

520 MHz Signal Generators

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

Versatility

Models 3001 (1 - 520 MHz) and 3002 (1 kHz to 520 MHz) are rugged, solid state instruments, offering the utmost in measurement convenience when testing receiver sensitivity, antenna gain, channel selectivity, signal-to-noise ratio, and the gain bandwidth and transmission line characteristics of various passive and active components. With the exceptions of frequency range and options available, Models 3001 and 3002 are identical, precision units.

High Accuracy and Stability

Both models provide signal accuracy of 0.001% (typically 0.0002%) over their entire fre-

quency ranges. 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.

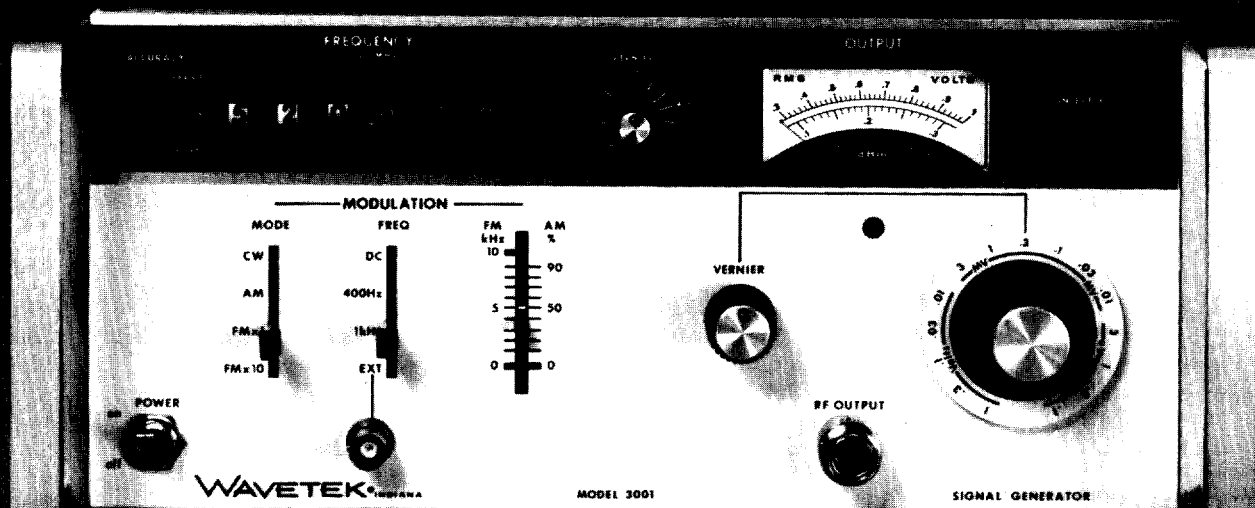
Human Engineering

Frequency is set via six front panel lever/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 fur-

ther convenience to the user, the modulation control and readout for percent AM or FM deviation are one and the same.

Programmability

Frequency programmability through a rear panel input connector using BCD-coded TTL voltages or BCD-coded contact closures is standard. Option 01A or 01B permits RF level programming. GPIB converters (Models 3910 and 3911) plus output level and frequency programmers (3900 Series) are available. The programmability of Models 3001 and 3002 makes them ideal for automatic and semi-automatic test applications.



MODELS 3001 & 3002

SIGNAL GENERATORS

FREQUENCY

Range

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

Model 3002: 1 kHz 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 programmability through rear-panel input connector using BCD-coded TTL voltages or BCD-coded contact closures is standard. GPIB converters (Models 3910 and 3911) plus output level and frequency programmers (3900 Series) are available.

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.

SPECTRAL PURITY

Harmonic Output

1 to 10 MHz: >26 dBc.

10 to 520 MHz: >30 dBc.

1 kHz to 1 MHz (Model 3002 only):

>30 dBc.

Subharmonics

None detectable.

Nonharmonics

Fundamental

Model 3001:

1 to 3 MHz

Spurious Level

>60 dBc in 1 to 3 MHz band

Model 3002:

1 kHz to 3 MHz

>60 dBc in 1 to 3 MHz band

Models 3001 and 3002:

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

>65 dB below carrier in a 50 Hz to 15 kHz post-detection bandwidth.

Residual FM

<100 Hz in 300 Hz to 3 kHz post-detection bandwidth. (Typical: <50 Hz.)

<200 Hz in a 50 Hz to 15 kHz post-detection bandwidth. (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

Output Connector

Type N.

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: Not all options are available all models. See page 110 for a model/option availability chart and a complete description of each option.

- 01A** **\$650**
RF Level Programming (0.1 dB steps)
- 01B** **\$740**
RF Level Programming (10 dB steps)
- 03** **\$200**
Reverse Power Protection
- 04** **\$180**
Auxiliary RF Output
- 05** **\$210**
External Reference (Required with Option 06)
- 05A** **\$295**
External Reference/High Stability Reference (1 ppm accuracy).
- 06** **\$625**
High Stability Reference (Requires Option 05)
- 07** **\$375**
Low Level Leakage

ACCESSORIES

NOTE: See page 111 for programming information and page 174 for rack mounting details.

- Model K108** **\$50**
Rack Mount Adapter
 - Model 2102** **\$825**
Precision Frequency Standard
 - Model 3900** **\$770**
12 Channel Frequency Programmer
 - Model 3900-1** **\$450**
12 Channel Frequency Programmer
 - Model 3901** **\$970**
12 Channel Frequency and 10 Step Output Programmer
 - Model 3901-1** **\$650**
12 Channel Frequency and 10 Step Output Programmer
 - Model 3910** **\$950**
GPIB Converter
 - Model 3911** **\$1235**
GPIB Converter (with integral LED readout of frequency and/or attenuation)
- PRICE (FOB Beech Grove)**
- Model 3001** **\$3900**
 - Model 3002** **\$4350**