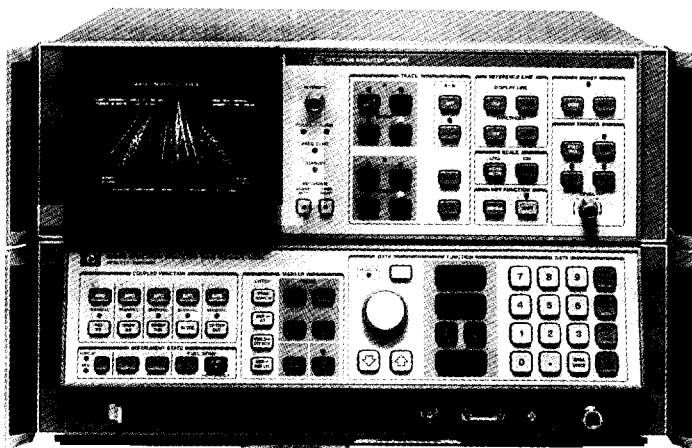


SIGNAL ANALYZERS

Spectrum Analyzers, Bench, 100 Hz to 22 GHz

HP 8566B, 8567A, 8568B

- 100 Hz to 22 GHz coverage with synthesizer accuracy
- 10 kHz to 1.5 GHz coverage at a lower price
- 100 Hz to 1.5 GHz coverage with counter accuracy
- 2 to 22 GHz preselected range
- Trace markers with amplitude and frequency readout
- 16 KB of user RAM for trace data or custom routines



HP 8566B
with Turbo Option



HP 8566B, 8567A, 8568B Spectrum Analyzers

The HP 8566B, 8567A, and 8568B are high-performance spectrum analyzers for bench and ATE system use. The HP 8566B has the highest performance of the three, with a frequency range from 100 Hz to 22 GHz that can be extended to 325 GHz using external mixers. The HP 8567A and 8568B are RF spectrum analyzers with frequency coverage to 1500 MHz. See pages 287 and 288 for specification summaries on all analyzers.

Each analyzer is designed around its own internal bus and controlled by its own microcomputer to yield significant improvements in operational and data processing features as well as flexibility under computer control. Each analyzer has 16 KB of user RAM for storing trace data, instrument states, or custom downloadable programs (DLPs).

HP 8566B Turbo Option

Increase the measurement speed of your HP 8566B spectrum analyzer. A new turbo option (Option 002) nearly doubles the analyzer's processing rate, so your measurements can be made up to 50 percent faster, with 25 percent improvement typical. If you already own an HP 8566B, a turbo retrofit kit is available as Option R02.

Performance

The exceptional frequency stability of both the HP 8566B and the HP 8568B makes it possible to make measurements with a 10 Hz resolution bandwidth. This narrow resolution bandwidth yields sensitivities to -135 dBm in both instruments. Excellent frequency stability, sensitivity, and frequency-reference accuracy combine to allow very accurate measurement of small signals in the presence of large ones.

For applications that don't require the high performance of the HP 8568B, the HP 8567A offers the same speed, versatility, and automatic operation capability at a lower price. Resolution bandwidths as narrow as 1 kHz yield sensitivities as low as -115 dBm.

Flexibility

These spectrum analyzers fit into many applications, such as EMC testing (see page 378), broadband signal surveillance, and component stimulus-response testing. The HP 8444A Option 059 tracking generator adds stimulus-response capabilities to the RF models for a minimal cost. The HP 85644A and 85645A tracking sources add 6.5 GHz and 22 GHz high-performance scalar capability to the HP 8566B (see page 285). Preselected external mixers simplify millimeter-wave measurements from 26.5 to 75 GHz (see page 290).

Usability

The instrument control settings are conveniently shown on the CRT for easy reference. Functions are activated by pressing a front-panel key, then selecting the function value using the knob, step keys, or numeric keyboard. To maintain a calibrated display, certain functions are automatically coupled in the analyzer. For example, resolution bandwidth, video bandwidth, and sweep time are automatically adjusted by the instrument when the frequency span is reduced.

Up to four tunable display markers are available to aid in measuring and analyzing signals. Two markers can be used to make relative measurements by displaying their amplitude and frequency differences. Marker information allows you to step between evenly spaced portions of a spectral display (such as signal harmonics) or "zoom in" on a selected portion of the spectrum. Analyzer control settings can be saved in the non-volatile memory of the analyzer.

Versatile CRT Display and Plotting Capabilities

All displayed information resides in the analyzer's digital memory, which refreshes the CRT at a flicker-free rate. Multiple traces can be displayed to measure residual FM or drift, or to conduct real-time surveillance over a wide frequency range.

By adding an HP-IB plotter, hard copy of all information on the display of the analyzer can be made for analysis, documentation, or presentation. Plots can be produced directly or with the aid of a controller.

Custom Softkey Programming

You can create complex measurement routines on an external controller, store the programs in user RAM, and execute them using a single custom softkey.

Simple measurement routines can be entered from the instrument front panel, stored in user RAM, and executed using a single custom softkey.

SIGNAL ANALYZERS

Spectrum Analyzers, Bench, 100 Hz to 1500 MHz

HP 8568B, 8567A

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Specification Summary

Frequency	HP 8568B	HP 8567A
Frequency range	100 Hz to 1500 MHz (dc-coupled) 100 kHz to 1500 MHz (ac-coupled)	10 kHz to 1500 MHz
Frequency span	100 Hz to 1500 MHz + zero span	100 Hz to 1500 MHz + zero span
Frequency reference accuracy		
Aging rate	$< 2.5 \times 10^{-7}$ /year	$< 5 \times 10^{-6}$ /year
Temperature stability	$< 7 \times 10^{-9}$ (0° to 55° C)	$< 1 \times 10^{-9}$ (5° to 55° C)
Resolution bandwidth (-3 dB)	10 Hz to 3 MHz in 1,3,10 sequence	1 kHz to 3 MHz in 1,3,10 sequence
Video bandwidth	1 Hz to 3 MHz in 1,3,10 sequence	1 Hz to 3 MHz in 1,3,10 sequence
Residual FM (peak-to-peak, < 100 kHz span)	< 3 Hz (res BW \leq 30 Hz)	< 100 Hz (res BW 1 kHz)
Drift (per minute of sweep time, after 1-hour warmup)	< 10 Hz (freq span \leq 100 kHz)	< 100 Hz (freq span \leq 100 kHz)
Phase noise (30 kHz offset)	-107 dBc	-105 dBc
Amplitude		
Amplitude range	-135 to +30 dBm	-115 to +30 dBm
Log display range	1, 2, 5, or 10 dB/div for 10, 20, 50, or 90 dB display	1, 2, 5, or 10 dB/div for 10, 20, 50, or 90 dB display
Scale fidelity—incremental	± 0.1 dB/dB; 0 to 90 dB	± 0.1 dB/dB; 0 to 80 dB
Cumulative (20° to 30° C)	$\leq \pm 1.0$ dB; 0 to 80 dB $\leq \pm 1.5$ dB; 0 to 90 dB	$\leq \pm 1.0$ dB; 0 to 80 dB $\leq \pm 1.5$ dB; 0 to 90 dB
Calibrator uncertainty	± 0.3 dB	± 0.3 dB
Frequency response (input atten \geq 10 dB)	± 1.5 dB, 100 Hz to 1500 MHz/ ± 1 dB, 100 kHz to 1500 MHz	± 1 dB, 10 kHz to 1500 MHz
Spurious responses (< -40 dBm at mixer)	< -70 dBc (< 10 MHz input sig) < -75 dBc (> 10 MHz input sig)	< -70 dBc
Second harmonic distortion (-30 dBm at mixer)	< -70 dBc (sig \geq 10 MHz) < -60 dBc (sig < 10 MHz)	< -70 dBc (sig \geq 10 MHz) < -60 dBc (sig < 10 MHz)
Third order intercept (TOI)	+10 dBm (sig > 10 MHz)	+10 dBm (sig > 10 MHz)
Residual responses (0 dB attn, no input signal)	< -105 dBm	< -100 dBm
Gain compression (\leq -10 dBm at mixer)	< 0.5 dB	< 1.0 dB
Displayed average noise level (0 dB attn, 1 Hz Video BW)	< -112 dBm, 500 Hz to 1 MHz (10 Hz res BW) < -135 dBm, > 1 MHz (10 Hz res BW)	< -92 dBm, 50 kHz to 1 MHz (1 kHz res BW) < -115 dBm, > 1 MHz (1 kHz res BW)
Sweep time: Zero span	1 μ s to 1500 s	1 μ s to 1500 s
Swept	20 ms to 1500 s	20 ms to 1500 s

General Specifications

(apply to both HP 8568B and 8567A unless noted)

Environmental

Temperature: Operation: HP 8568B, 0° to 55° C; HP 8567A, 5° to 55° C; Storage: -40° to +75° C

EMI: Conducted and radiated interference is within the requirements of MIL-STD461B, CE03/part 2 and RE02/part 7, and the requirements of CISPR Pub. 11 and FTZ 526/1979

Power Requirements: 100, 120, 220, or 240 Vac (+5%, -10%), 50 to 60 Hz or 400 Hz with Opt 400

Warmup Time

Operation: 30 min from cold start

Frequency Reference

HP 8568B: Freq. within 1×10^{-8} of final stable freq within 30 min

HP 8567A: Freq. within 5×10^{-9} of final stable freq within 30 min

Size (w/out handles): 425.5 mm W \times 279.4 mm H \times 558.8 mm D (16.75 in \times 11 in \times 22 in)

Weight: Net, 45 kg (100 lb)

Inputs

RF in (Type N), RF in (BNC, 8568B only), ext freq ref in, ext sweep trig in

Quasi-Peak: Video in, IF in

Outputs

Cal out, display X, Y, and Z out, horiz sweep out, video out, penlift out, 21.4 MHz IF, 1st LO, freq ref, probe power out (HP 8568B only)

Quasi-Peak: Video out, IF out

Key Literature

HP 8567A Technical Data, p/n 5954-2718.

HP 8568B Technical Data, p/n 5952-9394.

Ordering Information

HP 8568B Spectrum Analyzer

HP 8567A Spectrum Analyzer

Opt 001 75 Ω (BNC) RF input

Opt 016 Installed EMI Receiver Functions

Opt 044 Add HP 8444A Opt 059 Tracking Generator

(HP 8567A only)

Opt W30 Three-Year Customer Return Repair

(see page 663)

HP 8568B

HP 8567A

Opt W32 Three-Year Customer Return Calibration

(see page 663)

HP 8568B

HP 8567A

Opt W50 Five-Year Customer Return Repair

HP 8568B

HP 8567A

Opt 400 400 Hz Power Line Frequency Operation

HP 8568B

HP 8567A

Opt 010 Rack Mount Slide Kit

Opt 908 Rack Flange Kit (instrument w/out handles)

HP 8568B

HP 8567A

Opt 913 Rack Flange Kit (instrument w/handles)

HP 8568B

HP 8567A

Opt 910 Add Extra Set of User's Manuals

Opt 915 Add Service Manuals

HP 8568B

HP 8567A

Opt 462 Impulse Bandwidths for EMI Measurements

(HP 8568B only)

Opt 031 HP 8568B German Operating Manual

Opt 080 HP 8568B Information Card in Japanese

Opt 081 HP 8568B Information Card in French

Price

\$43,350

\$33,350

+ \$214

+ \$270

+ \$7,750

+ \$1,060

+ \$670

+ \$3,085

+ \$2,035

\$2,120

\$1,340

+ \$435

+ \$755

+ \$485

+ \$71

+ \$71

+ \$173

+ \$173

+ \$370

+ \$840

+ \$840

+ \$2,150



SIGNAL ANALYZERS

Spectrum Analyzer, Bench, 100 Hz to 22 GHz HP 8566B

HP 8566B Specification Summary

Frequency

Frequency Range: 100 Hz to 22 GHz with internal mixer; extendable to 110 GHz with HP 11970 external mixers, to 75 GHz with HP 11974 series preselected mixers, and to 325 GHz with mixers from other suppliers

Frequency Span: 0 Hz, 100 Hz to 22 GHz, variable in approximately 1% increments

Frequency Reference Error: Aging rate, $<1 \times 10^{-9}$ /day, $<2.5 \times 10^{-7}$ /year

Temperature Stability: $<7 \times 10^{-9}$, 0° to 55° C

Resolution Bandwidth: 3 dB bandwidths of 10 Hz to 3 MHz in a 1, 3, 10 sequence

Bandwidth Selectivity, 60 dB/3 dB ratio: $<12:1$, 30 Hz to 1 kHz; $<13:1$, 3 kHz to 30 kHz; $<15:1$, 100 kHz to 3 MHz

Bandwidth Shape: synchronously tuned, 4- or 5-pole filters, approximately Gaussian shape

Video Bandwidth: 1 Hz to 3 MHz in a 1, 3, 10 sequence

Residual FM (typical peak-to-peak, fundamental mixing mode): <50 kHz peak-to-peak, frequency span >5 MHz

Drift (typical, after 1-hour warmup at stabilized temperature): <10 Hz/min of sweep time, frequency span ≤ 100 kHz; <500 Hz/min of sweep time, frequency span 100 kHz to 5 MHz; <5 kHz/min of sweep time, frequency span ≥ 5 MHz

Spectral Purity

Noise Sidebands (center frequency 100 Hz to 5.8 GHz): 320 Hz offset, <-80 dBc/Hz; 1 kHz offset, <-85 dBc/Hz; 10 kHz offset, <-90 dBc/Hz; 100 kHz offset, <-105 dBc/Hz

Amplitude

Amplitude Range (dBm): -134 to $+30$, 1 MHz to 2.5 GHz; -132 to $+30$, 2 to 5.8 GHz; -125 to $+30$, 5.8 to 12.5 GHz; -119 to $+30$, 12.5 to 18.6 GHz; -114 to $+30$, 18.6 to 22 GHz

Log Display Range: 1, 2, 5, or 10 dB/division for 10, 20, 50, or 90 dB displays, respectively

Scale Fidelity: ± 0.1 dB/dB over 0 to 80 dB display (20° to 30° C); $<\pm 1.0$ dB max over 0 to 80 dB display; $<\pm 1.5$ dB max over 0 to 90 dB display

Calibrator Uncertainty: ± 0.3 dB

Frequency Response (10 dB input atten): 100 Hz to 2.5 GHz, ± 0.6 dB; 2 to 12.5 GHz, ± 1.7 dB; 12.5 to 20 GHz, ± 2.2 dB; 20 to 22 GHz, ± 3.0 dB, res BW ≥ 30 Hz

Dynamic Range

Spurious responses: <-70 dBc for mixer levels ≤ -40 dBm

Second harmonic distortion

Unpreselected, mixer levels ≤ -40 dBm: <-70 dBc, 100 Hz to 2.5 GHz; <-80 dBc, 50 to 700 MHz

Preselected, mixer levels ≤ -10 dBm: <-100 dBc, 2 to 22 GHz

Third order intercept (TOI): $> +5$ dBm, 100 Hz to 5 MHz; $> +7$ dBm, 5 MHz to 5.8 GHz; $> +5$ dBm, 5.8 to 18.6 GHz

Image responses: <-70 dBc, 2 GHz to 18.6 GHz; <-60 dBc, 18.6 to 20 GHz; <-50 dBc, 20 to 22 GHz

Multiple responses: <-70 dBc, 2 GHz to 22 GHz

Out-of-band responses: <-60 dBc, 2 to 22 GHz (tuned freq.)

Residual responses (0 dB input atten, no input signal): <-100 dBm, 100 Hz to 5.8 GHz; <-95 dBm, 5.8 to 12.5 GHz; <-85 dBm, 12.5 to 18.6 GHz; <-80 dBm, 18.6 to 22 GHz

Gain compression (≤ -5 dBm at mixer): <1.0 dB, 100 Hz to 22 GHz

Displayed average noise level (0 dB input atten, 10 Hz res BW)

Unpreselected: <-95 dBm, 100 Hz to 50 kHz; <-112 dBm, 50 kHz to 1 MHz; <-134 dBm, 1 MHz to 2.5 GHz

Preselected: <-132 dBm, 2 to 5.8 GHz; <-125 , 5.8 to 12.5 GHz; <-119 dBm, 12.5 to 18.6 GHz; <-114 dBm, 18.6 to 22 GHz

Sweep Time

Zero Span: 1 μ s to 1500 s

Swept: 20 ms to 1500 s

Accuracy: $\pm 10\%$ ≤ 200 s sweep times; $\pm 30\%$ > 200 s sweep times

Trigger: Free run, line, video, external, continuous, and single

General Specifications

Environmental

Temperature: Operation, 0° to 55° C; storage, -40° to $+75^\circ$ C

Humidity: Operation type-tested to 95% RH, 25° to 40° C

EMI: Conducted and radiated interference is within the requirements of MIL-STD-461C, Part 7, REO2 and CEO3 (Air Force), and the requirements of CISPR Pub. 11, FTZ 526/527/79, VDE 0871

Power Requirements: 100, 120, 220, or 240 Vac ($+5\%$, -10%), 50 to 60 Hz or 400 Hz with Opt 400

Warmup Time Operation: 30 min from cold start (0° to 55° C)

Frequency reference: Frequency within 1×10^{-8} of final stable frequency within 30 min

Size (w/out handles): 425.5 mm W \times 279.4 mm H \times 598.5 mm D (16.75 in \times 11 in \times 23.56 in)

Weight: Net, 50 kg (112 lb)

Inputs

RF in (Type N), ext freq ref in, ext sweep trig in

Quasi-Peak: Video in, IF in

Outputs

Cal out, 1st LO out, IF out, sweep + tune out, display X, Y, Z out, horiz sweep out, video out, penlift out, 21.4 MHz IF out, freq ref, 10 MHz

Quasi-Peak: Video out, IF out

Key Literature

HP 8566B Technical Data, p/n 5091-3385E.

Ordering Information

HP 8566B Spectrum Analyzer	Price
Opt 002 Turbo Option	\$2,550
Opt R02 Turbo Retrofit Kit	\$3,165
Opt 016 Installed EMI Receiver Functions	+ \$270
Opt 400 400 Hz Power-Line Frequency Operation	+ \$435
Opt W30 Three-Year Customer Return Repair (see page 663)	\$1,730
Opt W32 Three-Year Customer Return Calibration (see page 663)	\$3,715
Opt W50 Five-Year Customer Return Repair (see page 663)	\$3,460
Opt W52 Five-Year Customer Return Calibration (see page 663)	\$6,690
Opt 462 Impulse Bandwidths for EMI Measurements	+ \$2,150
Opt 010 Rack Mount Slide Kit	+ \$485
Opt 908 Rack Flange Kit (instrument w/out handles)	+ \$66
Opt 913 Rack Flange Kit (instrument w/handles)	+ \$173
Opt 910 Add Extra Set of User's Manuals	+ \$370
Opt 915 Add Service Manuals	+ \$840
Opt 031 German Operating Manual	\$0
Opt 080 Information Card in Japanese	\$0
Opt 081 Information Card in French	\$0
Opt 1BN MIL-STD 45622A Calibration Certification	\$204
Opt 1BP MIL-STD 45622A Calibration Certification With Test Data	\$510
HP 8566AB Retrofit Kit to Convert HP 8566A to HP 8566B	\$3,980