

KEYSIGHT TECHNOLOGIES (AGILENT HP)

8920B

The Keysight Technologies (Agilent HP) 8920B is a high-performance RF Communications Test Set designed for comprehensive testing of land mobile radios, cellular telephones, and other wireless communication systems. Building upon the 8920A, it offers enhanced measurement speed and accuracy, alongside expanded user memory and PCMCIA card support for data storage and test programs. It integrates numerous instruments into a single portable unit, including an RF generator, RF power meter, frequency counter, and options for spectrum analysis.

SPECIFICATIONS

General

Interfaces	GPIB (IEEE-488), RS-232, PCMCIA (2x Type II), External Reference Input/Output (BNC), Trigger Input/Output (BNC), RF Input (N-type), RF Output (N-type), Audio Input (BNC), Audio Output (BNC), Microphone Input, Speaker Output
Display	Monochrome LCD, 320 x 240 pixels

Physical

Power Supply	90-264 V AC, 47-66 Hz / 360-440 Hz, 250 VA max
Operating Temperature	0 to 55 °C °C
Dimensions (W×H×D)	426 mm (W) × 178 mm (H) × 584 mm (D) mm
Weight	23 kg (typical) kg

General Specifications

Product Description	Full-function RF Communications Test Set integrating multiple instruments for comprehensive wireless device testing.
Measurement Applications	Land Mobile Radio, Cellular Telephones (TDMA, AMPS, GSM with options), Paging Systems, General RF Transceiver Testing
Operating Modes	Manual, Automated (GPIB/RS-232), Internal IBASIC programs
Internal Memory	928 kbytes user memory (standard)
Memory Card Type	PCMCIA Type II
Software Support	VEE support with 8920B drivers, Built-in IBASIC computer

RF Generator Characteristics

RF Generator Frequency Range	250 kHz to 1000 MHz
RF Generator Frequency Resolution	1 Hz
RF Generator Frequency Accuracy (Internal Reference)	$\pm (\text{Timebase Error} \times \text{Frequency} + 10 \text{ Hz})$
RF Generator Output Power Range	-127 dBm to -9 dBm
RF Generator Output Power Resolution	0.1 dB
RF Generator Output Power Accuracy	$\pm 1.5 \text{ dB}$ (typically $\pm 1 \text{ dB}$ up to 1 GHz)
RF Generator Output Impedance	50 Ω
RF Generator Harmonic Spurious	<-30 dBc
RF Generator Non-Harmonic Spurious	<-60 dBc
RF Generator Residual FM	<3 Hz RMS (0.3 to 3 kHz BW, typical)

RF Receiver / Analyzer Characteristics

RF Receiver Frequency Range	250 kHz to 1000 MHz (base unit), extendable with options
RF Receiver Maximum Input Power	+30 dBm (without damage)
RF Receiver Input Power Range (Measurement)	-127 dBm to +30 dBm
RF Receiver Input Power Accuracy	$\pm 1 \text{ dB}$ (typical, up to 1 GHz)
RF Receiver Input Impedance	50 Ω
RF Receiver Noise Floor	<-140 dBm/Hz (with preamplifier, typical)
RF Receiver FM Demodulator Sensitivity	0.5 μV for 12 dB SINAD (1 kHz tone, 3.5 kHz dev, typical)
Spectrum Analyzer Frequency Range	250 kHz to 1000 MHz (optional), 1710 to 1990 MHz with 83236B PCS interface option
Spectrum Analyzer RBW Range	300 Hz to 300 kHz
Spectrum Analyzer VBW Range	30 Hz to 30 kHz

RF Measurement Functions

RF Power Measurement Range	-40 dBm to +30 dBm (internal power meter)
RF Power Measurement Accuracy	$\pm 0.5 \text{ dB}$ (at calibrated frequencies/levels, typical)
Frequency Error Measurement Accuracy	$\pm 10 \text{ Hz} + \text{Timebase Error}$
Occupied Bandwidth Measurement	Available with optional spectrum analyzer
Adjacent Channel Power (ACP) Dynamic Range	75 dB (typical, with optional spectrum analyzer)
Modulation Index Measurement (AM)	0 to 99%
Modulation Deviation Measurement (FM/PM)	FM: 0 to 400 kHz; PM: 0 to 40 rad
Modulation Distortion Measurement (THD, SINAD)	Available (typically for AM/FM demodulated audio)

Modulation / Demodulation

Modulation Types Supported (Internal)	AM, FM, Phase Modulation
AM Modulation Depth Range (Internal)	0 to 99%
AM Distortion (Internal)	<1% (typical)
FM Deviation Range (Internal)	0 to 400 kHz
FM Distortion (Internal)	<0.5% (typical)
Phase Modulation Deviation Range (Internal)	0 to 40 rad
Internal Modulation Frequencies	1 Hz to 25 kHz

Audio Generator Characteristics

Audio Generator Frequency Range	20 Hz to 20 kHz
Audio Generator Frequency Resolution	0.1 Hz
Audio Generator Output Level Range	-40 dBm to +10 dBm
Audio Generator Output Level Accuracy	±0.5 dB (typical)
Audio Generator Output Impedance	600 Ω
Audio Generator Output Distortion (THD)	<0.1% (typical)

Audio Analyzer Characteristics

Audio Analyzer Frequency Range	20 Hz to 20 kHz
Audio Analyzer Level Measurement Range	-80 dBm to +20 dBm
Audio Analyzer Level Measurement Accuracy	±0.2 dB (typical)
Audio Analyzer Distortion Measurement (THD+N)	<0.5% (typical)
Audio Analyzer Residual Noise	<-80 dBm (typical, 20 Hz - 20 kHz BW)
Audio Analyzer Input Impedance	600 Ω unbalanced, 1 MΩ unbalanced
Audio Analyzer Weighting Filters	C-Message, CCITT, Flat

Internal Timebase / Reference

Internal Reference Frequency	10 MHz
Internal Reference Aging Rate	±0.05 ppm/year (standard)
Internal Reference Temperature Stability	±0.1 ppm (0 to 55 °C, standard)
External Reference Input Frequency	10 MHz
External Reference Input Level	-10 dBm to +10 dBm
External Reference Output Frequency	10 MHz
External Reference Output Level	+7 dBm (nominal)

Connectivity & Interfaces

Speaker Output	Built-in, for demodulated audio monitoring
External Reference Input Connector Type	BNC (female)
External Reference Output Connector Type	BNC (female)
GPIO Compatibility	IEEE-488.1, IEEE-488.2
Serial Port Connector Type	DB-9 (male)
Parallel Printer Port Connector Type	Centronics (36-pin)

Environmental Conditions

Storage Temperature Range	-40 to 75 °C
Operating Humidity Range	5% to 95% RH (non-condensing)
Operating Altitude	0 to 4600 m (15,000 ft)
Non-Operating Altitude	0 to 15300 m (50,000 ft)

Physical Characteristics

Rack Mountable	Yes, with optional rack mount kit
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Ordering Information & Options

Available Options	High Stability Timebase (Option 10), Spectrum Analyzer, Tracking Generator, Adjacent Channel Power Meter, 83206A TDMA Cellular Adapter (800/1900 MHz), 83236B PCS Interface (1710-1990 MHz)
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RF Generator Output

RF Generator Output Level Flatness	±11.5 dB (typical)
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Spectrum Analyzer Performance

Displayed Average Noise Level (DANL)	-115 dBm/Hz (typical, <1 GHz, preamp off, 20 Hz RBW)
Displayed Average Noise Level (DANL) (with Option 006 Preamplifier)	-130 dBm/Hz (typical, <1 GHz, preamp on, 20 Hz RBW)
Resolution Bandwidth Filter Shape Factor	5:1 (60 dB/3 dB, analog filters)
Spectrum Analyzer Detector Modes	Peak, Sample, Normal

Connectivity

Remote Control Interface	IEEE-488.2 (GPIO)
Serial Interface	RS-232C
Parallel Interface	Centronics
External Trigger	BNC

Power Requirements

AC Input Voltage Range	90 to 264 VAC
AC Input Frequency Range	47 to 440 Hz
Maximum Power Consumption	300 VA

Regulatory Compliance

EMC Compliance	EN 55011:1991 Group 1, Class A; CISPR 11:1990 Group 1, Class A
Safety Compliance	IEC 1010-1:1990; EN 61010-1:1993; CSA C22.2 No. 1010.1:1992; UL 3111-1:1994

Remote Control

Programming Language	SCPI (Standard Commands for Programmable Instruments)
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RF Inputs & Outputs

RF Input Connector Type	N-type (female)
RF Output Connector Type	N-type (female)

Audio Inputs & Outputs

Audio Input Connector Type	BNC (female)
Audio Output Connector Type	BNC (female)

Demodulation

FM Demodulation Filter Bandwidths	100 Hz, 300 Hz, 1 kHz, 3 kHz, 15 kHz, 50 kHz, 100 kHz, 200 kHz
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Display

Display Type	Monochrome CRT
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General Characteristics

Warm-up Time	30 minutes (to rated specifications)
Recommended Calibration Interval	1 year

Auxiliary I/O

Scope Output Connector Type	BNC (female)
Demod Output Connector Type	BNC (female)

TECHNOLOGY

RF Test and Measurement

APPLICATIONS

Land Mobile Radio (LMR) Testing, Cellular Phone Testing (2G/2.5G), Wireless Communications System Debug and Manufacturing

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