

## HP 8590D and 8592D Specifications

(Specifications apply to either analyzer unless otherwise noted.)

### Frequency

#### Frequency Range

##### HP 8590D

**50  $\Omega$ :** 9 kHz to 1.8 GHz

**75  $\Omega$  (Opt 001):** 1 MHz to 1.8 GHz

**HP 8592D:** 9 kHz to 22 GHz

**HP 8592D Opt 026:** 9 kHz to 26.5 GHz

Band	LO harmonic=N	Center frequency
0	1	9 kHz to 2.9 GHz
1	1	2.75 to 6.5 GHz
2	2	6.0 to 12.8 GHz
3	3	12.4 to 19.4 GHz
4	4	19.1 to 22.0 GHz
4	4 (Opt 026)	19.1 to 26.5 GHz

#### Frequency Reference (HP 8590D Opt 013)

**Aging:**  $\pm 2 \times 10^{-6}$ /year

**Temperature stability:**  $\pm 5 \times 10^{-6}$

**Initial achievable accuracy:**  $\pm 0.5 \times 10^{-6}$

#### Frequency Readout Accuracy (start, stop, center, marker)

**HP 8590D:**  $\pm (5 \text{ MHz} + 1\% \text{ of freq span})$

**HP 8590D Opt 013:**  $\pm (\text{freq readout} \times \text{freq ref error} + \text{span accuracy} + 1\% \text{ of span} + 20\% \text{ of RBW} + 100 \text{ Hz})$

**HP 8592D:**  $\pm [(5 \times N) \text{ MHz} + 0.01\% \text{ of center freq} + 2\% \text{ of freq span}]$

#### Marker Count Accuracy (HP 8590D Opt 013)

**Span  $\leq 10$  MHz:**  $\pm (\text{marker freq} \times \text{freq ref error} + \text{counter resolution} + 100 \text{ Hz})$

**Span  $> 10$  MHz:**  $\pm (\text{marker freq} \times \text{freq ref error} + \text{counter resolution} + 1 \text{ kHz})$

**Counter resolution:** Span  $\leq 10$  MHz, selectable from 10 Hz to 100 kHz; span  $> 10$  MHz, selectable from 100 Hz to 100 kHz

#### Frequency Span

##### Range

**HP 8590D:** 0 Hz (zero span), 10 kHz to 1.8 GHz

**HP 8592D:** 0 Hz,  $[50 \times N]$  kHz to 19.25 GHz

**Resolution:** Four digits

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

#### Sweep Time

**Range:** 20 ms to 100 s

**Accuracy:**  $\pm 3\%$

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

**Resolution Bandwidth (characteristic):** 1 kHz to 3 MHz (3 dB) in 1, 3, 10 sequence  $\pm 20\%$  accuracy; 9 kHz and 120 kHz (6 dB) EMI bandwidths

**Video Bandwidth Range:** 30 Hz to 1 MHz in 1, 3, 10 sequence

#### Stability

**Noise sidebands (1 kHz RBW, 30 Hz VBW and sample detector):**  $\leq -95 \text{ dBc/Hz} + 20 \log N$  at  $> 30 \text{ kHz}$  offset from CW signal

**System-related sidebands:**  $\leq -65 \text{ dBc} + 20 \log N$  at  $> 30 \text{ kHz}$  offset from CW signal

**Comb Generator Frequency (HP 8592D):** 100 MHz fundamental freq

**Accuracy:**  $\pm 0.007\%$

### Amplitude

#### Amplitude Range

**HP 8590D, 8592D:** Displayed average noise level to +30 dBm

**HP 8590D Opt 001:** Displayed average noise level to +75 dBmV

**Maximum Safe Input Level (input attenuator  $\geq 10$  dB)**

#### Average Continuous Power

**HP 8590D, 8592D:** +30 dBm (1 W)

**HP 8590D Opt 001:** +75 dBmV (0.4 W)

#### Peak Pulse Power

**HP 8590D:** +30 dBm (1 W); +75 dBmV (0.4 W) (Opt 001)

**HP 8592D:** +50 dBm (100 W) for  $< 10 \mu\text{s}$  pulse width and  $< 1\%$  duty cycle, input atten  $\geq 30$  dB

#### dc

**HP 8590D:** 25 Vdc; 100 Vdc (Opt 001)

**HP 8592D:** 0 Vdc

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

**Displayed Average Noise Level (input terminated, 0 dB atten, 1 kHz RBW, 30 Hz VBW)**

**HP 8590D:**  $\leq -115$  to  $\leq -113$  dBm;  $\leq -63$  to  $\leq -61$  dBmV (Opt 001)

**HP 8592D:**  $\leq -112$  to  $\leq -92$  dBm;  $\leq -112$  to  $\leq -87$  dBm (Opt 026)

#### Spurious Responses

##### Second harmonic distortion ( $> 5$ MHz)

**HP 8590D:**  $< -70$  dBc for -45 dBm tone at input mixer

##### HP 8592D

**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 DANL)

##### Third-order intermodulation

##### HP 8590D

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

**Other input-related:**  $< -65$  dBc at  $\geq 30$  kHz offset, for -20 dBm tone at input mixer

##### HP 8592D

**Distortion  $> 10$  MHz:**  $< -70$  dBc for two -30 dBm tones at input mixer and  $> 50$  kHz separation

**Other input-related:**  $< -65$  dBc at  $\geq 30$  kHz offset, for -20 dBm tone at input mixer,  $\leq 18$  GHz;  $< -60$  dBc for -20 dBm tone at input mixer,  $\leq 22$  GHz

#### Display Range

**Log scale:** 0 to -70 dB from ref level is calibrated; 0.1, 0.2, 0.5 dB/div and 1 to 20 dB/div in 1 dB steps; 8 div displayed

**Linear scale:** 8 divisions

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

**Marker readout resolution:** 0.05 dB for log scale; 0.5% of reference level for linear

#### Reference Level

**Range:** Same as amplitude range

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

**Accuracy:**  $\pm 0.3$  dB @ -20 dBm

**0 dBm to -59.9 dBm:**  $\pm (0.3 \text{ dB} + 0.01 \times \text{dB from } -20 \text{ dBm})$

#### Frequency Response (10 dB input attenuation)

**Absolute (referenced to 300 MHz CAL OUT)**

**HP 8590D:**  $\pm 1.5$  dB

**HP 8592D (preselector peaked in band  $> 0$ ):**  $\pm 1.5$  to  $\pm 5.0$  dB

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

**HP 8590D:**  $\pm 1.0$  dB

**HP 8592D (preselector peaked in band  $> 0$ ):**  $\pm 1.0$  to  $\pm 2.0$  dB

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

**HP 8590D Opt 001:** +28.75 dBmV  $\pm 0.4$  dB

**Resolution Bandwidth Switching Uncertainty (ref to 3 kHz RBW, at ref level):**  $\pm 0.4$  dB for 3 kHz to 3 MHz RBW;  $\pm 0.5$  dB for 1 kHz

**Log to Linear Switching:**  $\pm 0.25$  dB at ref level

#### Display Scale Fidelity

**Log incremental accuracy:**  $\pm 0.4$  dB/4 dB, 0 to -60 dB from ref level

**Log maximum cumulative:**  $\pm (0.4 \text{ dB} + 0.01 \times \text{dB from ref level})$ , 0 to -70 dB from ref level

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

#### General

Same as for HP 8590 E-Series.