*Table 1-1. Specifications*

| RF Plug-in Installed in 8620A or 8620B Sweep Oscillator Mainframe | 86230A | 86230B | 86241A |
|---|---|---|---|
| **FREQUENCY** | | | |
| Frequency Range: [1] | 2.0 - 4.0 GHz | 1.8 - 4.2 GHz | 3.2 - 6.5 GHz |
| Frequency Accuracy: (25°C) [2] | | | |
| CW Mode: [3] | ± 10 MHz | ± 10 MHz | ± 30 MHz |
| All Sweep Modes: (for sweep time >100 msec) | ± 15 MHz | ± 15 MHz | ± 33 MHz |
| Frequency Stability: | | | |
| With Temperature: | ± 500 kHz/°C | ± 500 kHz/°C | ± 650 kHz/°C |
| With 10% Line Voltage Change: | ± 20 kHz | ± 20 kHz | ± 30 kHz |
| With 10 dB Power Level Change: | ± 2 MHz | ± 1 MHz | ± 1 MHz |
| Residual FM: (in 10 kHz bandwidth) | | | |
| CW Mode: | < 7 kHz peak | < 7 kHz peak | < 7 kHz peak |
| **POWER OUTPUT** | | | |
| Maximum Leveled Power: (25°C) | > +7 dBm (5 mW) | > +10 dBm (10 mW) | > +4 dBm (2.5 mW) |
| Power Variation: | | | |
| Unleveled: | < ± 3 dB | < ± 3 dB | < ± 4 dB |
| Internally Leveled (Option 001): | < ± 1.2 dB | < ± 1.2 dB | < ± 0.7 dB |
| Externally Leveled: | | | |
| Crystal Detector: [4] | < ± 0.1 dB | < ± 0.1 dB | < ± 0.1 dB |
| Power Meter: [5] | < ± 0.1 dB | < ± 0.1 dB | < ± 0.1 dB |
| Spurious Signals: (below fundamental at specified maximum power) | | | |
| Harmonics: | > 16 dB | > 20 dB | >16 dB (3.2-3.8 GHz)<br>>20 dB (3.8-6.5 GHz) |
| Nonharmonics: | > 60 dB | > 60 dB | > 60 dB |
| Residual AM: AM noise in 100 kHz bandwidth (below fundamental at maximum power) | > 50 dB | > 50 dB | > 50 dB |
| Source VSWR: 50 Ω nominal impedance | | | |
| Internally Leveled (Option 001): | < 1.6 | < 1.6 | < 1.6 |
| Unleveled: Typically | 2.5 | 3.0 | 2.5 |
| **MODULATION** | | | |
| External FM: | | | |
| Maximum Deviations for Modulation Frequencies: | | | |
| DC to 100 Hz: | ± 25 MHz | ± 25 MHz | ± 25 MHz |
| DC to 1 MHz: | ± 2 MHz | ± 2 MHz | ± 2 MHz |
| Sensitivity: Nominal [6] | | | |
| FM Mode: | −4 MHz/V | −4 MHz/V | −6 MHz/V |
| Phase-lock Mode: | −4 MHz/V | −4 MHz/V | −6 MHz/V |
| AM: Internal 1 kHz square wave ON/OFF ratio, external AM sensitivity to −10 volts input | > 25 dB | > 25 dB | > 25 dB |

[1] All specifications are at 0 to 55 degrees C except where noted and at RF output jack. Allow 30 minutes warmup time.

[2] See also the Supplemental Characteristics, Table 1-2.

[3] Approach desired frequency from low-frequency end of band.

[4] Excluding coupler and detector variation.

[5] Use HP Model 431B, 431C, and 432A power meters with HP Model 8404A Leveling Amplifier. Sweep durations > 10 seconds.

[6] A positive input voltage decreases frequency.

*Table 1-2. Supplemental Performance Characteristics (1 of 2)*

| SUPPLEMENTAL PERFORMANCE CHARACTERISTICS | | |
|---|---|---|
| | **86230A, 86230B** | **86241A** |
| **FREQUENCY** | | |
| **Frequency Accuracy:** | | |
| START-STOP END POINTS | (FM switch in position 1)<br>Sweep Time 0.01 to 0.1 Sec:<br>< ± 60 MHz or < ± 20 MHz<br>± 2% of sweep width. | (FM switch in position 1)<br>Sweep Time 0.01 to 0.1 Sec:<br>< ± 99 MHz or < ± 33 MHz<br>± 2% of sweep width. |
| MARKER: | Sweep Time > 0.1 sec: < ± 40 MHz<br>Sweep Time 0.01 to 0.1 sec:<br>< ± 60 MHz or < ± 20 MHz<br>± 2% of sweep width. | Sweep Time > 0.1 sec: < ± 66 MHz<br>Sweep Time 0.01 to 0.1 sec:<br>< ± 99 MHz or < ± 33 MHz<br>± 2% of sweep width. |
| ΔF Center Frequency: | MANUAL Sweep: < CW frequency<br>± 1 MHz ± 2% of sweep width.<br>AUTO Sweep (Sweep Time 0.01 to 0.1 sec): < CW frequency<br>± 1 MHz ± 4% of sweep width. | MANUAL Sweep: < CW frequency<br>± 1 MHz ± 2% of sweep width.<br>AUTO Sweep (Sweep Time 0.01 to 0.1 sec): < CW frequency<br>± 1 MHz ± 4% of sweep width. |
| ΔF Sweep Width: | MANUAL Sweep: < ± 1 MHz,<br>+3%, −10% of sweep width.<br>AUTO Sweep (Sweep time > 0.1 sec): < ± 1 MHz, +1%, −12% of sweep width.<br>AUTO Sweep (Sweep time 0.01 to 0.1 sec): < ± 1 MHz, +3%, −17% of sweep width. | MANUAL Sweep: < ± 1 MHz,<br>+3% −10% of sweep width.<br>AUTO Sweep (Sweep time > 0.1 sec): < ± 1 MHz, +1%, −12% of sweep width.<br>AUTO Sweep (Sweep time 0.01 to 0.1 sec): < ± 1 MHz, +3%, −17% of sweep width. |
| CW VERNIER: | CW Vernier Frequency: < ± 2 MHz,<br>+3%, −10% of scale setting. | CW Vernier Frequency: < ± 2 MHz,<br>+3%, −10% of scale setting. |
| CW REMOTE PROGRAMMING: | < ± 15 MHz | < ± 25 MHz |
| **Frequency Linearity:**<br>(Correlation between frequency and SWEEP OUT voltage) | Sweep Time > 0.1 sec: < ± 40 MHz<br>Sweep Time 0.01 to 0.1 sec:<br>< ± 60 MHz or < ± 20 MHz<br>± 2% of sweep width. | Sweep Time > 0.1 sec: < ± 66 MHz<br>Sweep Time 0.01 to 0.1 sec:<br>< ± 99 MHz or < ± 33 MHz<br>± 2% of sweep width. |
| **Residual FM in 10 kHz Bandwidth:** | (FM switch in position 1)<br>MANUAL sweep mode: < 7 kHz<br>AUTO sweep mode (Sweep Time Switch in 10—100 sec. position): < 7 kHz<br>AUTO sweep mode (Sweep Time Switch in .01—10 sec. position): < 14 kHz | (FM switch in position 1)<br>MANUAL sweep mode: < 7 kHz<br>AUTO sweep mode (Sweep Time Switch in 10—100 sec. position): < 7 kHz<br>AUTO sweep mode (Sweep Time Switch in .01—10 sec. position): < 21 kHz |

*Table 1-2. Supplemental Performance Characteristics (2 of 2)*

| SUPPLEMENTAL PERFORMANCE CHARACTERISTICS | | |
|---|---|---|
| | **86230A, 86230B** | **86241A** |
| **FREQUENCY (Cont'd)** | | |
| Residual FM in 10 kHz Bandwidth (cont'd) | (FM switch in position 2)<br>All MANUAL or AUTO sweep modes: < 14 kHz peak | (FM switch in position 2)<br>All MANUAL or AUTO sweep modes: < 21 kHz peak |
| **POWER OUTPUT** | | |
| Power Level: | | |
| Stability with temperature change: | $< -0.1$ dB/°C | $< -0.1$ dB/°C |
| Dynamic range of POWER LEVEL control: (while maintaining 60-40 symmetry of internal 1 kHz square wave) | | |
| Leveled: | > 20 dB | > 10 dB |
| Unleveled: | > 25 dB | > 25 dB |
| **MODULATION** | | |
| Phase-Lock: (FM switch in position 2) | | |
| Sensitivity: | −4 MHz/V | −6 MHz/V |
| Rate: | DC to 1 MHz | DC to 1 MHz |
| Internal AM: (Below maximum leveled power) | | |
| RF Blanking ON/OFF Ratio: | > 25 dB | > 25 dB |
| External AM: | | |
| Frequency Response: (with RF signal down 6 dB from maximum power output) | | |
| Unleveled: | DC to 30 kHz | DC to 30 kHz |
| Leveled: | DC to 30 kHz | DC to 30 kHz |

## GENERAL

**Oscillator Type:** Fundamental

**Net Weight:** 4 lbs, 3 oz.

**Dimensions:** Length: 12 in. (30,48 cm); Width: 5-13/16 in. (14,76 cm); Height: 5 in (12,7 cm).

**Options:**

Option 001: Internal leveling

Option 004: Rear panel RF output