

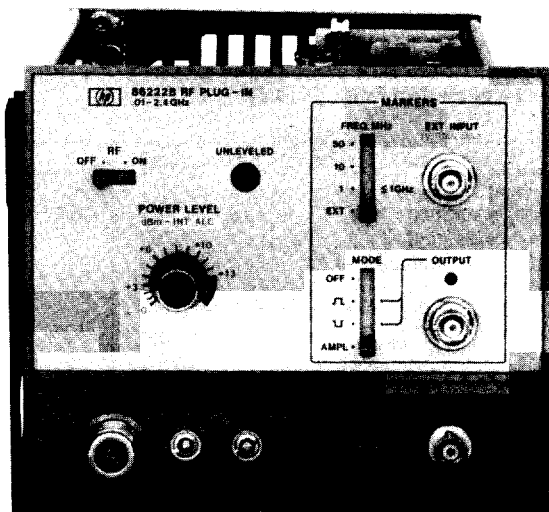


SWEEP OSCILLATORS

Model 8620 Series: Broadband RF Plug-Ins (cont.)

Models 86222A and 86222B

- 10 MHz to 2.4 GHz in one, continuous sweep
- Internally leveled flatness ± 0.25 dB over full range



HP 86222B

The HP 86222A and 86222B RF plug-ins can provide CW or continuous swept 10 MHz to 2.4 GHz frequency coverage. Power output is calibrated from 0 to +13 dBm in 1 dB increments with ± 0.25 dB flatness and excellent linearity (2 MHz) over the entire 0.01 to 2.4 GHz range. For applications demanding precise frequency identification, the HP 86222B offers a crystal marker system which provides a comb of markers at 1, 10 or 50 MHz. Markers may be displayed as intensified spots on a CRT or as amplitude dips on the RF output (often useful for XY recordings). In addition, when the output frequency is coincident with a 50, 10 or 1 MHz comb of the internal crystal oscillator, a front panel LED lights for independent CW frequency calibration (75 kHz accuracy at 1 GHz). For scalar measurements in the AC detection mode, the 27.8 kHz square wave modulation from the HP 8756A or the HP 8757A Scalar Network Analyzer is accepted directly through the external AM input. For phase/magnitude network analysis the interfacing between the sweeper and the HP 8410C Network Analyzer permits the HP 8410C to automatically phase-lock over multi-octave sweeps.

Specifications with Plug-In Installed in an HP 8620C Mainframe

Frequency Characteristics

Range: 10 MHz to 2.4 GHz.

Accuracy (25°C)

CW mode: ± 10 MHz.

Remote programming: typically ± 1.5 MHz.

All sweep modes: ± 15 MHz (>100 ms sweep time). Accuracy of HP 86222B may be enhanced to better than ± 200 kHz through use of crystal markers.

Linearity: typically ± 2 MHz.

Stability

With temperature: ± 500 kHz/°C.

With 10% line voltage change: ± 20 kHz.

With 10 dB power level change: ± 100 kHz.

With 3:1 load SWR, all phases: ± 10 kHz.

With time (after 1-hour warm-up): typically ± 100 kHz/10 min.

Residual FM: (20 Hz - 15 kHz bandwidth; FM switch in NORM; CW Mode): <5 kHz peak.

Output Characteristics

Maximum leveled power (25°C): >20 mW (+13 dBm); typically >+15 dBm.

Power level accuracy (internal leveling only): ± 1 dB.

Attenuator Opt 002: add ± 0.2 dB/10 dB step.

Power Variation (at max. rated power)

Internally Leveled

0.01 to 2.4 GHz: ± 0.25 dB.

Stability with temperature: typically ± 0.02 dB/°C.

- 1, 10, and 50 MHz crystal marker combs with HP 86222B
- Compatible with HP 8350 mainframe via HP 11869A adapter

Externally Leveled (excluding coupler and detector variation)

Crystal detector: (-10 to -100 mV at rated output): ± 0.1 dB.

Power meter (with HP 432A/B/C series power meters): ± 0.1 dB.

Residual AM in 100 kHz BW: <-50 dBc.

Spurious Signals (below fundamental)

Harmonics: <-25 dBc at +13 dBm; typically <-30 dBc at +10 dBm.

Non-Harmonics

0.01 to 2.3 GHz: <-30 dBc at +13 dBm; typically <-40 dBc at +10 dBm.

2.3 to 2.4 GHz: <-25 dBc at +13 dBm; typically <-35 dBc at +10 dBm.

Broadband noise in 100 kHz bandwidth: typically <-70 dBm.

Impedance: 50 Ω nominal.

SWR: <1.5 internally leveled.

Slope control: allows variable compensation for frequency dependent losses in test set-up.

RF output connector: type N female.

Modulation Characteristics

External AM

Input impedance: approximately 10 k Ω .

Frequency response: typically 150 kHz.

Square Wave Response

On/Off ratio: >30 dB.

Symmetry: 40/60, for > 10 dBm output power.

Attenuation for +6 V input: >30 dB.

Internal AM

1 kHz square-wave On/Off ratio: >30 dB.

RF blanking On/Off ratio: >30 dB.

External FM

Maximum Deviations for Modulation Frequencies

DC to 100 Hz: ± 75 MHz.

100 Hz to 1 MHz: ± 5 MHz.

1 MHz to 2 MHz: ± 2 MHz.

Sensitivity (typically)

FM mode: -20 MHz/V.

Phase-lock mode: -6 MHz/V.

Crystal Marker Capabilities (HP 86222B only)

Internal crystal markers: harmonic markers of 10 and 50 MHz usable over full 0.01 to 2.4 GHz range and 1 MHz markers usable 0.01 to 1 GHz. Positive (+) or negative (-) voltage output pulses can be selected to Z-axis intensify a scope trace; or RF amplitude pips can be selected (at maximum sweep speed, pulse width optimized for approximately 10 markers/sweep).

Accuracy of center frequencies (25°C): $\pm 5 \times 10^{-6}$.

Typical Marker Width Around Center Frequency

1 MHz markers: ± 75 kHz.

10 MHz markers: ± 200 kHz.

50 MHz markers: ± 300 kHz.

Temperature stability: typically $\pm 2 \times 10^{-6}$ /°C.

Marker output

Pos. intensity mode: nominally >3 V.

Neg. intensity mode: nominally -3 to -8 V, internally adjustable.

Amplitude mode: typically 0.5 dB, internally adjustable.

General

Weight: net, 2.5 kg (5.5 lb); shipping, 4 kg (9 lb).

Ordering Information

HP 86222A 0.01-2.4 GHz RF Plug-In (internal leveling standard)

HP 86222B 0.01-2.4 GHz RF Plug-In with Crystal and External Markers (internal leveling standard)

Opt 002: 70 dB Step Attenuator (10 dB steps)

Opt 004: Rear Panel RF Output

Price

\$5,520

\$6,970

add \$750

add \$200