

# 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.

### 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)	$< 1 \times 10^{-8}$ (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
<b>Amplitude</b>		
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	$\pm 0.1$ dB/dB; 0 to 90 dB	$\pm 0.1$ 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	$\pm 0.3$ dB	$\pm 0.3$ dB
Frequency response (input atten $\geq 10$ dB)	$\pm 1.5$ dB, 100 Hz to 1500 MHz/ $\pm 1$ dB, 100 kHz to 1500 MHz	$\pm 1$ 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 $\mu$ s to 1500 s	1 $\mu$ 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  $1 \times 10^{-8}$  of final stable freq within 30 min

**HP 8567A:** Freq. within  $5 \times 10^{-8}$  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  $\Omega$  (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