Range	95% relative humidity at 40 °C

Hardware & Calibration Options

Recommended Calibration Cycle	2 years
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Frequency Options

Frequency Option 501 Range	250 kHz to 1 GHz
Frequency Option 502 Range	250 kHz to 2 GHz
Frequency Option 504 Range	250 kHz to 4 GHz

Level

Level Resolution	0.01 dB
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Amplitude Modulation

AM Depth Range	0 to 100% (Option UNT)
AM Depth Resolution	0.1% (Option UNT)

Phase Modulation

PM Deviation Resolution	0.1% of deviation
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Pulse Modulation

Pulse Modulation On/Off Ratio	> 80 dB (carrier >= 500 MHz) (Option UNW)
Pulse Modulation Rise/Fall Time	< 10 ns (typical) (Option UNW)

TECHNOLOGY

Analog RF Signal Generation

APPLICATIONS

General-purpose receiver testing, LO substitution, low-jitter clock stimulus, and out-of-band blocking/interference tests

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