

KEYSIGHT TECHNOLOGIES (AGILENT HP)

E4423B

The Keysight Agilent E4423B is an ESG-AP Series analog RF signal generator covering a frequency range from 250 kHz to 1 GHz. Engineered for high spectral purity, it provides excellent phase-noise performance, superior level accuracy, and flexible analog modulation (AM, FM, Phase, and Pulse) for receiver testing, local oscillator substitution, and general-purpose component characterization.

SPECIFICATIONS

Frequency

Minimum Frequency	250 kHz Hz
Maximum Frequency	1 GHz Hz
Frequency Resolution	0.01 Hz
Phase Offset Resolution	0.1°

Output

Maximum Output Power	+13 dBm dBm
Output Power Range	-136 dBm to +13 dBm
Phase Noise	<-134 dBc/Hz (typical -140 dBc/Hz) @ 20 kHz offset, 1 GHz carrier

Modulation

Modulation	AM, FM, Phase Modulation (ΦM), Pulse Modulation
Sweep Modes	Step sweep (frequency, power, and list)
AM Distortion	< 1.5% (at 30% depth, 1 kHz rate)
FM Distortion	< 0.5% (at 100 kHz deviation, 1 kHz rate)
Internal Modulation Source Frequency Resolution	0.1 Hz
AM Resolution	0.1%
Internal Modulation Source Output Impedance	600 Ω (nominal)
Internal Modulation Source Output Voltage Range	0 to 3 Vp-p into 600 Ω

General

Reference Oscillator	10 MHz (standard); optional High-Stability Ovenized Reference (Option 1E5)
Interfaces	GPIO, RS-232
Display	Monochrome LCD with backlight
Save/Recall Registers	100 registers, 10 register sequences

Physical

Power Supply	90 to 254 VAC, 45 to 440 Hz
Dimensions (W×H×D)	426 mm × 133 mm × 574 mm mm
Weight	12.7 kg kg

Frequency Specifications

Frequency Range	250 kHz to 1 GHz
Frequency Switching Speed	< 20 ms (typical)
Internal Reference Aging Rate (Standard)	< ±2 ppm/year
Internal Reference Temp Stability (Standard)	< ±1 ppm
Internal Reference Aging Rate (Option 1E5)	< ±0.1 ppm/year (or < ±1.5 × 10 ⁻¹⁰ /day)
Internal Reference Temp Stability (Option 1E5)	< ±0.05 ppm
External Reference Input Frequency	1, 2, 5, 10 MHz (±10 ppm)
External Reference Input Amplitude	-0.15 to +16 dBm

Amplitude Specifications

Minimum Output Power	-136 dBm
Amplitude Resolution	0.02 dB
Amplitude Accuracy	±0.5 dB (typical, levels > -110 dBm)
Output SWR	< 1.5:1 (typical)
Maximum Reverse Power	50 W (continuous, < 1 GHz)
Attenuator Type	Electronic (standard) or Mechanical (Option UNB)
Attenuator Range	0 to 115 dB (standard)

Spectral Purity

SSB Phase Noise (20 kHz offset)	<-134 dBc/Hz (typical -140 dBc/Hz) @ 1 GHz carrier
SSB Phase Noise (100 Hz offset)	<-80 dBc/Hz @ 1 GHz carrier
Harmonics	<-30 dBc (at levels ≤ +4 dBm)
Sub-Harmonics	None (< 1 GHz carrier)
Residual FM (50 Hz to 15 kHz BW)	< 1 Hz @ 1 GHz carrier

Analog Modulation

Amplitude Modulation (AM) Depth Range	0 to 100%
Amplitude Modulation (AM) Rate Range	DC to 10 kHz (for depths up to 90%)
Pulse Modulation On/Off Ratio	> 80 dB
Internal Modulation Source Frequency Range	0.1 Hz to 50 kHz (sine wave)
Internal Modulation Source Waveforms	Sine, triangle, square, ramp, noise

Sweep and Operating Modes

Dwell Time Range	2 ms to 60 s
Number of Points	2 to 401 points (list sweep)
Trigger Modes	Free run, trigger key, external, GPIB

System Connectivity & Interfaces

RF Output Connector	Type-N female
RF Output Impedance	50 ohms
GPIB Interface	IEEE-488.2
RS-232 Interface	Yes (DB-9)
Auxiliary I/O Connector	37-pin D-sub
External Reference Input Connector	BNC female (rear panel)
Reference Output Connector	BNC female (rear panel)

Physical & Environmental

Operating Temperature Range	0 to 55 °C
Storage Temperature Range	-40 to 71 °C
Relative Humidity	95% at 40 °C
Maximum Operating Altitude	4,600 meters (15,000 feet)
Rack Unit (RU) Height	3U
Cooling	Forced-air (internal fan)

Power Requirements

Line Voltage Range	90 to 254 VAC
Line Frequency Range	45 to 440 Hz
Power Consumption	< 200 W

Compliance & Standards

EMC Compliance	Conforms to EN 55011, EN 50082-1
Safety Compliance	Conforms to CSA C22.2 No. 1010.1, IEC 1010-1

Hardware & Software Options

Option 1E5	High-stability ovenized reference oscillator
Option 1E6	High-performance pulse modulation
Option UNB	High output power with mechanical attenuator
Option 1EM	Moves all front panel connectors to rear panel

Interfaces & Software

Command Compatibility	SCPI, HP 8656B, HP 8657A/B, HP 8648A/B/C/D
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Sweep

Sweep Spacing	Linear, logarithmic
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Inputs & Outputs

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

Options

Option 1CP	Rackmount flange kit with handles
Option 1CN	Front handle kit
Option 1CM	Rackmount flange kit

TECHNOLOGY

Analog RF Signal Generation

APPLICATIONS

Receiver testing, component characterization, and local oscillator substitution

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