SECTION 1
GENERAL INFORMATION

1.1 INTRODUCTION

The Wavetek 1000 Series Sweep/Signal generators are single band instruments covering the frequency range from 500 KHz to 1.4 GHz. All units utilize the same, Front Panel, Harness and Power Supply with the balance of the circuits contained in Plug-In Modules. However, it is not intended that one model be converted to another. The plug-in concept simplifies maintenance problems and provides marker circuits which can be customized to specific applications. A Rear Panel Connector permits remote programming of Center Frequency, Sweep Width and Output Level, plus, External Amplitude and Frequency Modulation.

1.2 SPECIFICATIONS

TABLE 1-1. SPECIFICATIONS

RF SPECIFICATIONS

MODEL	1001A	1002	1003	1004-1	1004	1005	
Frequency Range	0.5 to 300	1.0 to 500	350 to 650	450 to 950	500 to 1000	700 to 1400	MHz
Sweep MAX	300	500	300	500	500	700	MHz
Width MIN	200	200	300	400	400	500	KHz
Maximum Output	+13	+13	+13	+10	+10	+10	dBm
Flatness (Note 1)	±0.25	±0.25	±0.25	±0.25	±0.25	±0.5	dB
Frequency Dial Calibration Intervals	10	10	10	10	10	20	MHz
Freq. Dial Accuracy	±3 MHz	±5 MHz	1% (Note 2)	1% (Note 2)	1% (Note 2)	1% (Note 2)	———
Display Linearity	2	2	2 (Note 2)	2 (Note 2)	2 (Note 2)	2 (Note 2)	%
Frequency Drift 5 MIN.	100	100	50	100	100	200	KHz (Note 3)
Frequency Drift 8 HR.	2	2	2	2	2	4	MHz (Note 3)
Residual FM	15	15	10	10	10	20	KHz
Spurious — Harmonics	30 (10 to 300 MHz)	26 (10 to 500 MHz)	26 (380 to 650 MHz)	26 (500 to 950 MHz)	26 (550 to 1000 MHz)	26 (800 to 1400 MHz)	dB below output
Spurious — Non-Harmonics	40	40 to 300 MHz, 30 to 500 MHz	—	—	—	—	dB below output

NOTE 1 Flatness is read with a Negative Half-wave Detector. If flatness is read with a power meter, flatness will be approximately 2 times negative detector specifications.

NOTE 2 Linearity and Dial accuracy are measured at full output, as additional errors can occur due to frequency pulling from the 0-20db vernier attenuator. This pulling effect is typically less than 1% of frequency.

NOTE 3 Drift is measured after 1 hour warm-up and constant ambient temperature and allowing a 5 minute stabilizing period after a frequency change.

NOTE 4 An output impedance of 75 ohm is available on instruments up to 1000 MHz and provides the same performance. The output system is calibrated in dBmV (0dB REF is 1MV). Maximum output of units providing +13dBm into 50 ohm would be +60dBmV into 75 ohm. Units having a maximum output of +10dBm into 50 ohm, would provide +57dBmV into 75 ohm.

TABLE 1-1. Specifications (Con't.)

Blanking	Retrace blanking of the RF output is provided for sweep operation and removed for CW operation.
Output Impedance	50 ohm standard, 75 ohm optional (see Note 4)
Attenuation	0 to 70dB in 10dB steps 0 to 20dB vernier, calibrated in 1dB intervals.

ACCURACY OF STEP ATTENUATOR	ACCURACY OF VERNIER ATTENUATOR
±0.5dB to 500 MHz	±0.5 dB to 500 MHz
±1.0dB to 1000 MHz	±1.0dB to 1000 MHz
±2.0dB to 1400 MHz	±2.0dB to 1400 MHz

Vernior Frequency Control	±1% of frequency range.

REMOTE PROGRAMMING

A Rear Panel REMOTE Jack provides necessary connections for Remote Control of Frequency, Sweep width and the 0 to 20 dB Vernier output control. This jack also provides connections for EXTERNAL Amplitude and Frequency Modulation

Frequency	May be remotely programmed by a ±16 volt signal (−16 volts corresponds to LOW frequency band end and +16 volts to HIGH frequency band end).
Sweep Width	May be controlled by a remote potentiometer, (Input and output connections provided in Rear Panel REMOTE jack).
Vernier 0-20dB Output	May be remotely programmed over a 20dB range with a 0 to −18 volt signal (−18 volts corresponds to maximum output).
External FM	The full frequency range can be swept at rates up to 4 kHz With reduced Deviation and Linearity, modulation rates to 100 kHz are possible.
External AM	External AM signals are applied to the same connections as for vernier 0-20dB control. Therefore, vernier range must be restricted so the 0 to −18 volt range is not exceeded or distortion will occur. With average voltage set to mid-range, 100% modulation is obtainable up to 1 kHz, 40% modulation is obtainable up to a 40kHz rate.

SWEEP SPECIFICATIONS

Sweep Modes	Repetitive sweep Single sweep Externally triggered sweep Manual sweep Line-lock sweep
Sweep Time	Continuously variable from less than 10ms to over 100 seconds, in 4-decade steps, plus vernier.
Horizontal Output	16 volts peak-to-peak (symmetrical about ground)

TABLE 1-1. Specifications (Con't.)

EXTERNAL LEVELING

External Monitor (ALC)	An external negative signal, between 0.2 and 2 volts, may be used to level the RF output. The ALC front panel input jack mates with Switchcraft type 750 plug.

MARKER SPECIFICATIONS

Type	Birdy by-pass markers with provisions for 8 plug-in marker modules, plus, rear panel external marker input. Markers may be either single frequency or harmonic (comb) type. (See Options A-1 and A-2)
Accuracy	0.005%
External Marker Input	Rear Panel BNC connector accepts external CW signal for conversion to a Birdy marker. Input level: 100mV into 50 ohms.
Marker Width	Adjustable from (approx.) 15 to 400 kHz in four steps.
Marker Size	Adjustable from (approx.) 1V to 1mV peak-to-peak.
Rectified Birdy	Internal switch removes the negative portion of the birdy marker for use with X-Y recorders. Size varies with detector's impedance. Adjustable from (approx.) 6 volt to 1mV with detector impedance of 1 meg ohm, or from 0.5V to 1 mV with detector impedance of 0 ohms.
Marker Tilt	Provides horizontal markers with a size equal to approximately 10% of horizontal display. Adjustment of marker size vectorily adds the normal vertical marker to the horizontal marker, causing the resulting marker to vary from a horizontal position toward a vertical position.

POWER REQUIREMENTS

Line Supply	115 or 230 VAC ± 10%, 50 to 60 Hz, (approx. 20 watts)

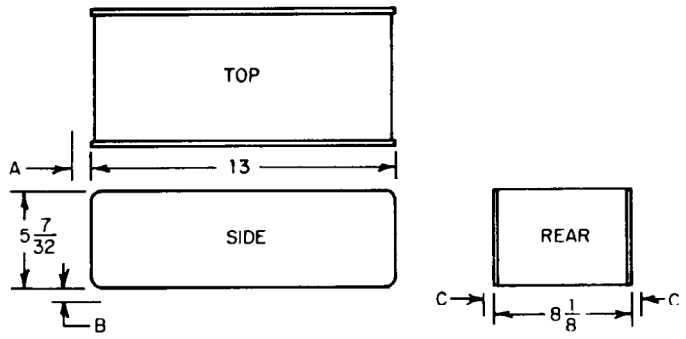
MECHANICAL SPECIFICATIONS (See Figure 1-1.)

A For total length, including knobs, add 11/16 inch

B For total height, including feet, add 5/8 inch

C For total width, including screw heads, add 3/16 inch

Weight
Net— 19 lbs.
Shipping—25 lbs.



1.3 OPTIONS

1.3.1 Marker A-1. Any single frequency between 1 to 1400 MHz.

1.3.2 Marker A-2. Harmonic type at 1, 10 or 50 MHz. (Other frequencies available on special order.)

1.3.3 Modulator A-4. Provides 100% amplitude modulation at a 1 kHz rate.

1.3.4 Penlift A-5. Provides contact closure during sweep time.

1.4 ACCESSORIES

1.4.1 Accessories furnished: Instruction Manual and Plug to mate with Rear Panel REMOTE jack.

1.4.2 Accessories Available:

a. Wide-band RF Detector	Model D-151 for 50 ohm applications up to 1000 MHz. Model D-152 for 50 ohm applications up to 1400 MHz. Model D-171 for 75 ohm applications up to 1000 MHz.
b. Service Kit	K102. Contains a module extender and extension cables.
c. Rack Mount Kit	K103. Mounts single instruments in a 5½ inch space. See figure 2-1
d. Rack Mount Kit	K104. Mounts one or two instruments in a 7 inch space. See figure 2-