

Scalar Analyzer System

- Sweeps 1 MHz to 1 GHz in a Single Band
- Broadband Search Mode
- System Level Correction
- Versatile Display

Wavetek's Scalar Analyzer System is a versatile, low-cost system especially well suited for production testing. A real-time, broadband swept system, it provides highly accurate measurement at any frequency from 1 MHz to 1 GHz. The system is available in either 50 Ω or 75 Ω impedance.

System Components

The system consists of a sweep frequency source, Model 1080 (1081 is 75 Ω); a calibrated dual-channel switching RF comparator, Model

1077 (1076 is 75 Ω); an RF return loss Bridge, Model FB40-50 (FB40-75); and a large-screen oscilloscope, Model 1901C, to simultaneously display both test and reference channels.

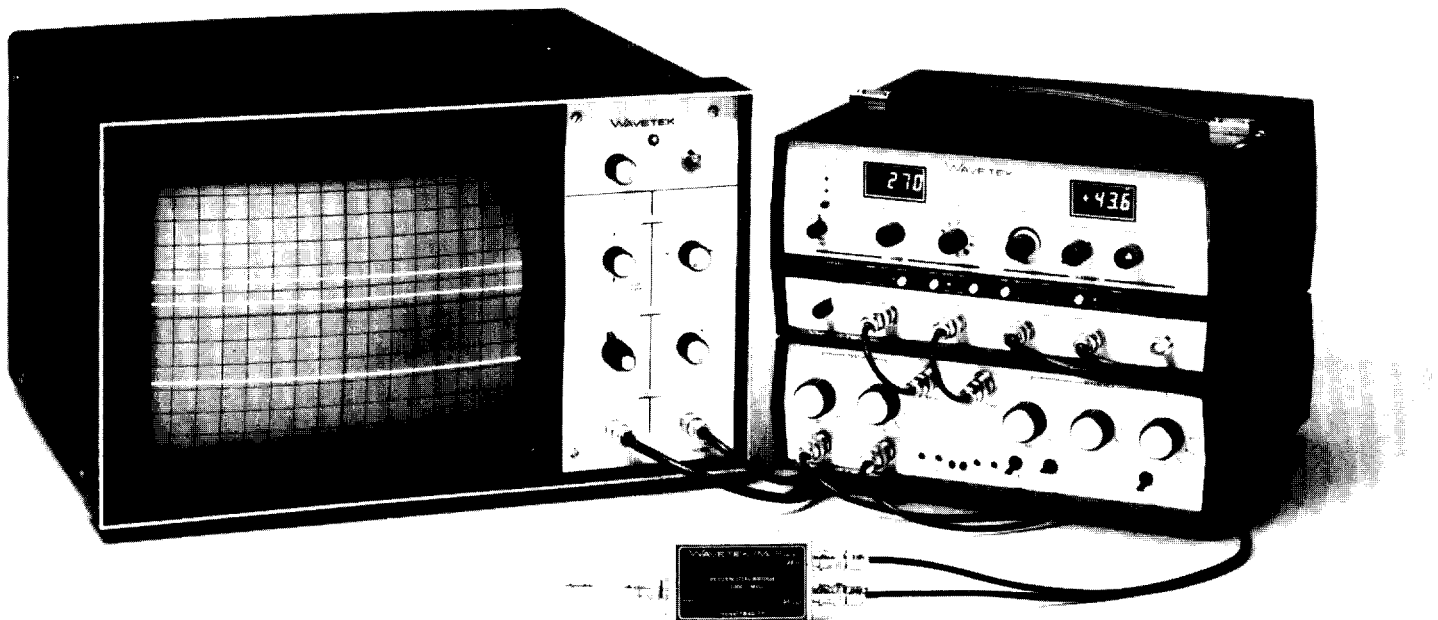
Measurement to 1 GHz in a Single Band

The system sweeps from 1 MHz to 1 GHz in a single band. One oscillator is used to cover the whole band, eliminating errors introduced by switching transients used in other systems. Harmonic markers of

100 MHz, 10 MHz and 1 MHz help identify frequencies easily and accurately at any point in the sweep band. The size of the markers may be controlled to optimize readability and resolution.

Broadband Search Mode

After identifying a point of interest on a wideband response curve, the user may quickly switch to a preset narrow sweep around the marker frequency. When the passband of a device under test is not known, the full sweep mode may be used



MODELS 1080, 1077, 1901C & FB40-50

RF SCALAR ANALYZERS

to locate the passband and the variable marker may then be moved to coincide with the center of the passband. A simple, push-button control changes the mode to ΔF around the center frequency.

System Level Correction

Inaccuracies found in test setups caused by high-frequency rolloff of system components (such as adapters, cables, or "lossy" connectors) may be compensated for via the slope control on either the Model 1080 (1081) Sweep Generator or the Model 1077 (1076) RF Sweep Comparator. By looking at the detected response of this network, the operator can adjust the slope control (± 1 dB/GHz) to

compensate for inherent system errors which typically result in undesirable high-frequency rolloff. Absolute gain or loss measurements of the device under test are now possible with this step.

Absolute accuracy is determined by precision attenuators in each channel. Excellent trace coincidences of 0.3 dB allow very accurate relative measurements between the unknown and the reference or test channels. Use of a common internal detector, amplifier, and cable, virtually eliminates errors due to drift. A cable set to connect the device under test is matched to internal cables to minimize errors normally encountered when connecting the device under test.

Measurement of gain or loss at any frequency is made by allowing the reference and test traces to be superimposed. Gain is measured to 79.9 dB by attenuating the test channel until the traces meet. Loss is measured to 65 dB by attenuating the reference channel. Resolution is 0.1 dB.

Versatile Display

A switch on the front panel of the Wavetek Model 1077 (1076) RF Sweep Comparator controls the choice of linear, logarithmic or unshaped vertical display. Logarithmic display provides a typical dynamic range of 40 dB required to test very sharply tuned devices.

FREQUENCY

Range

1 MHz to 1 GHz in one band.

Sweep Width

Δ : 0.2 to 1000 MHz.

Full Sweep: same as range.

Display Linearity

1% at maximum sweep width.

Drift

Measured at constant temperature, after 1/2 hour warm-up.
<200 kHz for 10 min.

Operating Modes

CW, ΔF and Full Sweep.

RF OUTPUT

Impedance

50 Ω or 75 Ω .

Power Level Range

50 Ω : +13 to -70 dBm.

75 Ω : +60 to -10 dBmV.

Output Flatness

± 0.25 dB.

AMPLITUDE VS. FREQUENCY

Gain Measurement Range

0 to 79.9 dB (resolution: 1 dB).

Loss Measurement Range

0 to >60 dB (resolution: 0.1 dB).

Step (dB)	Accuracy (dB)	
	2 To 500 MHz	1 To 1000 MHz
0.1	± 0.10	± 0.20
1	± 0.10	± 0.25
10	± 0.50	± 1.00

Trace Coincidence

2 to 500 MHz: ± 0.2 .

1 to 1000 MHz: ± 0.3 .

REMOTE PROGRAMMING

Frequency

Center frequency and sweep width control.

Level

RF output level control over >13 dB range.

FB40-50/FB40-75

Impedance

Model FB40-50: 50 Ω .

Model FB40-75: 75 Ω .

Open-Short Change

± 1.2 dB.

Insertion Loss

15 dB nominal.

Directivity

>40 dB.

Connectors

BNC connectors are standard. Contact factory for other options.

GENERAL

Dimensions

Model 1080/1081: 13.3 cm (5 1/4 in.) high; 28.6 cm (11 1/4 in.) wide; 26.7 cm (10 1/2 in.) deep.

Model 1076/1077: 10.2 cm (4 in.) high; 28.6 cm (11 1/4 in.) wide; 26.7 cm (10 1/4 in.) deep.

Model 1901C: 26.2 cm (10 15/16 in.) high; 41.9 cm (16 1/2 in.) wide; 36.2 cm (14 1/4 in.) deep.

Model FB40-50/FB40-75: 5 cm (2 in.) high; 11.5 cm (4 1/2 in.) wide; 3.2 cm (1 1/4 in.) deep.

Weight

Model 1080/1081: 4.9 kg (10.8 lb) net; 6.8 kg (15 lb) shipping.

Model 1076/1077: 3.0 kg (6.5 lb) net; (10 lb) shipping.

Model 1901C: 11.8 kg (26 lb) net; 15 kg (35 lb) shipping.

Model FB40-50/FB40-75: 0.35 gram (10 oz) net; 2.3 kg (5 lb) shipping.

Power

Model 1080/1081: 90 to 110 V; 105 to 125 V; 190 to 220 V; or 210 to 250 V; 50 to 400 Hz; approx 35 watts.

Model 1076/1077: Supplied by associated sweep.

Model 1901C: 115 or 230 V $\pm 10\%$; 50 or 60 Hz; approx 75 watts.

NOTE: For more information

Model 1080: page 102;

Model 1081: page 102;

Model 1901C: page 108;

Models FB40-50, FB40-75, 1076, 1077 consult factory.

FACTORY/FOB

Beech Grove, IN