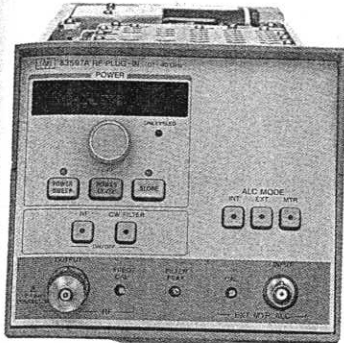


- 10 MHz to 50 GHz frequency coverage with the 2.4 mm coaxial connector
- -45 dBc harmonics and subharmonics from 1.5 to 26.5 GHz, -40 dBc from 26.5 to 40 GHz, -35 dBc to 50 GHz



HP 83597A

The HP 83599A/83598A and 83597B/83596B RF plug-ins provide the highest performance and reliability available up to 50/40 GHz (respectively) from a swept source. They feature high output power, as well as excellent harmonic performance. They also incorporate the 2.4 mm connector that makes high performance broadband coaxial measurements possible. The superiority of the 2.4 mm connector lies in its ruggedness, repeatable performance, and excellent match over the entire frequency range.

A 50 GHz broadband swept scalar measurement system is easy to configure with the HP 83599A/8350B and the HP 8757A/C/E Scalar Network Analyzers with the appropriate 2.4 mm scalar network analyzer accessories. With -45 dBc of harmonic and subharmonic suppression from 1.5 to 20 GHz, and < -35 dBc above 20 GHz, these plug-ins are the ideal choice for scalar network analysis.

The broadband frequency coverage and high output power of these plug-ins make them ideal as local oscillators for down-converting high-frequency signals to a lower intermediate frequency. They provide the broadest frequency coverage for mixer measurement systems or coaxial noise figure measurements with the HP 8970B Noise Figure Meter.

The outstanding performance of the HP 83599A/83598A and 83597B/83596B plug-ins makes them especially attractive as stand-alone sources for various signal generation and simulation applications. Frequency accuracies of better than ± 5 to ± 25 MHz are specified depending on the frequency of operation. These plug-ins also have very flexible amplitude, frequency, and pulse modulation capabilities.

Output Characteristics

Output Power Resolution

Displayed: 0.1 dB Programmable/Settable: ± 0.01 dB

Minimum settable power: -12 dBm

Power variation:

Externally leveled (excluding coupler/detector variation)

Negative crystal detector² or HP 432A/B/C, 436A or 438A

Power meter³: ± 0.2 dB, typical

Power sweep

Calibrated range: > 20 dB (< 20 GHz), > 12 dB (> 20 GHz)

Accuracy (including linearity): ± 1.5 dB, typical

Resolution (displayed): 0.1 dB, typical

Power slope

Calibrated range: up to 5 dB/GHz, up to 12 dB for full sweep

Linearity: 0.2 dB, typical

Resolution (displayed): 0.01 dB/GHz, typical

Residual AM in 100 kHz bandwidth: -50 dBc, typical

Source output VSWR (50 Ω , nominal impedance): < 2.0:1, typical

Modulation Characteristics

External AM

Frequency response: 100 kHz, typical

Maximum input: 15V

Range of amplitude control: 15 dB, typical

Sensitivity: 1 dB/V, typical

Input impedance: approximately 25 k Ω

Internal square-wave modulation

1 kHz or 27.778 kHz square-wave modulation selectable by internal jumper in HP 8350B. The 27.778 kHz modulation ensures operation with all Hewlett-Packard scalar network analyzers.

On/off ratio: > 30 dB

External pulse modulation:

Rise/fall time (neglecting overshoot): < 50 nsec, typical

Minimum RF pulse width: Internally leveled: < 1.5 μ sec, typical

Unleveled: < 1 μ sec, typical

On/off ratio: > 60 dB, typical

External FM

Maximum deviations for modulation frequencies:

DC to 100 Hz: ± 75 MHz (cross-over coupled),

± 12 MHz (direct coupled)

100 Hz to 1 MHz: ± 7 MHz

1 to 2 MHz: ± 5 MHz

2 to 10 MHz: ± 1 MHz

Sensitivity (switch-selectable):

FM mode: -20 MHz/V, typical

Phase-lock mode: -6 MHz/V, typical

General Specifications

Minimum sweep time: 30 ms for a single band, 75 ms for < 20 GHz sweep width, 150 ms for > 20 GHz sweep width.

Auxiliary output: Rear panel 2.3 to 7.0 GHz fundamental oscillator output, nominally 0 dBm.

Frequency reference output: Switch-selectable 0.5 V/GHz (0.01 to 38 GHz) or 0.25V/GHz (0.01 to 40 GHz).

± 25 mV (< 2.4 GHz)

± 100 mV (> 2.4 GHz)

RF output connector: Type 2.4 mm (male).

Weight: Net 7.1 kg (15.7 lb), Shipping 10.2 kg (22.5 lb).

Ordering Information

HP 83599A 10 MHz to 50 GHz RF Plug-In

HP 83598A 2.4 GHz to 50 GHz RF Plug-In

HP 83597B 10 MHz to 40 GHz RF Plug-In

HP 83596B 2.4 GHz to 40 GHz RF Plug-In

Opt 002 60 dB Step Attenuator

Opt 004 Rear-Panel RF Output

Opt W30 Extended Repair Service (see page 671)

Opt W32 Calibration Service (see pg 671)

Price

\$37,000

\$33,500

\$34,000

\$30,500

+ \$2,700

+ \$200

See HP 8350B

Data Sheet

	Band 0	Band 1	Band 2	Band 3	Band 4	Full Band
Frequency Characteristics						
Range						
HP 83599A	0.01 to 2.4 GHz	2.4 to 7.0 GHz	7.0 to 14.0 GHz	14.0 to 26.5 GHz	26.5 to 50.0 GHz	0.01 to 50.0 GHz
HP 83598A	0.01 to 2.4 GHz	2.4 to 7.0 GHz	7.0 to 14.0 GHz	14.0 to 26.5 GHz	26.5 to 50.0 GHz	2.4 to 50.0 GHz
HP 83597B	0.01 to 2.4 GHz	2.4 to 7.0 GHz	7.0 to 14.0 GHz	14.0 to 26.5 GHz	26.5 to 40.0 GHz	0.01 to 40.0 GHz
HP 83596B	0.01 to 2.4 GHz	2.4 to 7.0 GHz	7.0 to 14.0 GHz	14.0 to 26.5 GHz	26.5 to 40.0 GHz	2.4 to 40.0 GHz
Accuracy¹						
CW Mode:						
All Sweep Modes: ²	± 5 MHz	± 5 MHz	± 10 MHz	± 20 MHz	± 25 MHz	
Residual FM (peak): ³	± 15 MHz	± 20 MHz	± 25 MHz	± 50 MHz	± 65 MHz	± 75 MHz
Output Characteristics	< 5 kHz	< 5 kHz	< 7 kHz	< 14 kHz	< 24 kHz	
Maximum Leveled power: ⁴						
[High Power] ⁵	10 mW	10 mW	10 mW	10 mW (3 mW > 20 GHz)	3 mW ⁶	
Power Level Accuracy: ^{1,8}	± 1.5 dB	± 1.3 dB	± 1.3 dB	± 1.4 dB	± 2.2 dB	± 2.2 dB
Power Variation: ^{1,8}	± 0.9 dB	± 0.7 dB	± 0.7 dB	± 0.8 dB	± 1.4 dB	± 1.5 dB
Spurious Signals ⁷						
Harmonics and Subharmonics	< -25 dBc (< 1.5 GHz)	< -45 dBc	< -45 dBc	< -40 dBc	< -40 dBc	
[High Power] ⁸	< -50 dBc (> 1.5 GHz)	[< -20 dBc]	[< -20 dBc]	[< -20 dBc]	[< -35 dBc > 40 GHz]	
Non-Harmonics:	< -25 dBc	< -50 dBc	< -50 dBc	< -50 dBc	< -50 dBc	

¹ 25° C $\pm 5^\circ$ C.

² For sweep times ≥ 100 ms.

³ 10 Hz to 10 kHz bandwidth, CW mode with CW filter on.

⁴ Typically degrades 0.1 dB/°C above 25° C.

⁵ Includes power level variations.

⁶ Degrades typically ± 0.05 dB/°C outside the 20° C to 30° C range.

⁷ At specified maximum leveled power.

⁸ High-power operating-mode performance is given in brackets []. Activating it increases power from 2.4 to 20 GHz and degrades harmonics.

⁹ For sweep times ≥ 10 sec and ≥ 2.5 sec/GHz.

¹⁰ HP 83599A/83598A provide +2 mW from 26.5 to 40 GHz.