520 MHz Signal Generator

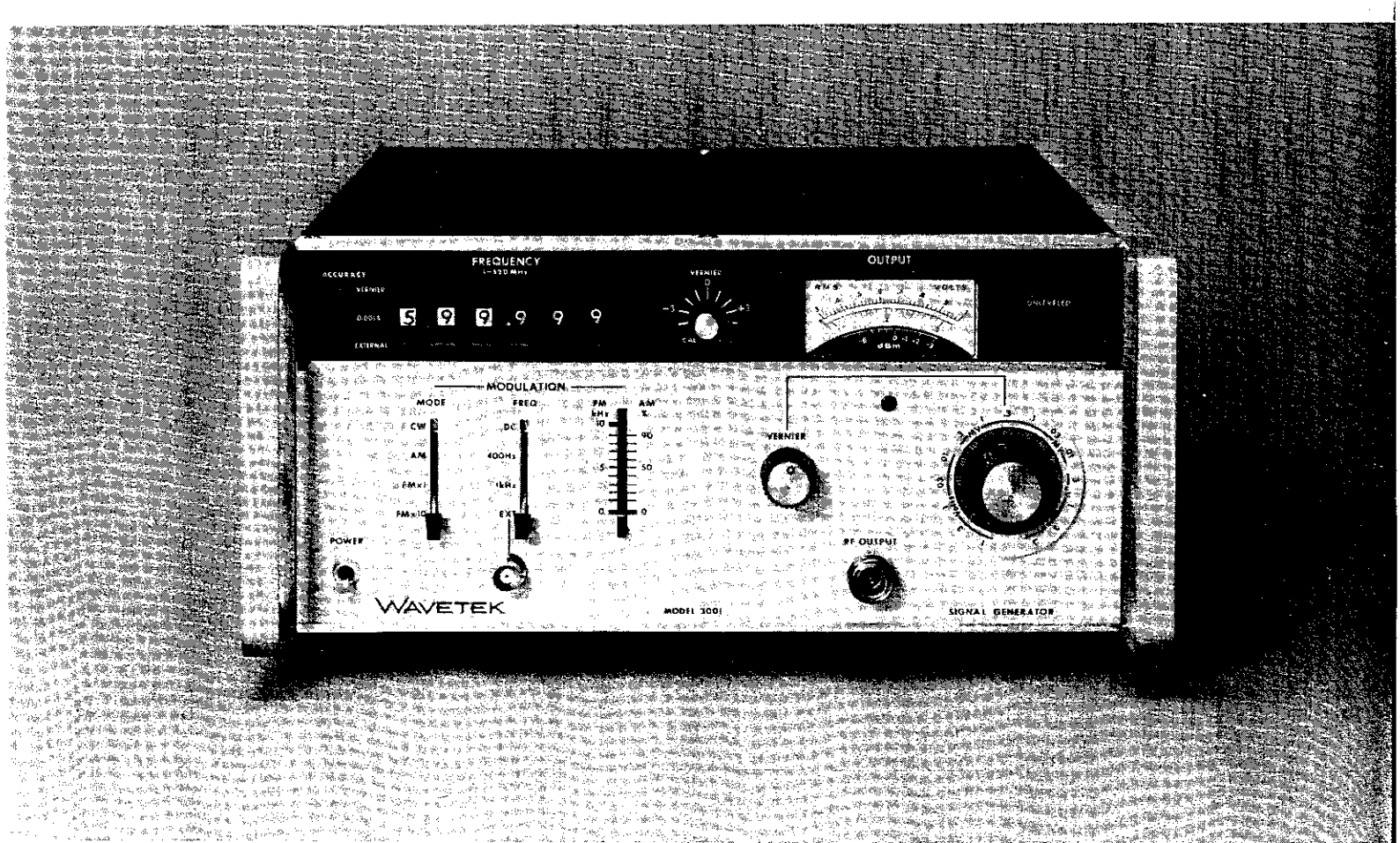
- **Broad Frequency Range**
- **Phase Locked Over Entire Range**
- **Programmable Frequency and RF Level**
- **GPIB Compatible**
- **Simplified Operation**

Versatility
Model 3001, with a frequency range of 1 to 520 MHz, is a rugged, solid state instrument, offering the utmost in measurement convenience when testing receiver sensitivity, antenna gain, channel selectivity, signal-to-noise ratio, gain bandwidth, and transmission line characteristics of various passive and active components.

High Accuracy and Stability
Model 3001 signal accuracy is 0.001% (typically 0.0002%) over the entire frequency range. Standard stability is 0.2 ppm/hour. Option 05, External Reference, allows accuracy over the entire frequency range to equal the accuracy of an external standard. Option 06, High Stability Reference, used in conjunction with Option 05 provides typical overall accuracy of 0.2 ppm (0.00002%) and aging of 0.005 ppm/day.

Human Engineering
Frequency is set via six front panel level/indicator switches to a resolution of 1 kHz. This method of selecting frequency is faster than other methods (range switches, tuning controls, frequency counters, etc.) and is practically error-free. As a further user convenience, one control sets the modulation and provides a readout for percent AM or FM deviation.

Programmability
Frequency is programmable through a rear panel input connector using BCD-coded TTL voltages or BCD-coded contact closures. Option 01C permits RF level programming, making Model 3001 an ideal instrument for automatic and semiautomatic test applications.



MODEL 3001 SIGNAL GENERATORS

FREQUENCY

Range
Model 3001: 1 to 520 MHz selectable in 1 kHz steps.

Readout
6 digit lever/indicator switches.

Resolution
1 kHz.

Accuracy
±0.001% in all modes. (Typical: ±0.0002% after 2 hours.)
±0.001% ±10 kHz when frequency vernier is not in CAL position.

Stability
0.2 ppm/hr.
500 Hz/10 min when frequency vernier is not in CAL position.

Programmability
Frequency programmable through rear-panel input connector using BCD-coded TTL voltages or BCD-coded contact closures.

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: 400 Hz and 1 kHz ±5%.
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 when frequency vernier is not in CAL position. A 10V p-p signal into 600Ω is required to provide calibrated deviation control.

Peak Deviation Standard Ranges
0 to 10 kHz and 0 to 100 kHz. Other frequency deviation ranges available on special order.

Deviation Control Calibrations
0 to 10 kHz, ×1 and ×10.

Accuracy
±500 Hz on ×1 range.
±5 kHz on ×10 range.

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

NOTE: Option combinations are restricted as shown on model/option availability chart (page 200). Options are described on this page also.

01C **$500**
RF Level Programming (0.1 dB steps)

03 **$230**
Reverse Power Protection

04 **$210**
Auxiliary RF Output

05 **$250**
External Reference (Required with Option 06)

05A **$340**
External Reference/High Stability Reference (1 ppm accuracy)

06 **$720**
High Stability Reference (Requires Option 05)

07 **$470**
Low Level Leakage

ACCESSORIES

NOTE: See page 228 for rack mounting details.

K108 **$55**
Rack Mount Adapter (P/N 1019-00-0031)

2102 **$995**
Precision Frequency Standard

FACTORY/FOB

Beech Grove, IN

PRICE

Model 3001 **$4850**