KEYSIGHT TECHNOLOGIES (AGILENT HP)

E4402B

The Keysight Technologies E4402B ESA-E Series Spectrum Analyzer offers a frequency range of 100 Hz to 3.0 GHz, making it an ideal mid-performance instrument for general-purpose RF and microwave measurements. It features 0.4 dB overall amplitude accuracy, a +16 dBm Third Order Intercept (TOI), and a low -166 dBm Displayed Average Noise Level (DANL) with an internal preamplifier.

SPECIFICATIONS

General

Interfaces	GPIB, LAN (10Base-T), RS-232, Parallel, VGA
Display	6.5-inch Color TFT LCD
Recommended Calibration Cycle	1 year

Physical

Power Supply	90-132 VAC / 198-264 VAC, 47-66 Hz, 250 VA max
Operating Temperature	0 to 55 °C °C
Dimensions (W×H×D)	350 mm (W) × 222 mm (H) × 410 mm (D) mm
Weight	15.5 kg kg
Rack Mount Kit	Available (Agilent P/N E4400-60002)

Frequency Characteristics

Frequency Range	100 Hz to 3.0 GHz
Frequency Reference Aging Rate	±1 x 10^-7 / year
Frequency Readout Accuracy	±((frequency x reference uncertainty) + 1% x span + 10% x RBW + 10 Hz)
Span Accuracy	10 Hz to 5 MHz (10% steps), 9 kHz, 120 kHz (standard)
Resolution Bandwidth (RBW) Range	1 Hz to 5 MHz (1-3-10 sequence), 9 kHz, 120 kHz, 1 Hz (optional)
RBW Accuracy	±10%
Video Bandwidth (VBW) Range	1 Hz to 5 MHz (1-3-10 sequence)
Sweep Time Range	1 ms to 1000 s
Phase Noise @ 10 kHz Offset	-98 dBc/Hz (1 GHz carrier)
Minimum Settable Frequency	0 Hz (Zero Span)
Maximum Settable Frequency	3.0 GHz
Frequency Counter Resolution	1 Hz, 10 Hz, 100 Hz, 1 kHz selectable

Amplitude Characteristics

Maximum Input Level (Average)	+30 dBm
Maximum Input Level (Peak, with attenuator)	+50 dBm
Maximum DC Input	0 VDC
Input Attenuator Range	0 to 70 dB (10 dB steps)
Input Attenuator Accuracy	±0.5 dB
Displayed Average Noise Level (DANL)	-155 dBm/Hz (with internal preamp, Option 1DP, 10 MHz to 2.5 GHz)
Third Order Intercept (TOI)	+16 dBm
Second Harmonic Distortion (SHD)	-90 dBc
Input VSWR	<1.5:1 (10 dB attenuation, preamplifier off)
Absolute Amplitude Accuracy	±0.4 dB
Frequency Response Flatness	±0.5 dB
Amplitude Measurement Units	dBm, dBmV, dBµV, V, W
Log Scale Fidelity	±0.2 dB (0 to -70 dB from reference level)

Sweep and Measurement

Number of Display Points	2 to 8192 (variable)
Analysis Bandwidth	10 MHz (with digitizer options)
Trace Detectors	Peak, Sample, Normal, Negative Peak, Average (RMS, Power Avg, Voltage Avg); Quasi-Peak (Optional)
Trace Functions	Clear/Write, Max Hold, Min Hold, View, Blank, Trace Math
Measurement Functions	Channel Power, Occupied Bandwidth (OBW), Adjacent Channel Power Ratio (ACPR), xdB Bandwidth, Harmonic Distortion, Spurious Emissions
Triggering Modes	Free Run, Video, External, Line
Segmented Sweep	Up to 32 discontinuous spans in one sweep

Input/Output & Interfaces

RF Input Connector Type	N-type (female)
RF Input Impedance	50 Ohm
External Reference Input	10 MHz, BNC (female)
External Reference Output	10 MHz, BNC (female)
VGA Output	DB-15 connector
External Trigger Input	BNC (female)
Remote Control Capability	GPIB, LAN, RS-232

Display

Display Resolution	640 x 480 pixels
Number of Traces	Up to 4
Display Scales	Linear, Log (10, 5, 2, 1 dB/div)

General Specifications

Storage Temperature Range	-40 to +75 °C
Humidity Range	95% RH at 40 °C (non-condensing)
Warm-up Time	5 minutes (to guaranteed measurement accuracy)

Options and Accessories

Tracking Generator Option	Option 1D5
Preamplifier Option	Option 1DP (internal preamplifier)
EMI Measurement Capability	Option 1DS (includes 9 kHz, 120 kHz RBW and quasi-peak detector)
Digital Demodulation Option	Option AYA
Narrow Resolution Bandwidth Option	Option 1DR (1 Hz to 1 kHz)

Interfaces

GPIB Interface	IEEE-488.2
LAN Interface	10/100Base-T Ethernet (Option 1FP)
USB Ports	2 (rear panel)
Parallel Port	DB-25 (printer port)
RS-232 Serial Port	DB-9
Composite Video Output	BNC
IF Output	21.4 MHz (Option AYZ)

Resolution Bandwidth

RBW Filter Shape Factor (60 dB/3 dB)	<5:1 (standard), <15:1 (Option 1D6)

Frequency Reference

External Reference Output Level	10 MHz, +10 dBm nominal into 50 Ohm
External Reference Input Level	10 MHz, -10 dBm to +10 dBm into 50 Ohm

RF Input Characteristics

Input Return Loss (RF Input)	>15 dB (preamp off, 10 MHz to 3 GHz)

Spectral Purity

Residual Response (non-harmonic spurious)	<-90 dBm (with input terminated, 0 dB attenuation, preamplifier off, >10 MHz)

Power Requirements

Power Consumption	250 VA max (150 VA typical)

Environmental

Altitude (Operating)	Up to 4,600 m (15,000 ft)
Altitude (Non-operating)	Up to 15,300 m (50,000 ft)

Compliance

Safety Compliance	CSA, UL, IEC, EN
EMC Compliance	IEC/EN 61326-1, CISPR 11 (Group 1, Class B)

Amplitude

Amplitude Display Range	100 dB (log scale)

Connectivity

External Reference Input Impedance	50 Ohm
External Reference Output Impedance	50 Ohm
Keyboard/Mouse Support	USB

Bandwidth

VBW Filter Type	Digital

Audio

Internal Speaker	Yes

Power

AC Input Voltage Range	90 - 264 VAC
AC Input Frequency Range	47 - 63 Hz

TECHNOLOGY

Spectrum Analyzer

APPLICATIONS

RF and Microwave Measurement

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