LIGHTWAVE TEST EQUIPMENT

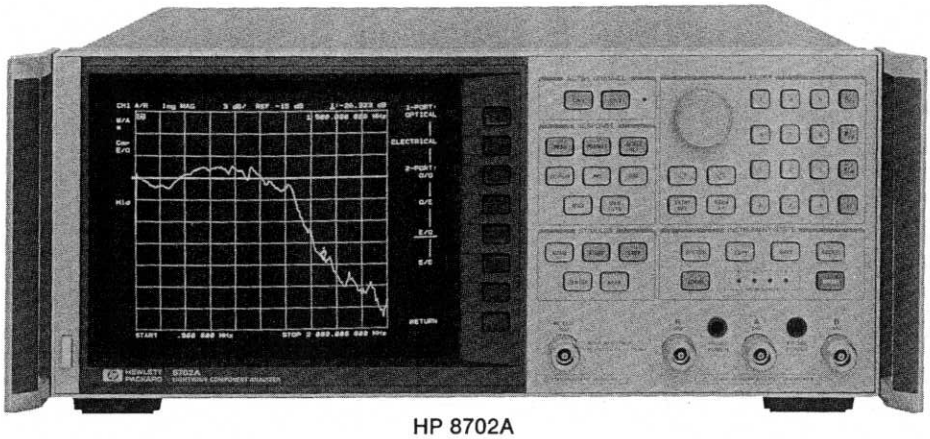
Lightwave Component Analyzer

Model 8702A

- 300 kHz to 3 GHz Modulation Frequency
- Single and Multimode

NEW

DESIGNED FOR HP-IB SYSTEMS



HP 8702A

Description

The HP 8702A can make calibrated measurements of lasers, photodiodes, optical fiber, and electrical components that operate with high bandwidth. The swept modulation frequency measurements show precisely how a component operates on the ' 'information bearing" signal. Knowing how a single component responds independently of the rest of the transmission system gives insight into how system operates, and how to improve it.

The HP 8702A operates at a fixed wavelength (1300 nm), and sweeps the frequency of the intensity modulation signal. The lightwave source and receiver are independently calibrated. This allows calibrated measurements of the modulation characteristics of lasers and photodiodes.

Measure Lightwave Components

In-fiber components such as connectors, splitters, couplers, and lenses, as well as fiber itself, can be measured as a function of modulation frequency. This yields modulation bandwidth, insertion loss, length, and optical return loss measurements. With the time domain option, high resolution reflection measurements (6 cm) and modal dispersion measurements can be made.

Measure Electro-Optical Components

The HP 8702A can make calibrated measurements of the modulation frequency response of lasers, LED's, and modulators. Similarly, it can measure the demodulation frequency response of PIN photodiodes, APD's, and complete receivers. For E/O devices, the measurement shows the actual modulation power generated at a given frequency. For O/E devices, the measurement shows RF current generated as a function of modulation power, at a given frequency. This exact knowledge of the behavior of the electro-optical component gives a designer the ability to optimize the component independently of the measurement system.

Measure Electrical Components

Typical network analyzer measurements such as bandwidth, insertion loss, gain, phase, and impedance of RF components can be made with the HP 8702A. For example, linear components such as amplifiers, filters, and transmission lines can be characterized.

Time Domain Measurements

The HP 8702A option 010, Time Domain, takes the data measured in the frequency domain, and applies the inverse Fourier transform to calculate the impulse response of devices. In reflection measurements, the time axis can be related to distance, and the HP 8702A used to locate discontinuities as close as 6 cm apart in fiber. In transmission, the impulse response can be used to calculate dispersion. The time domain calculations apply to all the measurements that the HP 8702A performs.

HP 83401A

Lightwave Source

HP 83400A Single-mode
HP 83401A Multimode

A 1300 nm Fabret-Perot laser directly modulated through the RF Input. The HP 83400A has 9/125 μ fiber, and the HP 83401A has 50/125 μ fiber.

Wavelength: 1308 ± 10 nm
Spectral Width: ≤ 3 nm
Average Power: 1.25 ± 0.75 mW
Responsivity @ 50 Mhz: −34 dB[1]
Modulation Bandwidth: 300 kHz to 3 GHz
Modulation Frequency Response: ± 3.5 dB
Optical Connector: Selected by option[3]

HP 83410A

Lightwave Receiver

HP 83410A

A 1300 nm PIN photodiode receiver that accepts fiber core sizes up to 62.5 micrometers.

Wavelength: 1300 nm (nominal)
Maximum Power: 3 mW
Responsivity @ 50 Mhz: 20 dB[2]
Modulation Bandwidth: 300 kHz to 3 GHz
Modulation Frequency Response: ± 4 dB < 2 GHz
+4, −14 dB
Optical Connector: Selected by option[3]

Lightwave Coupler

HP 11890A Single-mode
HP 11891A Multimode
Optical Connector: Selected by option[3]

A 3 port, directional lightwave coupler for making lightwave reflection measurements, and monitoring lightwave transmission. The coupler has a nominal 3 dB coupling factor.

RF Interface Kit

HP 11889A

This kit contains the RF accessories required to operate the HP 8702A. The HP 85044 or 85046 test sets replace the function of the HP 11889A. Contains a power splitter, a 20 dB pad, male and female SMA barrels, 3 SMA right angle bends, and a custom cable.

High Frequency Probe

HP 85024A

The HP 85024A makes it easy to perform in-circuit measurements. Its high impedance (0.7 pF in shunt with 1 megaohm) permits high frequency probing without adversely loading the circuit under test, and allows measurements of non-50 ohm devices. Page 246 has a more complete description of the HP 85024A.

S Parameter Test Set

HP 85046A

The HP 85046A test set provides the capability to measure impedance and transmission characteristics of 2 port electrical devices in either forward or reverse direction with a single connection. See page 244 for more detailed information.

3.5 mm Calibration Kit

HP 85033C

Contains precision 3.5 mm standards used to calibrate the HP 8702A for measurements of 3.5 mm and SMA electrical devices. Page 246 has a more complete description of calibration kits.

Ordering Information

HP 8702A Lightwave Component Analyzer	$28,000
Option 010 Time Domain	$4,800
Option 802 HP 9122 Dual Disc Drive	$1,495
Option 910 Extra Operating and Service Manual	$125
Option 913 Rack Mount Kit	$40
Option W30 Extended return-to-HP service	$540
HP 83400A Lightwave Source, Single-mode	$12,700
Option 01X[3] Select Optical Connector	$0
Option W30 Extended return-to-HP service	$260
HP 83401A Lightwave Source, Multimode	$12,700
Option 01X[3] Select Optical Connector	$0
Option W30 Extended return-to-HP service	$260
HP 83410A Lightwave Receiver	$5,000
Option 01X[3] Select Optical Connector	$0
Option W30 Extended return-to-HP service	$100
HP 11890A Lightwave Coupler, Single-mode	$3,900
Option 01X[3] Select Optical Connector	$0
HP 11891A Lightwave Coupler, Multimode	$3,900
Option 01X[3] Select Optical Connector	$0
HP 11889A RF Interface Kit	$1,500
HP 85024A High Frequency Probe	$1,900
HP 85046A S-Parameter Test Set	$7,800
HP 85033C 3.5 mm Calibration Kit	$2,500

[1] Nominal responsivity, expressed in log format, referenced to 1 Amp/Watt.
[2] Nominal responsivity, expressed in log format, referenced to 1 Watt/Amp.
[3] The optical connector used with these products are determined by an exchangeable adapter. One adapter option must be specified:
011 Diamond HMS 10/HP
012 FC/PC
013 DIN 47256
014 ST