NETWORK ANALYZERS

Microwave Network Analyzers, 45 MHz to 100 GHz

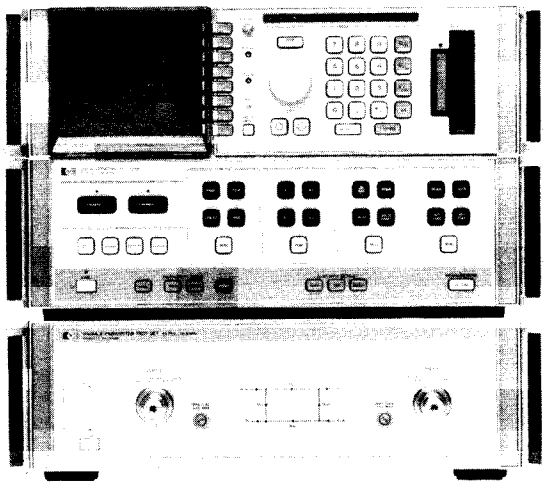
8510 Series

- 45 MHz to 100 GHz frequency range
- "Real Time" error-corrected measurements
- 60 dB effective directivity and source match
- 70 dB to 100 dB dynamic range
- 0.001 dB, 0.01 degree, 0.01 nanosecond measurement resolution
- Time domain analysis

DESIGNED FOR HP-IB SYSTEMS

HP 8510B

HP 8515A



NEW

Description

The HP 8510 series microwave vector network analyzers provide a complete solution for characterizing the linear behavior of either active or passive networks over the 45 MHz to 26.5 GHz frequency range. A complete system comprises the HP 8510B network analyzer, either an HP 8514B or 8515A S-parameter test set, and a compatible RF source. For millimeter-wave measurement needs, complete systems operating to 100 GHz can be configured.

The S-parameter test sets offer a single test setup solution for complete characterization of two-port devices. The HP 8514B covers the frequency range of 45 MHz to 20 GHz. The HP 8515A spans the frequency range of 45 MHz to 26.5 GHz. Each test set includes bias tees and step attenuators useful for active device testing. Option 002 deletes these components for applications where primarily passive components are tested. The HP 8511A is a four-channel frequency converter that covers the 45 MHz to 26.5 GHz frequency range. For all three test sets, Option 001 adds IF switching circuitry for HP 8510B operation with multiple test sets.

Each measurement presented on the CRT display consists of 51, 101, 201, 401 or 801 discrete points of data, and when the system source is a synthesizer, the frequency of each data point is synthesized.

Measurement results can be displayed on one of two independent, yet identical, channels. The channels may be displayed individually, or simultaneously, with results presented in either logorithmic/linear magnitude, phase, or group delay format on rectangular or polar coordinates. Direct measurement of normalized impedance is possible with the Smith chart format. The value and frequency of any one data point can be read with one of five independent markers. The entire measurement trace can be copied directly to a plotter, such as the HP 7474A, 7475A, or 7550A without the need of an external computer. Also, a list of the trace values can be sent to a printer such as the 2225A.

Powerful measurement enhancement functions are also available. Data averaging can be employed to narrow the effective receiver IF bandwidth, extending dynamic range and increasing signal-to-noise ratio. Trace smoothing aids in the interpretation of measurement results and is used to control the aperture of group delay measurements. The equivalent of an electronic line stretcher is available with the electrical delay function.

Built-in storage provides the capability to save and recall up to eight different front panel states, eight separate measurement calibrations, and four separate measurements in nonvolatile memory. Extension of the internal storage capacity is practically limitless via the built-in tape cassette unit.

High Performance

Along with the capability to completely characterize a microwave network with a single connection over the extremely broad 45 MHz to 26.5 GHz frequency range, the HP 8510 system offers wide dynamic range. Depending on the test set used, 80 dB to 100 dB of dynamic range is available. The precision IF processing and detection system contributes as little as ±0.05 dB and ±0.5 degree measurement uncertainty at a level of 50 dB below the reference. Meaningful resolutions of 0.001 dB, 0.01 degree, and 0.01 nanosecond are easily achievable.

"Real Time" Error Correction

The HP 8510's built-in, high speed computer provides the capability to characterize and effectively remove the impact of systematic errors through accuracy enhancement techniques. Effective directivity and source match can be improved to as much as 60 dB. The data processing speed of the system is such that a fully error-corrected, 401 point trace of data is updated in under one second. This virtual "real time" display of error-corrected data means that you can easily adjust your test device while it's being measured, with the assurance that you are viewing the data at the highest possible accuracy.

Time Domain Analysis

The HP 8510 (with option 010) has the capability of displaying the time domain response of a network, obtained by computing the Inverse Fourier Transform of the frequency domain response. The time domain response displays the reflection coefficient of the network versus time, which displays the magnitude and location of each individual discontinuity, or else the transmission coefficient versus time, which displays each individual transmission path.

Ordering Information	Price
HP 8510B Network Analyzer	$33,800
Option 010 Time Domain Capability	9,800
HP 8511A Frequency Converter	18,500
Option 001 add IF Switching	add 2,000
HP 8514B S-parameter Test Set	27,000
Option 001 add IF Switching	add 2,000
Option 002 delete Attenuators and Bias Tees	delete 6,500
HP 8515A S-parameter Test Set	37,900
Option 001 and IF Switching	add 2,000
Option 002 delete Attenuators and Bias Tees	delete 7,000