

KEYSIGHT TECHNOLOGIES (AGILENT HP)

8561B

The Keysight (Agilent HP) 8561B is a high-performance portable RF spectrum analyzer designed for RF and microwave design, manufacturing, and field-service applications. It features fully synthesized tuning, a built-in frequency counter, digital resolution bandwidths (10 Hz, 30 Hz, and 100 Hz), and integrated AM/FM demodulators, offering outstanding dynamic range and sensitivity in a rugged, portable package.

SPECIFICATIONS

General

Interfaces	HP-IB (GPIB)
Display	CRT
Warm-up Time	5 minutes (from ambient temperature to meet frequency stability specs)

Physical

Power Supply	115 / 230 VAC nominal, 47 to 66 Hz (400 Hz for 115 VAC), <180 W
Operating Temperature	0 to +55 °C °C
Dimensions (W×H×D)	325 mm x 187 mm x 461 mm mm
Weight	20 kg kg

Frequency Specifications

Frequency Range	50 Hz to 6.5 GHz
Tuning Type	Synthesized tuning
Frequency Counter	Built-in

Resolution and Video Bandwidths

Resolution Bandwidth (RBW) Range	10 Hz to 2 MHz
Video Bandwidth (VBW) Range	1 Hz to 1 MHz

Amplitude Specifications

Minimum Displayed Average Noise	-130 dBm
Maximum Dynamic Range	128 dB
Input Attenuator Range	0 to 70 dB in 10 dB steps
Sensitivity	-130 dBm

Demodulation Options

Demodulation Modes	AM, FM
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Inputs and Outputs

RF Input Impedance	50 ohms
RF Input Connector	Type-N female
Calibrator Output	300 MHz, -10 dBm

Physical and Environmental

Storage Temperature Range	-40°C to +75°C
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Frequency

Frequency Span Range	0 Hz, 100 Hz to 6.5 GHz
Standard Reference Aging Rate	$\pm 1 \times 10^{-7}$ per year
Frequency Reference Temperature Stability	$\pm 1 \times 10^{-8}$ (standard) / $\pm 1 \times 10^{-6}$ (with Option 103)

Spectral Purity

Phase Noise at 30 kHz Offset	≤ -103 dBc/Hz (1 GHz carrier)
Phase Noise at 100 kHz Offset	≤ -110 dBc/Hz (1 GHz carrier)

Sweep

Sweep Time Range (Span $\geq$ 100 Hz)	50 ms to 100 s
Sweep Time Range (Zero Span)	50 μ s to 100 s

Maximum Ratings

Maximum Safe RF Input Power	+30 dBm (1 W) with ≥ 10 dB RF attenuation
Maximum DC Input Voltage	0 V

Amplitude

Scale Display Range (Logarithmic)	1, 2, 5, 10 dB per division
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Spurious Responses

Residual Responses (200 kHz - 6.5 GHz)	≤ -90 dBm (with 0 dB attenuation)
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Inputs & Outputs

1st LO Output Power	+16.5 dBm $\pm$ 2.0 dB
External Reference Input Frequency	10 MHz
External Reference Input Power	-10 dBm to +10 dBm
Reference Output Frequency	10 MHz
Reference Output Power	> 0 dBm
Sweep Output Voltage	0 V to +10 V ramp

Amplitude Accuracy

Logarithmic Scale Fidelity	Incremental: ±0.1 dB/dB over 0 to -80 dB range
Linear Scale Fidelity	±3% of reference level
Resolution Bandwidth Switching Uncertainty	< ±0.5 dB (referred to 300 kHz RBW)
Input Attenuator Switching Uncertainty	< ±0.5 dB (at 100 MHz, 20 to 70 dB settings, referred to 10 dB setting)

Performance

Sweep Time Accuracy	±10%
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Environmental

Operating Altitude	Up to 4,570 m (15,000 ft)
Non-operating Altitude	Up to 15,240 m (50,000 ft)
Humidity	95% relative humidity at 40 °C for 5 days

Compliance

EMI Compatibility	Conducted and radiated emissions meet MIL-STD-461C, Part 7, RE02 and CE03; also FTZ 526/527
MIL-T-28800D Compliance	Meets MIL-T-28800D, Type III, Class 3, Style C

TECHNOLOGY

RF Spectrum Analysis

APPLICATIONS

RF and Microwave Testing, Signal Analysis, Spectral Measurements

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