

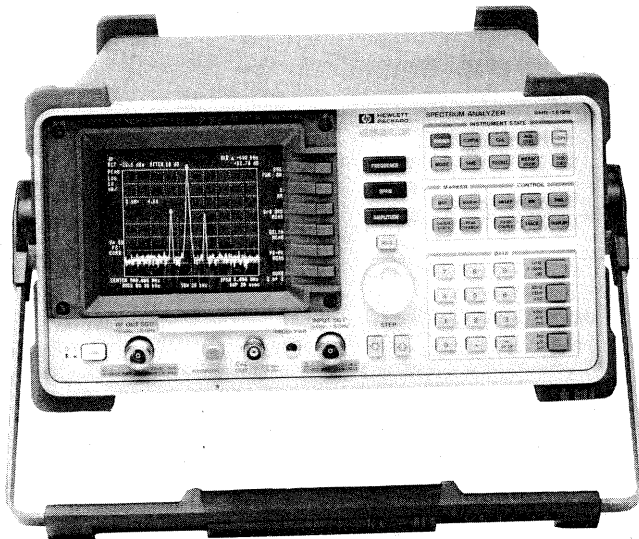
# SIGNAL ANALYZERS

## Spectrum Analyzers, Low-cost Portable

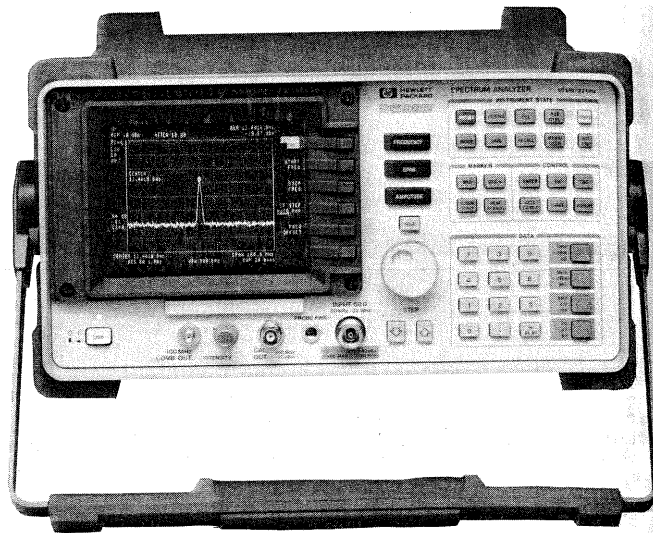
### HP 8590B, 8592B

- Low price
- Easy to use

- Sturdy and lightweight
- Measurement personalities



HP 8590B



HP 8592B



### HP 8590B and 8592B Spectrum Analyzers

These models offer basic RF and microwave measurement performance at a low cost. The HP 8590B has a frequency range of 9 kHz to 1.8 GHz, a 50- or optional 75-ohm input, and a weight of only 13.6 kg (30 pounds). Amplitude range is a wide  $-115$  to  $+30$  dBm. The HP 8592B has a frequency range of 9 kHz to 22 GHz (or 25 GHz with option H25), an internal preselector, and a weight of (35 pounds) 15.9 kg. Amplitude range extends from  $-114$  to  $+30$  dBm. (For special applications or general export, the HP 8592B option 1BH does not tune above 18 GHz nor span greater than 2.3 GHz.) If ac power is not available, both spectrum analyzers can be operated using the HP 85901A portable ac power source.

### One Spectrum Analyzer for Many Applications

You can change the test capabilities of these spectrum analyzers to fit specific measurement needs. An optional memory card reader enables you to load specific measurement personalities for cable television, electromagnetic compatibility, or digital radio applications. Complex measurement routines and test limits are available at a key-stroke. An optional built-in tracking generator provides the HP 8590B RF analyzer with a synchronously swept signal source for stimulus-response measurements. Operating these analyzers requires only minimal training.

### Easy-to-Use Features

Numerous features make it easier to control your measurements and to analyze the results. Both portable spectrum analyzers have built-in, automatic calibration to ensure measurement consistency. Frequency panning lets you quickly reposition signals without repeated sweeps. The internal memory allows 50 traces to be stored, and 24 more can be stored on a RAM card with addition of the optional memory-card reader. Time-and-date stamping come standard. Direct output to printer or plotter are available with either the HP-IB or RS-232 interface option.

### HP 8590B Specifications

#### General

##### Temperature range

**Operating:**  $0^{\circ}$  to  $+55^{\circ}$  C

**Storage:**  $-40^{\circ}$  to  $+75^{\circ}$  C

**EMI compatibility:** CISPR Pub. 11 and FRZ 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  $\pm 10\%$

#### Frequency

**Range:** 9 kHz to 1.8 GHz; 1 MHz to 1.8 GHz option 001

**Readout accuracy:**  $\pm(5$  MHz  $+ 1\%$  of frequency span)

#### Span

**Range:** 0 Hz (zero span), 50 kHz to 1.8 GHz

**Accuracy:**  $\pm 3\%$  of indicated span

#### Sweep time

**Range:** 20 ms to 100 s

**Accuracy:**  $\pm 3\%$  of indicated sweep time

**Sweep trigger:** free run, single, line, video, external

#### Stability

**Drift:**  $<75$  kHz/5 minutes after 2-hour warmup and 5 minutes after setting center frequency

**Noise sidebands:**  $<-95$  dBc/Hz at  $>30$  kHz offset from CW signal

**System related sidebands:**  $<-65$  dBc at  $>30$  kHz offset from CW signal

## HP 8590B Specifications (continued)

### Amplitude

**Amplitude range:** -115 to +30 dBm (50 ohm); -63 to +75 dBmV (75 ohm, option 001)

**Maximum safe input level:** **50 ohm**      **75 ohm (option 001)**  
 Average cont. power      +30 dBm (1 watt)      +75 dBmV (0.4 watts)  
 Peak pulse power      +30 dBm (1 watt)      +75 dBmV (0.4 watts)  
 DC      25 Vdc      100 Vdc

**Gain compression > 10 MHz:**  $\leq 0.5$  dB (total power at input mixer = -10 dBm)

**Displayed average noise level:**  $< -115$  dBm to  $< -113$  dBm

### Spurious responses

**Second harmonic distortion > 5 MHz:**  $< -70$  dBc for -45 dBm tone at input mixer

### Third-order intermodulation

**Distortion > 5 MHz:**  $< -70$  dBc for two -30 dBm tones at input mixer and > 50 kHz separation

**Other input-related:**  $< -65$  dBc for  $\geq 30$  kHz offset from CW signal

### Residual responses (input terminated and 0 dB attenuation)

	50 ohm	75 ohm (option 001)
150 kHz to 1 MHz	$< -90$ dBm	N/A
1 MHz to 1.8 GHz	$< -90$ dBm	$< -38$ dBmV

### Display range

**Log scale:** 0 to -70 dB from reference level is calibrated;

1 to 20 dB/division in 1 dB steps; 8 divisions displayed

**Linear scale:** 8 divisions

**Scale units:** dBm, dBmV, dBmicroV, volts, watts

**Marker readout resolution:** 0.05 dB for log scale; 0.05% of reference level for linear

### Reference level

**Range:** -115 to +30 dBm (50 ohm); -63 to +75 dBmV (75 ohm)

**Resolution:** 0.01 dB for log scale; 0.12% of ref lev for linear

### Accuracy (referred to -20 dBm reference level)

**0 to -59.9 dBm:**  $\pm(0.5$  dB + input attenuator accuracy at 50 MHz)

**-60 to -115 dBm:**  $\pm(1.25$  dB + input attenuator accuracy at 50 MHz)

### Frequency response, 10 dB input attenuation

**Absolute:**  $\pm 1.5$  dB, referred to 300 MHz CAL OUT

**Relative flatness:**  $\pm 1.0$  dB, referred to midpoint between highest and lowest frequency response deviations

### Calibrator output

**Frequency:** 300 MHz  $\pm 30$  kHz

**Amplitude:** -20 dBm  $\pm 0.4$  dB (50 ohm); +28.75 dBmV  $\pm 0.4$  dB (75 ohm, option 001)

### Input attenuator

**Range:** 0 to 60 dB, 10 dB steps

**Accuracy:**  $\pm 0.5$  dB at 50 MHz, ref 10 dB attenuation, 0 to 50 dB;  $\pm 0.75$  dB at 50 MHz, ref 10 dB attenuation, 60 dB

**Resolution bandwidth:** 1 kHz to 3 MHz, -3 dB nominal

**Switching uncertainty, referred to 3 kHz RBW:**  $\pm 0.4$  dB for 3 kHz to 3 MHz RBW;  $\pm 0.5$  dB for 1 kHz

**Video bandwidth range:** 30 Hz to 1 MHz

**Log to linear switching:**  $\pm 0.25$  at reference level

### Display scale fidelity

**Log incremental accuracy:**  $\pm 0.2$  dB/2 dB, 0 to -70 dB from ref lev

**Log maximum cumulative:**  $\pm 0.75$  dB, 0 to -60 from ref level;  $\pm 1.0$  dB, 0 to -70 dB from ref level

**Linear accuracy:**  $\pm 3\%$  of reference level

## HP 8592B Specifications

### Frequency

**Range:** 9 kHz to 22 GHz; 9 kHz to 25 GHz (option H25)

**Readout accuracy:**  $\pm[(5 \times N)$  MHz + 0.01% of center frequency + 2% of frequency span]

### Span

**Range:** 0 Hz (zero span), (50  $\times$  N) kHz to 19.25 GHz

**Accuracy:**  $\pm 2\%$  of span, span > 10 MHz;  $\pm 5\%$  of span, span < 10 MHz

### Sweep time

**Range:** 20 ms to 100 s

**Accuracy:**  $\pm 3\%$  of indicated sweep time

**Sweep trigger:** free run, single, line, video, external

### Stability

**Noise sidebands:**  $<(-95 + 20 \log N)$  dBc/Hz > 30 kHz offset from CW

**System-related sidebands:**  $< -65$  dBc + 20 log N at > 30 kHz offset from CW signal

**Comb generator frequency accuracy:** 100 MHz fundamental freq  $\pm 0.007\%$

### Amplitude

**Range:** -114 to +30 dBm

**Maximum safe input:** +30 dBm (1 watt, 7.1 Vrms), 0 Vdc

**Gain compression:**  $\leq 0.5$  dB (total power at input mixer = -10 dBm)

**Displayed average noise level:**  $\leq -114$  to  $\leq -92$  dBm

### Spurious responses

#### Second harmonic distortion

**10 MHz to 2.9 GHz:**  $< -70$  dBc for -40 dBm tone at input mixer

**> 2.75 GHz:**  $< -100$  dBc for -10 dBm tone at input mixer (or below displayed average noise level)

### Third-order intermodulation

**Distortion > 10 MHz:**  $< -65$  dBc for two -30 dBm at input mixer and > 50 kHz separation

**Other input related:**  $< -70$  dBc for applied freq  $\leq 18$  GHz;  $< -60$  dBc for applied freq  $\leq 22$  GHz

### Display range

**Log scale:** 0 to -70 dB from reference level is calibrated; 1 to 20 dB/division in 1 dB steps; 8 divisions displayed

**Linear scale:** 8 divisions

**Scale units:** dBm, dBmV, dB $\mu$ V, volts, watts

### Reference level

**Range:** -114 to +30 dBm

**Resolution:** 0.01 dB for log scale; 0.12% of ref lev for linear

### Accuracy referred to -20 dBm reference level

**0 to -59.9 dBm:**  $\pm(0.5$  dB + input atten acc @ 50 MHz)

**-60 to -114 dBm:**  $\pm(1.25$  dB + input atten acc @ 50 MHz)

### Frequency response, referred to 300 MHz CAL OUT, preselector peaked

**Absolute:**  $\pm 2.0$  to +3.0 dB

**Relative flatness:**  $\pm 1.5$  to +2.0 dB

### Calibrator output

**Frequency:** 300 MHz  $\pm 30$  kHz

**Amplitude:** -20 dBm  $\pm 0.4$  dB

### Input attenuator

**Range:** 0 to 70 dB in 10 dB steps

### Accuracy

**0 to 60 dB:** 0.5 dB at 50 MHz, ref to 10 dB atten

**70 dB:** 1.2 dB at 50 MHz, ref to 10 dB atten

### Resolution bandwidth (-3 dB nominal): 1 kHz to 3 MHz

**Switching uncertainty:**  $\pm 0.4$  dB, 3 kHz to 3 MHz RBW;  $\pm 0.5$  dB, 1 kHz

**Video bandwidth range:** 30 Hz to 1 MHz

**Log to linear switching:**  $\pm 0.25$  dB at reference level

**Display scale fidelity:**  $\pm 0.2$  dB/2 dB, 0 to -70 dB from ref lev, incremental;  $\pm 0.75$  dB, 0 to -60 dB from ref lev  $\pm 1.0$  dB; 0 to -70 dB from ref lev, maximum cumulative

**Linear accuracy:**  $\pm 3\%$  of reference level

### Ordering information

HP 8590B spectrum analyzer (9 kHz to 1.8 GHz)

HP 8592B spectrum analyzer (9 kHz to 22 GHz)

Opt 001 75  $\Omega$  input impedance (HP 8590B only)

Opt 003 card reader

Opt 010 tracking generator 50 $\Omega$

(HP 8590B only)

Opt 011 tracking generator 75 $\Omega$

(HP 8590B only)

Opt 021 HP-IB interface

Opt 023 RS-232 interface

Opt H25 frequency extension to 25 GHz (HP 8592B only)

Opt 1BH general export version