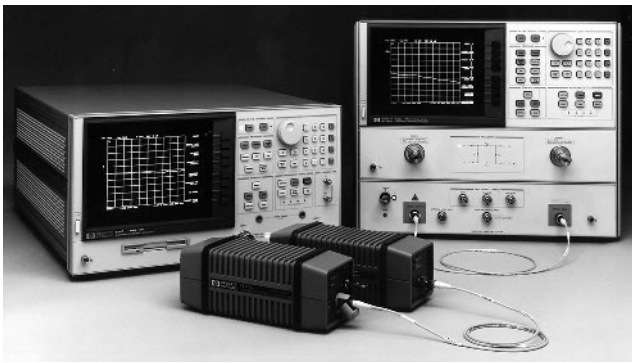
Lightwave Component and Signal Analyzers

HP 8702D
HP 8703A
HP 71400C
HP 71401C
HP 70810B

- 300 kHz to 20 GHz modulation frequency
- 850, 1300 or 1550 nm operation
- Calibrated frequency response measurements of high-speed optical, electro-optical, and electrical components
- RIN measurements
- Laser linewidth and chirp measurements
- Modulation response, distortion and depth measurements



HP 8702D and 8703A

Lightwave Component Analyzers

The HP 8702D and 8703A precisely characterize the swept modulation frequency response of wide bandwidth fiber optic system elements such as WDM components, lasers, LEDs, photodiodes, and electro-optical modulators. Both the HP 8702D and 8703A operate at a fixed wavelength and sweep the frequency of the intensity modulation signal over the bandwidth you select.

The HP 8702D has 1300 and 1550 nm lightwave sources and receivers as well as an 850 nm receiver. The 8703A can operate at 1300 or 1550 nm. These sources and receivers are characterized to allow calibrated measurements of electro-optical test devices.

When used to measure linear electrical components, such as filters, amplifiers, and transmission lines, the lightwave component analyzers provide the full measurement capability of a microwave network analyzer. Typical measurements are bandwidth, insertion loss/gain, phase, impedance, match, and group delay.

HP 8702D Lightwave Component Analyzer

GPIB

300 kHz–3 GHz (850 nm) 300 kHz–6 GHz (1300, 1550 nm)

The HP 8702D offers several significant improvements in versatility, performance and productivity.

- high optical calibration accuracy
- built-in 3.5-inch floppy disk drive with LIF/DOS formats
- integrated S-parameter test set
- serial and parallel printer interfaces
- test sequencing for automated measurements
- multiple source and receiver choices

HP 8703A Lightwave Component Analyzer

GPIB

130 MHz–20 GHz (1300 or 1550 nm)

The standard configuration includes one 1300/1550 nm receiver and one lightwave directional coupler. An optional 1300 or 1550 nm DFB internal laser source must be specified. The external lightwave source input (Option 100) can be used for additional wavelength flexibility. Lasers with center wavelength between 1530 and 1570 nm can be used with HP 8703A Option 210 (1550 nm). Lasers with center wavelength between 1290 and 1330 nm can be used with HP 8703A Option 220 (1300 nm).

HP 71400C

HP 71400C and 71401C Lightwave Signal Analyzers

GPIB

Calibrated Measurements of Intensity Modulation from 100 kHz to 22 GHz

The HP 71400C combines a high-performance microwave spectrum analyzer with a wideband, sensitive optical receiver. This system measures modulated light from 1200 to 1600 nm on single-mode optical fibers from 100 kHz to 22 GHz. Optical modulation, noise, and average power are presented on a fully-calibrated display.

With the HP 11980A fiber-optic interferometer, the analyzer can also measure linewidth. With an interferometer and a gated source, the analyzer can measure chirp and FM characteristics of distributed-feedback (DFB) and other single-line lasers. Or, for higher performance, replace the interferometer with a tunable laser.

This system is also a microwave spectrum analyzer with all the capability of the HP 71210C. Because the analyzer is modular, its measurement capabilities can be expanded easily. For example, you can add a tracking generator module for modulation response measurements to 18 GHz, or an optical spectrum analyzer for wavelength analysis.

The HP 71400C measures intensity modulation up to 22 GHz and operates over wavelengths from 1200 to 1600 nm or, with Option 850, from 750 to 870 nm. It can achieve an optical sensitivity of better than –60 dBm. The analyzer also offers average-power measurement, displayed both as a real-time vertical power bar and as a digital readout. Full calibration of both average power and modulation power makes this system a reference receiver for measuring and characterizing optical detectors and receivers.

A program for enhanced relative intensity noise (RIN) measurement is included. This program subtracts thermal noise and shot noise components of the measurement and calculates RIN to –165 dB/Hz.

The HP 71401C has an upper frequency limit of 2.9 GHz but the same functions and features as the HP 71400C. Both models provide lightwave optical or electrical units in either log (dB) or linear (watts) units, as well as microwave units for electrical spectrum analysis.

HP 70810B Lightwave Receiver Module

The HP 70810B lightwave section is a receiver module with a built-in average power meter and attenuator, a wavelength range of 1200 to 1600 nm (750 to 870 with Option 850), a detected modulation bandwidth of 100 kHz to 22 GHz, and a built-in, 32 dB RF amplifier that gives an optical sensitivity of –60 dBm in a 10 Hz bandwidth. It can be used in standalone applications as a lightwave receiver or housed in an HP 70000 series electrical spectrum analyzer.

For more complete information, order the Lightwave Test and Measurement Catalog. See detailed description on page 603.