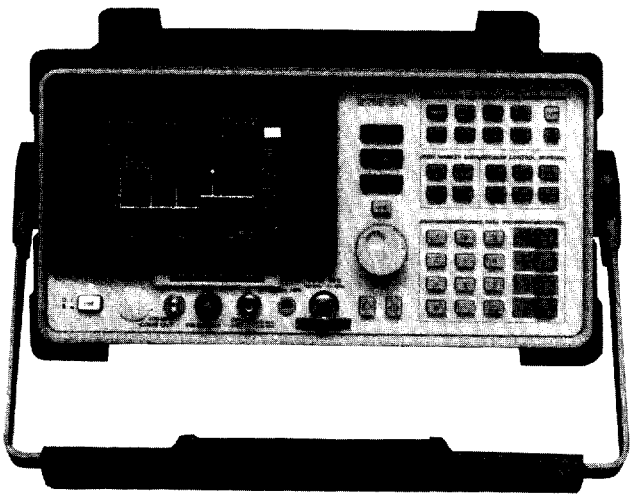
- General-purpose or high performance microwave capabilities
- Built-in comb generator and internal preselection
- Optional 26.5 GHz operation
- 32-plus Kbytes of user memory
- Wide range of add-on features
- Custom measurement personalities

NEW

DESIGNED FOR HP-IB SYSTEMS

HP 8592B



NEW

DESIGNED FOR HP-IB SYSTEMS

HP 8593A

HP 8592B Low-cost Microwave Spectrum Analyzer

Our lowest-priced microwave spectrum analyzer offers basic performance and features similar to those of the HP 8590B. This 35-pound, portable analyzer has a frequency range of 9 kHz to 22 GHz with optional coverage to 26.5 GHz. Amplitude range is −114 dBm to +30 dBm. An internal preselector facilitates signal identification. And, as with all models in the portable spectrum analyzer family, this instrument can be operated approximately one hour using the HP 85901A portable ac power source (see page 109).

Easy-to-use Features

Whether you are a first-time user or an experienced professional, this microwave analyzer is one of the easiest you will ever operate. Three clearly marked keys and the data-entry knob or keypad are used to measure any signal. Internal parameters such as resolution bandwidth, video bandwidth, sweep time, IF gain, and input attenuation are adjusted automatically.

This model also has 32 Kbytes of programmable memory, and an optional card reader. Dedicated measurement personalities for cable-television and digital-radio testing can be downloaded using application measurement cards (see page 104). A built-in clock/calendar is standard, and HP-IB or RS-232 interfaces are optional. Data can be sent directly from the analyzer to a printer or plotter.

To ensure the continued accuracy of your tests, internal calibration routines are included along with service routines.

HP 8593A Frequency-accurate Microwave Spectrum Analyzer

High performance spectrum analysis in the field or on the bench is now available with the HP 8593A. This model has synthesizer frequency accuracy from 9 kHz to 22 GHz, extendable to 26.5 GHz. Marker-count accuracy is 11 kHz at 18 GHz. All the portability and convenience features of the HP 8592B are found in this microwave spectrum analyzer, along with additional features for improved performance and more customizing options.

Better Performance and More Features at Microwave

New standard features of this spectrum analyzer include a frequency counter and more than 32 Kbytes of non-volatile program memory as well as capability for storing up to 50 traces. With the built-in memory-card reader, you can load custom programs or HP measurement personalities in seconds. An internal clock/calendar stamps stored traces with the time and date. The many options can be added in any combination to customize this analyzer for the lowest cost. Optional features include 26.5-GHz frequency coverage, fast time-domain sweep, AM/FM demodulator with speaker, TV trigger sync, a precision frequency reference, and HP-IB or RS-232 interfaces. HP measurement personalities for cable-television and digital-radio testing can be added (see page 104), and four internal card slots permit certain options to be configured at any time.

SIGNAL ANALYZERS

Spectrum Analyzers, Low-cost Portable

HP 8592B, 8593A

General Specifications

Temperature range
Operating: 0° to +55° C
Storage: −40° to +75° C
EMI compatibility: CISPR pub 11 and FTZ 526/527/79
Audible noise: <37.5 dBA pressure and <5.0 Bels power (ISODP7779)
Power requirements: 86 to 127 or 195 to 250 Vrms, 47 to 66 Hz; 103 to 126 Vrms, 400 Hz ±10%; <300 VA power consumption

HP 8592B Specifications

Frequency

Frequency range: 9 kHz to 22 GHz
Frequency readout accuracy: ±[(5 xN) MHz + 0.01% of center frequency + 2% of frequency span]
Frequency span
Range: 0 Hz (zero span), (50 x N) kHz to 19.5 GHz
Accuracy: ±2% of span, span >10 MHz; ±5% of span, span <10 MHz
Sweep time
Range: 20 ms to 100 s
Accuracy: ±3% of indicated sweep time
Sweep trigger: free run, single, line, video, external
Stability
Noise sidebands: <(−95 + 20 log N) dBc/Hz offset from CW signal
System-related sidebands: <−65 dBc + 20 log N at >30 kHz offset from CW signal
Comb generator frequency accuracy: 100 MHz fundamental freq ±0.007%

Amplitude

Amplitude range: −114 to +30 dBm
Maximum safe input: +30 dBm (1 watt, 7.1 Vrms), 0 Vdc
Gain compression: ≤0.5 dB for −10 dBm total power at input mixer
Displayed average noise level: ≤−114 to ≤−92 dBm
Spurious responses
Second harmonic distortion: <−70 dBc for −40 dBm tone at input mixer from 10 MHz to 2.9 GHz; <−100 dBc for −10 dBm tone at input mixer (or below displayed average noise level)
Third-order intermodulation distortion: <−70 dBc for two −30 dBm tones at input mixer and >50 kHz separation
Other input related spurious: <−70 dBc for applied freq ≤18 GHz; <−60 dBc for applied freq ≤22 GHz
Display range
Log scale: calibrated 0 to −70 dB from reference level; 1 to 20 dB /division in 1 dB steps; 8 divisions displayed
Linear scale: 8 divisions
Scale units: dBm, dBmV, dBmicroV, volts, watts
Reference level
Range: −114 to +30 dBm
Resolution: 0.01 dB for log scale; 0.12% of ref lev for linear
Accuracy, −20 dBm reference level: ±(0.5 dB + input atten acc @ 50 MHz) for 0 to −59.9 dBm; ±(1.25 dB + input atten acc @ 50 MHz) for −60 to −114 dBm
Frequency response, referred to 300 MHz CAL OUT, preselector peaked
Absolute: ±2.0 to ±3.0 dB
Relative flatness: ±1.5 to ±2.0 dB
Calibrator output
Frequency: 300 MHz ±30 kHz
Amplitude: −20 dBm ±0.4 dB
Input attenuator
Range: 0 to 70 dB in 10 dB steps
Accuracy: +0.5 dB at 50 MHz, ref to 10 dB atten, from 0 to 60 dB; 1.2 dB at 50 MHz, ref to 10 dB atten, for 70 dB
Resolution BW switching: ±0.4 dB, 3 kHz to 3 MHz RBW; ±0.5 dB, 1 kHz
Log to linear switching: ±0.25 dB at reference level
Log scale fidelity: ±0.2 dB/2 dB, 0 to −70 dB from ref lev, incremental; ±0.75 dB, 0 to −60 dB from ref lev and ±1.0, 0 to −70 dB from ref lev, maximum cumulative
Linear accuracy: ±3% of reference level

HP 8593A Specifications

Frequency

Frequency range: 9 kHz to 22 GHz; 9 kHz to 26.5 GHz (option 026)
Frequency reference
Aging: $\pm 1 \times 10^{-7}$ /day, $\pm 2 \times 10^{-6}$ /year
Settability: $\pm 0.5 \times 10^{-6}$
Temperature stability: $\pm 5 \times 10^{-6}$
Precision frequency reference (Opt 004)
Aging: $\pm 1 \times 10^{-7}$ /year
Settability: $\pm 1 \times 10^{-8}$
Temperature stability: $\pm 1 \times 10^{-8}$
Frequency readout accuracy: ±(frequency readout x frequency reference error + 1.5% of span + 20% of RBW + 1.5 kHz)
Marker count accuracy (signal-to-noise ratio ≥25 dB, RBW/span ≥0.01
Frequency span ≤10 MHz: ±(marker freq x freq ref error + counter resolution + 100 Hz)
Frequency span >10 MHz: ±(marker freq x freq ref error + counter resolution + 1 kHz)
Counter resolution: Selectable from 10 Hz to 100 kHz
Frequency span
Range: zero span, (10 x N) kHz to 19.25 GHz, (10 x N) kHz to 23.75 GHz (option 026)
Accuracy: ±2% of span, span ≤10 MHz; ±3% of span, span >10 MHz
Sweep time
Range: 20 ms to 100 s, span = 0 Hz or >10 kHz; 20 micros to 100s, span = 0 Hz (option 101)
Accuracy: ±3% of indicated sweep time; ±2% for option 026
Sweep trigger: free run, single, line, video, external
Stability
Noise sidebands: ≤−95 dBc/Hz + 20 log N at >30 kHz offset from CW signal (1 kHz RBW, 30 Hz VBW, sample detector)
Residual FM: <(400 x N) Hz pk-pk in 100 ms (1 kHz RBW, 1 kHz VBW)
System-related sidebands: <−65 + 20 log N at >30 kHz offset from CW signal

Amplitude

Amplitude range: −114 to +30 dBm
Maximum safe input: +30 dBm (1 watt, 7.1 Vrms), 0 Vdc
Gain compression: ≤0.5 dB −10 dBm total power at input mixer
Displayed average noise level: ≤−114 to ≤−92 dBm
Spurious responses
Second harmonic: <−70 dBc for −40 dBm tone at input mixer, 10 MHz to 2.9 GHz; <−100 dBc for −10 dBm tone at input mixer (or below displayed average noise level), > 2.75 GHz
Third-order intermodulation: <−70 dBc for two −30 dBm tones at input mixer and >50 kHz separation, > 10 Hz
Other input-related spurious: <−70 dBc for applied freq ≤18 GHz; <−60 dBc for applied freq ≤22 GHz
Display range
Log scale: calibrated 0 to −70 dB from ref lev; 1 to 20 dB/division in 1 dB steps; 8 divisions displayed
Linear scale: 8 divisions
Scale units: dBm, dBmB, dBmicroV, volts, watts
Reference level
Range: −114 to +30 dBm
Resolution: 0.01 dB for log scale; 0.12% of ref lev for linear
Accuracy: ±(0.5 dB + input atten acc @ 50 MHz), 0 to −59.9 dBm); ±(1.25 dB + input atten acc @ 50 MHz), −60 to −114 dBm
Frequency response, 10 dB input atten, preselector peaked
Absolute: ±2.0 to ±3.0 dB
Relative flatness: ±1.5 to ±2.0 dB
Calibrator output
Frequency: 300 MHz ±(300 MHz x freq ref error)
Amplitude: −20 dBm ±0.4 dB
Input attenuator
Range: 0 to 70 dB in 10 dB steps
Accuracy at 50 MHz, 10 dB atten: ±0.5 dB for 0 to 60 dB; ±1.2 dB for 70 dB
Resolution BW switching: ±0.4 dB, 3 kHz to 3 MHz RBW; ±0.5 dB, 1 kHz
Log to linear switching: ±0.25 dB at reference level
Log scale fidelity: ±0.2 dB/2 dB, 0 to −70 from ref lev, incremental; ±0.75 dB, 0 to −60 dB from ref lev and ±1.0 dB, 0 to −70 dB from ref lev, maximum cumulative
Linear accuracy: ±3.0% of reference level

Ordering Information

	Price
HP 8592B Portable Microwave Spectrum Analyzer	$19,000
Opt 003 Card Reader	+$600
Opt 021 HP-IB Interface	+$600
Opt 023 RS-232 Interface	+$600
Opt W30 Extended Repair Service. See page 725.	+$475
HP 8593A Portable Microwave Spectrum Analyzer	$24,000
Opt 004 Precision Frequency Reference	+$2,000
Opt 021 HP-IB Interface	+$600
Opt 023 RS-232 Interface	+$600
Opt 026 Frequency Extension to 26.5 GHz	+3,000
Opt 101 Fast Time-domain Sweep	+$1,000
Opt 102 AM/FM Demodulator & TV Sync Trigger	+$1,500
Opt W30 Extended Repair Service. See page 725.	+$625