

Signal Sources

HP 83550 Series Millimeter-Wave Source Modules

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- 26.5 to 110 GHz frequency range
- Leveled high output power
- Can be driven by many HP microwave sources
- Source module remotable up to one meter length
- Low entry cost



HP 83558A mm-wave source module. 75GHz to 110 GHz

HP 83550 Series Millimeter-Wave Source Modules

The five HP 83550 series millimeter-wave source modules provide a simple approach to extend the frequency range of 11 to 20 GHz sources to cover 26.5 to 40 GHz (HP 83554A) 33 to 50 GHz (HP 83555A), 40 to 60 GHz (HP 83556A), 50 to 75 GHz (HP 83557A) and 75 to 110 GHz (HP 83558A) bands. The HP 83550 series source modules offer leveled high output power, full waveguide band frequency coverage and the high-frequency accuracy and resolution of the driving microwave source.

As shown in the figure in the right column, there are two basic ways of configuring a millimeter-wave source to best suit your specific needs. You can choose between an individual synthesized sweeper (HP 83623B/L, HP 83624B, HP 83751B, or HP 83752B) or a combination of an HP 8349 amplifier and another HP 8360 B/L series or HP 8370 series synthesized sweeper.

Pulse, AM, and FM Modulation

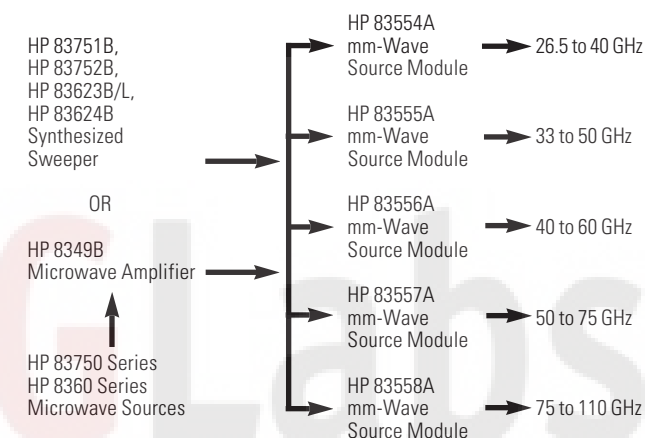
The high-performance pulse modulators of the Hewlett-Packard synthesized sources offer > 80 dB on/off ratio and < 50 ns rise and fall times. Pulse amplitudes are leveled for pulse widths as narrow as 1 μ s.

The HP 8360 B-series also feature dc-coupled AM with a 3 dB bandwidth of 250 kHz. Pulse and amplitude modulation can be used to simultaneously simulate antenna scan patterns.

FM rates between 100 kHz and 8 MHz may be applied to the HP 8360 B-series synthesizer input to achieve deviations up to 16 MHz (HP 83554A) and 24 MHz (HP 83555A, 83556A), 32 MHz (HP 83557A), and 48 MHz (HP 83558A) at millimeter-wave frequencies.

High-Output Power

Leveled-output power from the source modules is rated at +8 dBm for the HP 83554A, +3 dBm for the HP 83555A, +3 dBm for the HP 83556A, +3 dBm for the HP 83557A, and 0 dBm for the HP 83558A. This high-output power can permit the source module to serve as a mixer LO in some applications and also expands the available dynamic range in frequency response measurements.



All at a Lower Cost

The HP 83550 series source modules combine performance and quality with a low cost of entry. This is possible because the source modules are backward-compatible with existing HP microwave sources. Thus you can generate a full waveguide band of millimeter-wave frequencies for just the cost of a source module and an HP 8349B amplifier (where required). Also, the cost of ownership is reduced even further by the two-year warranty on the microcircuits of the HP 83550 series source modules and the HP 8349B microwave amplifier.

HP 83554A Output Characteristics

	HP 8360 Series/8349B, HP 83623B/L, 83624B	HP 8370 Series/8349B, HP 83751B, 83752B
Maximum leveled power (25° ± 5° C)	+ 8 dBm	+ 8 dBm
Minimum settable power	- 5 dBm	- 5 dBm
Power level accuracy ² (25° ± 5° C)	± 2.00 dB	± 2.00 dB
Power flatness (at max. leveled power)	± 1.50 dB ³	± 1.50 dB ³
Source output SWR	< 2.0	< 2.0
Spurious signals ⁴		
Harmonically related spurious:		
26.5 to 26.7 GHz	< - 25 dBc	< - 25 dBc
26.7 to 40.0 GHz	< - 40 dBc	< - 20 dBc

¹ All specifications apply to internally leveled operation only.

² Specified with respect to HP 83550A or HP 8349B power display. Includes power level flatness.

³ Must have 0.5 V/GHz modification on microwave source.

⁴ Expressed in dB relative to the carrier level (dBc).

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HP 83550 Series Millimeter-Wave Source Modules (cont'd)

HP 83555A Output Characteristics¹

	HP 8360 Series/8349B, HP 83623B/L, 83624B	HP 8370 Series/8349B, HP 83751B, 83752B
Maximum leveled power (25° ± 5° C)	+3 dBm	+3 dBm
Minimum settable power	-5 dBm	-5 dBm
Power level accuracy ² (25° ± 5° C)	±2.00 dB	±2.00 dB
Power flatness (at max. leveled power)	±1.50 dB ³	±1.50 dB ³
Source output SWR	< 2.0	< 2.0
Spurious signals ⁴		
Harmonically related spurious:		
33.0 to 37.5 GHz	< -20 dBc	< -20 dBc
37.5 to 49.5 GHz	< -40 dBc	< -50 dBc
49.5 to 50.0 GHz	< -20 dBc	< -20 dBc

HP 83556A Output Characteristics¹

	HP 8360 Series/8349B, HP 83623B/L, 83624B	HP 8370 Series/8349B, HP 83751B, 83752B
Maximum leveled power (25° ± 5° C)	+3 dBm	+3 dBm
Minimum settable power:	-5 dBm	-5 dBm
Power level accuracy ² (25° ± 5° C)	±2.25 dB	±2.25 dB
Power flatness (at max. leveled power)	±1.75 dB ³	±1.75 dB ³
Source output SWR	< 2.0	< 2.0
Spurious signals ⁴		
Harmonically related spurious:		
40.0 to 45.0 GHz	< -20 dBc	< -20 dBc
45.0 to 60.0 GHz	< -40 dBc	< -50 dBc

HP 83557A Output Characteristics

	HP 8360 Series/8349B, HP 83623B/L, 83624B	HP 8370 Series/8349B, HP 83751B, 83752B
Maximum leveled power (25° ± 5° C)	+3 dBm	+3 dBm
Minimum settable power	-2 dBm	-2 dBm
Power level accuracy (25° ± 5° C)	±2.0 dB	±2.5 dB
Power flatness (at max. leveled power)	±1.5 dB	±2.0 dB
Source output SWR		
Leveled:	< 2.0	< 2.0
Unleveled:	< 3.0	< 3.0
Spurious signals ⁴		
Harmonically related spurious:	< -20 dBc	< -20 dBc

HP 83558A Output Characteristics

	HP 8360 Series/8349B, HP 83623B/L, 83624B	HP 8370 Series/8349B, HP 83751B, 83752B
Maximum leveled power (25° ± 5° C)	0 dBm	0 dBm
Minimum settable power	-5 dBm	-5 dBm
Power level accuracy (25° ± 5° C)	±2.0 dB	±2.5 dB
Power flatness (at max. leveled power)	±1.5 dB	±2.0 dB
Source output SWR		
Leveled:	< 2.0	< 2.0
Unleveled:	< 3.0	< 3.0
Spurious signals ⁴		
Harmonically related spurious:	< -20 dBc	< -20 dBc

¹ All specifications apply to internally leveled operation only.

² Specified with respect to HP 83550A or HP 8349B power display.
Includes power level flatness.

³ Must have 0.5 V/GHz modification on microwave source.

⁴ Expressed in dB relative to the carrier level (dBc).

General Specifications

Waveguide Output Connector

- HP 83554A:** EIA size WR 28 waveguide; JAN UG-599 flange
- HP 83555A:** EIA size WR 22 waveguide; JAN UG-383 flange
- HP 83556A:** EIA size WR 19 waveguide; JAN UG-383 (mod.) flange
- HP 83557A:** EIA Size WR 15 waveguide; JAN UG-385 flange
- HP 83558A:** EIA Size WR 10 waveguide; JAN UG-387 flange

Weight: Net, 1.7 kg (4 lb)

Size: Module, 80 mm W x 80 mm H x 210 mm D (3.15 in x 3.15 in x 8.27 in)

Furnished with Each Source Module: Operating and Service Manual, Modification Procedures for 0.5 V/GHz Output, Type-N RF Cable, Module Base Assembly, Synthesizer Interface Cable

Key Literature

HP 83557A/83558A Data Sheet, p/n 5958-0398

HP 83554A/83555A/83556A, MM-Wave Source Modules Data Sheet, p/n 5954-8364D

Ordering Information

HP 83554A 26.5 to 40.0 GHz mm-Wave Source Module

HP 83555A 33.0 to 50.0 GHz mm-Wave Source Module

HP 83556A 40.0 to 60.0 GHz mm-Wave Source Module

HP 83557A 50.0 to 75.0 GHz mm-Wave Source Module

HP 83558A 75.0 to 110.0 GHz mm-Wave Source Module

Opt 910 Extra Service Manual

Opt W30 Extended Repair Service (see page 70)

HP 83554/5/6

HP 83557/8

Opt W32 Calibration Service (see page 70)

HP 83554/5/6

HP 83557/8