520 MHz Signal Generator

- **1 to 520 MHz Frequency Range With 1 kHz Resolution**
- **Phase-Lock Stability Over Entire Range**
- **Built-In Frequency Programmability**
- **Internal and External AM/FM Capability**

Versatility
Model 3000 Signal Generator is a rugged, completely solid-state instrument covering the VHF frequency range of 1 to 520 MHz. Ease of operation and exceptional accuracy, stability, dynamic range and AM/FM capability are the key features of this high value unit.

High stability signals are accurate to 0.001% in CW and AM modes. In FM mode, frequency is accurate to 0.001% ± 10 kHz up to 50 kHz peak deviation and 0.001% ± 45 kHz up to 500 kHz peak deviation. In AM mode, amplitude can be modulated to 90%.

Flexibility
Frequency is set via front panel lever/indicator switches to a resolution of 1 kHz. Remote frequency programmability is standard.

Output power is monitored on a front panel meter calibrated in both dBm and Vrms. A 15 position, 10 dB step attenuator used in conjunction with an 11 dB vernier control gives a range of +13 to −137 dBm. The calibrated output of Model 3000 is leveled to within ±0.75 dB across its complete frequency range.

FREQUENCY

Range
1 to 520 MHz selectable in 1 kHz steps.

Readout
6 digit lever/indicator switches.

Resolution
1 kHz.

Accuracy
±0.001% in CW and AM modes. (Typical: ±0.0002% after 2 hr.)
±(0.001% +10 kHz) in FM × 1 mode.
±(0.001% +45 kHz) in FM × 100 mode.

Stability
0.2 ppm/hr in CW and AM modes.
500 Hz/10 min in FM × 1 mode.

Programmability
Frequency programmable through rear-panel input connector using BCD-coded TTL voltages or BCD-coded contact closures. Option 01C permits RF level programming.

RF OUTPUT

Power Level Range
+13 to −137 dBm (1V to 0.03 μV rms).

Level Control
Continuously adjustable in 10 dB steps with an 11 dB vernier. Output level is indicated on a front panel meter calibrated in volts and dBm.

Total Level Accuracy
+13 to −7 dBm: ±1.25 dB. (Typical: ±0.75 dB.)
−7 to −77 dBm: ±1.95 dB. (Typical: ±1.25 dB.)
−77 to −137 dBm: ±2.75 dB. (Typical: ±1.5 dB.)

Accuracy Breakdown
Flatness (+13 to −7 dBm): ±0.75 dB (Typical: ±0.5 dB.)
Output Meter: 0.5 dB.
Step Attenuator:
±0.5 to 70 dB (±0.2 dB calibration error).
±1.0 to 130 dB (±0.5 dB calibration error).

Impedance
50Ω (SWR <1.2 at RF output levels below 0.1V).

Leakage
<1 μV into a 2 turn, 1 in. diameter loop held 1 in. from any surface.

Output Connector
Type N.

SPECTRAL PURITY

Harmonic Output
1 to 10 MHz: <−26 dBc.
10 to 520 MHz: <−30 dBc.

Subharmonics
Nondetectable.

Nonharmonics

Fundamental	Spurious Level
1 to 3 MHz	<−60 dBc in 1 to 3 MHz band
3 to 250 MHz	<−65 dBc in 3 to 250 MHz band
3 to 350 MHz	<−55 dBc in 3 to 350 MHz band
3 to 520 MHz	<−35 dBc in 3 to 1000 MHz band

Residual AM
50 Hz to 15 kHz post-detection bandwidth: <−65 dBc.

Residual FM
300 Hz to 3 kHz post-detection bandwidth: <100 Hz (Typical: <50 Hz).
50 Hz to 15 kHz post-detection bandwidth: <200 Hz (Typical: <100 Hz).

AMPLITUDE MODULATION

Frequency
Internal (±5%): 400 Hz and 1 kHz.
External: DC to 20 kHz (±3 dB bandwidth). A 10V p-p signal into 600Ω is required to provide calibrated % modulation control.

Range
0 to 90%.

Distortion
Measured at 1 kHz.
0 to 70% AM: <3%. (Typical, 0 to 30% AM: <1.5%.)
0 to 90% AM: <5%.

Modulation Control
Calibrated from 0 to 90%.

Accuracy
±(5% +5% of reading) at a frequency of 1 kHz.

FREQUENCY MODULATION

Frequency
Internal (±5%): 400 Hz and 1 kHz.
External: DC to 25 kHz (±1 dB bandwidth). A 10V p-p signal into 600Ω is required to provide calibrated deviation control.

Peak Deviation Standard Ranges
0 to 5 kHz and 0 to 500 kHz. Other frequency deviation ranges available on special order.

Deviation Control Calibrations
0 to 5 kHz, ×1 and ×100.

Accuracy
±250 Hz on ×1 range.
±35 kHz on ×100 range.

Distortion
Measured at 1 kHz.
10 kHz to max deviation: <2%.
3 kHz to 10 kHz deviation: <4%.

GENERAL

Dimensions
30.3 cm (12 in.) wide, 13.4 cm (5¼ in.) high; 34.9 cm (13¾ in.) deep.

Weight
13 kg (28.6 lb) net; 13.6 kg (30 lb) shipping.

Power
115 or 230V ±10%; 50 to 400 Hz; approximately 40 watts.

OPTIONS

03
Reverse Power Protection

ACCESSORIES

K108
Rack Mount Adapter (P/N 1019-00-0031). See page 172 for details.

FACTORY/FOB

Beech Grove, IN