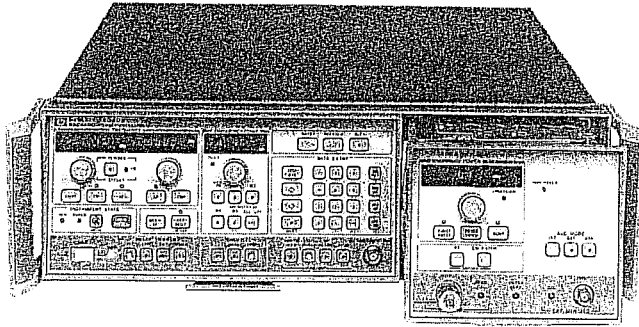


SIGNAL SOURCES

Mainframe and RF Plug-ins

HP 8350 and HP 83500 Series

- Versatile microprocessor-controlled mainframe
- Single-band, straddle-band, and broadband plug-ins
- 10 MHz to 50 GHz from a single plug-in
- 13 dBm output power to 26.5 GHz



HP 8350B Mainframe with HP 83599A RF Plug-in

HP 8350 System

The HP 8350 is a powerful general-purpose source for swept microwave measurements, CW signal generation, and automatic testing. Combine the HP 8350 mainframe with any of the 20 versatile HP 83500 Series RF plug-ins to configure a source that meets your frequency and power requirements.

HP 8350 Mainframe

The HP 8350 mainframe includes many productivity features, such as five independent, continuously variable markers, a marker sweep function, and save/recall registers that provide quick access to nine complete front panel settings. The HP 8350 can alternate between two completely different front panel settings on successive sweeps. When this alternate sweep function is used with an HP 8757 scalar analyzer, the responses of the test device under the two test conditions can be displayed simultaneously.

RF Plug-Ins

The HP 83500 series RF plug-ins offer a wide range of frequency coverage and output power capabilities to match a variety of application requirements from 0.01 to 50 GHz. These plug-ins are internally leveled¹, providing flat, calibrated output power levels with a range up to 22 dB (plug-in dependent). The range may be fully utilized with the power sweep and slope features. Power levels can also be adjusted up to 80 dB with Option 002 (step attenuator).

Frequency coverage up to 110 GHz can be achieved in waveguide with the HP 83550A RF plug-in and HP 83550 series mm-wave source modules. Other RF plug-ins, such as the HP 83590 series, can drive the HP 83550 modules via the HP 8349 microwave amplifier.

HP 8350 Mainframe Operating Characteristics

Frequency Control Modes: Start/stop sweep, CF/DF, CW, and frequency offset

Instrument State Storage

Save n/recall n: Nine front-panel settings

Sweep Time: Adjustable from 10 ms to 100 s (plug-in dependent)

Remote Programming

HP-IB interface functions: SH1, AH1, T6, L4, SR1, RLL1, PP0, DC1, DT1, C0, EI

General Specifications

Operating Temperatures: 0° to 55° C

Power: 100, 120, 220, or 240 V ±10%, 50 to 60 Hz

Approximately 375 V-A including RF plug-in

Size: 425 mm W × 133.3 mm H × 422 mm D (16.75 in × 5.25 in × 16.6 in)

Weight (without RF unit): Net, 16.5 kg (36.4 lb); shipping, 22.7 kg (50 lb)

¹ The HP 83572C offers only optional external leveling (Option 001).

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Output Characteristics

Minimum Settable Power: -5 dBm

HP 83592B/95C only: -2 dBm

HP 83597B/99A only: -12 dBm

Source Output VSWR (50 Ω nominal), typical: <1.9

HP 83597B/99A only: <2.0

Externally Leveled Power Variation (typical)

Crystal detector or power meter²: ±0.2 dB

With temperature: ±0.1 dB/°C

Power Sweep

Range: >12 dB

HP 83592C only: >9 dB

HP 83597B/99A only: >12 dB (22 dB < 20 GHz)

Accuracy (including linearity): ±1.5 dB, typical

Resolution (displayed): 0.1 dB

Power Slope

Range: 0-5 dB/GHz, to max power sweep range

Linearity, typical: 0.2 dB

Resolution (displayed): 0.01 dB/GHz

Modulation Characteristics

External AM (typical)

Frequency response: 100 kHz

Control range: 15 dB

Sensitivity: 1 dB/V

Internal Square-Wave Modulation: 1 kHz or 27.8 kHz square wave

On/off ratio: >30 dB

External Pulse Modulation (typical)

Rise/fall time: ≤50 ns

Min pulse width:

Internally leveled: ≤5 μs

Unleveled: ≤200 ns

HP 83597B/99A only: ≤1 μs

External FM

Max deviations for modulation frequencies

dc to 100 Hz: ±75 MHz

100 Hz to 1 MHz: ±7 MHz

1 MHz to 2 MHz: ±5 MHz

2 MHz to 10 MHz: ±1 MHz

Sensitivity: -20 or -6 MHz/V

General Specifications

Display Resolution (power): 0.1 dB

Minimum Sweep Time

Single band: 10 ms

HP 83597B/99A only: 30 ms

Full band:

HP 83590A, 83592A/B: 25 ms

HP 83592C: 35 ms

HP 83595C: 30 ms

HP 83597B/99A: <20 GHz: 75 ms

>20 GHz: 150 ms

Auxiliary Output (rear panel): 2.0/2.3 to 7 GHz fundamental oscillator, nominally 0 dBm

Frequency Reference Output (switch selectable):

1 V/GHz ±25 mV (to 18 GHz) or 0.5 V/GHz ±25 mV (full span)

HP 83597B/99A

0.5 V/GHz (to 38 GHz) or 0.25 V/GHz (full span)

±25 mV (<2.4 GHz) or 100 mV (>2.4 GHz)]

RF Output Connector

HP 83590A/92A/92B/92C: Type-N, female

HP 83595C: 3.5 mm, male

HP 83597B/99A: 2.4 mm, male

Weight: Net, 6.0 kg (13.2 lb); shipping, 9.2 kg (20 lb)

HP 83597B/99A: Net, 6.8 kg (16 lb); shipping, 11.8 kg

(26 lb)

² Opt 002 attenuates the minimum settable power from 55 to 70 dB, depending on plug-in.

³ Sweep times are typically >10 s and ≥5 s/GHz.

Ordering Information

HP 8350B Sweeper Mainframe:

Opt 400 60 to 400 Hz Fan

Opt 803 HP 5343A Interface Cables

Opt 910 Extra Manual

Opt W30 Extended Repair Service

Opt W32 Calibration Service

Price

\$5,610

+\$204

+\$61

+\$82

+\$128

+\$312

HP 83590A, 83592A/B/C, 83594A, 83595A/C Specifications

	Band 0	Band 1	Band 2	Band 3	Band 4	Full Band
Frequency Characteristics						
Range (GHz)						
HP 83590A		2.0 to 7.0	7.0 to 13.5	13.5 to 20	—	2.0 to 20
HP 83592A/B/C	0.01 to 2.4	2.4 to 7.0	7.0 to 13.5	13.5 to 20	—	0.01 to 20
HP 83595C	0.01 to 2.4	2.4 to 7.0	7.0 to 13.5	13.5 to 20	20 to 26.5	0.01 to 26.5
Accuracy (MHz, 25 ± 5° C)						
CW mode	±5	±5	±10	±10	±12	
All sweep modes (sweep times > 100 ms)	±15	±20	±25	±30	±35	±50
Linearity (MHz), typical	±2	±2	±4	±6	±10	
Stability, typical						
With temperature (kHz/° C)	±200	±200	±400	±600	±800	
With time ¹ (kHz, in a 10-min period)	±100	±100	±200	±300	±400	
Residual FM, kHz peak (10 Hz–10 kHz BW)	<5	<5	<7	<9	<12	
Output Characteristics (25° ± 5° C)						
Maximum leveled power (dBm, internally leveled)						
HP 83590A/83592A	10	10	10	10	—	10
HP 83592B	13	13	13	10	—	10
HP 83592C	10	6	6	4	—	4
HP 83595C	13	13	13	13	10	10
Power level accuracy² (dB)	±1.5	±1.3	±1.3	±1.4	±1.7	±1.5 (1.8) ³
Power variation (dB, max specified power)	±0.9	±0.7	±0.7	±0.8	±0.9	±0.9 (1.0) ³
Spurious signals (dBc, max specified power)						
Harmonics						
HP 83590A/83592A/B	< -25 ⁴	< -25	< -25	< -25	—	< -25 ⁴
HP 83592C	< -25	< -50	< -55	< -55	—	< -25
HP 83595C	< -25	< -50	< -50	< -50	< -50	< -25
Nonharmonics						
	< -25	< -50	< -50	< -50	< -50	< -25

HP 83596B, 83597B, 83598A, 83599A Specifications

	Band 0	Band 1	Band 2	Band 3	Band 4	Full Band
Frequency Characteristics						
Range (GHz)						
HP 83597B	0.01 to 2.4	2.4 to 7.0	7.0 to 14	14 to 26.5	26.5 to 40	0.01 to 40
HP 83599A	0.01 to 2.4	2.4 to 7.0	7.0 to 14	14 to 26.5	26.5 to 50	0.01 to 50
Accuracy (MHz, 25° ± 5° C)						
CW mode	±5	±5	±10	±20	±25	
All sweep modes (sweep time > 100 ms)	±15	±20	±25	±50	±65	±100 (75) ⁵
Linearity (MHz), typical	±2	±2	±4	±10	±20	
Stability, typical						
With temperature (kHz/° C)	±200	±200	±400	±800	±1600	
With time ¹ (kHz, in a 10 min. period)	±100	±100	±200	±400	±800	
Residual FM, kHz peak (10 Hz–10 kHz BW)	<5	<5	<7	<14	<24	
Output Characteristics (25° ± 5° C)						
Maximum leveled power (dBm, internally leveled)						
HP 83597B	10	10	10	10 (5 > 20 GHz)	5	5
HP 83599A	10	10	10	10 (5 > 20 GHz)	3 (0 > 40 GHz)	3 (0 > 40 GHz)
[High power] ⁵ (switch selectable)		[15]	[15]	[15]		
Power level accuracy² (dB)	±1.5	±1.3	±1.3	±1.4	±2.2 (2.0) ⁵	±2.2
Power variation (dB, max specified power)	±0.9	±0.7	±0.7	±0.8	±1.4 (1.2) ⁵	±1.5
Spurious signals (dBc, max specified power)						
Harmonics and Subharmonics						
	< -25	< -45	< -45	< -40	< -40	< -25
	< -50 > 1.5 GHz	[< -20] ⁶	[< -20] ⁶	[< -20] ⁶	< -35 > 40 GHz	
Nonharmonics	< -25	< -50	< -50	< -50	< -50	< -25

¹After 1-hour warmup at selected CW frequency.²Includes power level variations.³HP 83594A, 83595A/C only.⁴HP 83592B harmonics are specified at < -20 dBc below 2.4 GHz, typically < -27 dBc.⁵HP 83596B and 83597B only.⁶Performance unique to high-power mode (2.4 to 20 GHz) in brackets.

Ordering Information

	Price
HP 83590A 2.0 to 20 GHz	\$18,900
HP 83592A 0.01 to 20 GHz	\$22,200
HP 83592B 0.01 to 20 GHz (high power)	\$25,750
HP 83592C 0.01 to 20 GHz (low harmonics)	\$25,750
HP 83595C 0.01 to 26.5 GHz (high power, low harmonics)	\$28,450

HP 83597B 0.01 to 40 GHz	\$35,000
HP 83599A 0.01 to 50 GHz	\$38,100
Opt 002 Step Attenuator	
HP 83590A, 83592A/B, 70 dB	+\$1,560
HP 83592C, 55 dB	+\$1,545
HP 83595C, 60 dB	+\$1,835
HP 83597B, 83599A, 60 dB	+\$2,780
Opt 004 Rear Panel RF Output	+\$206
Opt W30 Extended Repair Service (see page 588)	See HP 8350B ordering guide
Opt W32 Calibration Service (see page 588)	

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