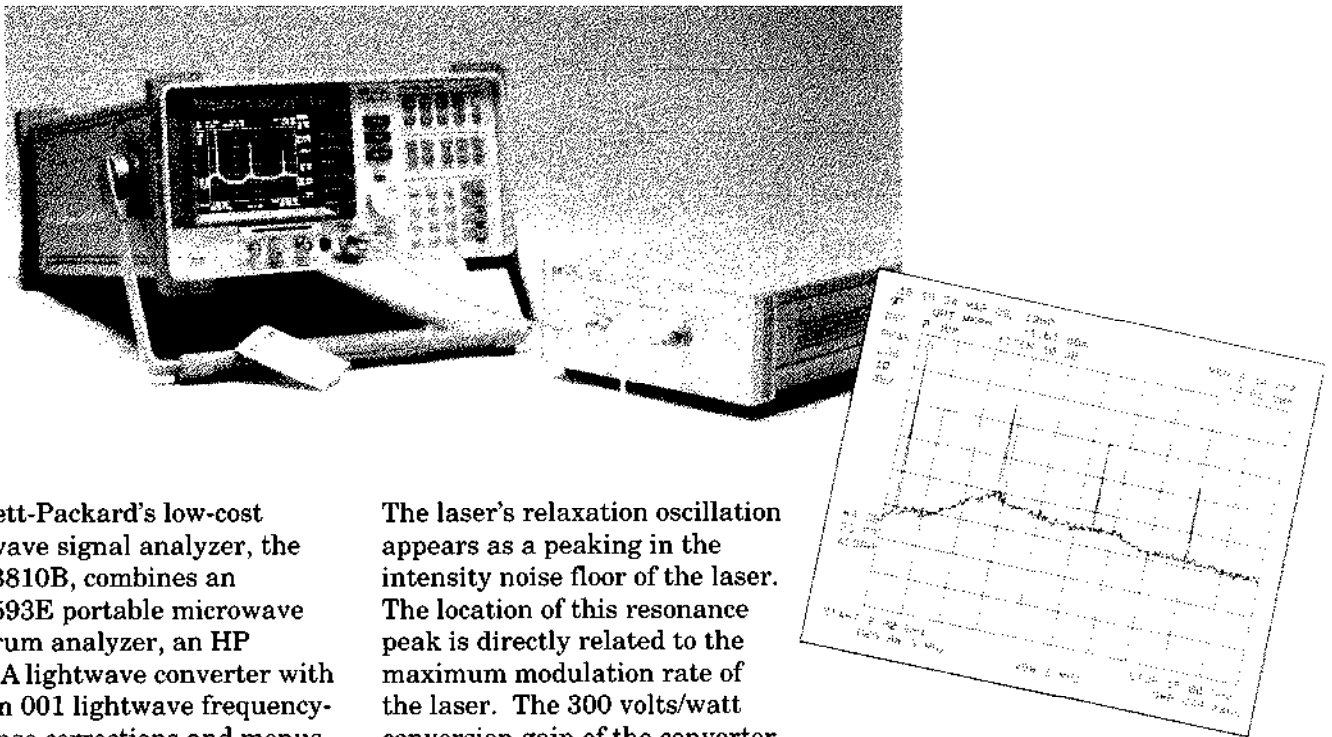


HP 83810B Portable Lightwave Signal Analyzer

Technical Data

**1,200 nm to 1,600 nm
Wavelength**

**9 kHz to 22 GHz
Bandwidth**



Hewlett-Packard's low-cost lightwave signal analyzer, the HP 83810B, combines an HP 8593E portable microwave spectrum analyzer, an HP 11982A lightwave converter with Option 001 lightwave frequency-response corrections and menus, an interface cable, and an N-type to SMA adapter.

The HP 83810B lightwave signal analyzer covers wavelengths from 1,200 nm to 1,600 nm and bandwidths from 9 kHz to 22 GHz. It displays optical modulation power as a function of frequency. Intensity modulation, distortion, and laser intensity noise can also be displayed and measured. The optical marker function of the analyzer allows measurements to be expressed in optical or electrical units (dBm or watts).

The laser's relaxation oscillation appears as a peaking in the intensity noise floor of the laser. The location of this resonance peak is directly related to the maximum modulation rate of the laser. The 300 volts/watt conversion gain of the converter improves the frequency-domain sensitivity over that of a photodiode only converter to easily distinguish the relaxation oscillation peak.

When a laser is modulated, its noise floor and modulation distortion products can change dramatically. Often, knowing static noise performance is not enough to predict the effects of laser noise in a system. The HP 83810B automatically applies the HP 11982A's frequency-response corrections and calculates optical power.

This enables you to accurately measure these changes and dynamically observe their effect.

Adding the HP 11980A fiber-optic Mach-Zehnder interferometer to the lightwave signal analyzer allows you to make linewidth, chirp, and frequency modulation (FM), measurements of single-line lasers.

Specifications

Specifications describe the instrument's warranted performance over the 0° - 55 °C temperature range, except where noted. Characteristics provide information about non-warranted instrument performance in the form of nominal values. All amplitude specifications are in optical power units unless noted by an asterisk().*

Specifications/Characteristics

Wavelength (characteristic)	1,200 nm to 1,600 nm	
Frequency Range	9 kHz to 22 GHz	
Optical Frequency Response (absolute with 10 dB attenuation)	20-30°C	0-55°C
9 kHz - 12.8 GHz	± 2.2 dB	± 3.3 dB
12.4 GHz - 19.4 GHz	± 3.0 dB	± 4.7 dB
19.1 GHz - 22.0 GHz	± 3.2 dB	± 4.9 dB
Displayed Average Optical Noise Level (characteristic in sample detector, 1 Hz VBW, 0 dB attenuation)	1 KHz RBW	30 Hz** RBW
400 kHz - 6.4 GHz	- 54 dBm	-62 dBm
6.0 GHz - 12.8 GHz	- 48 dBm	-56 dBm
12.4 GHz - 19.4 GHz	- 44 dBm	-52 dBm
19.1 GHz - 22 GHz	- 39 dBm	-47 dBm
Input Return Loss (characteristic with HMS 10/HP connector)	> 23 dB	
Harmonic Distortion	> 60 dB* below fundamental with modulated power < - 20 dBm	
Maximum Safe Optical Input Power (average)	10 mW (+10 dBm)	
Maximum Operating Optical Input Power (peak)	1.5 mW (+1.76 dBm)	
Inputs/Outputs		

Optical Input Connector Single Mode Fiber Connectors:
Diamond HMS-10/HP, FC/PC,
ST, Biconic, DIN

General

Environmental	
Temperature Range	Operational 0 to +55°C Storage -40 to +75°C
EMI	Conducted and radiated emissions are in compliance with the requirements of FTZ 1046; CISPR Publication 11 1975; and MIL-STD-461C, Part 7, Methods CE03 and RE02.
Power Requirements	
HP 11982A	100, 120, 220, or 240 volts (± 10%), 47-63 Hz Power consumption < 75 VA
HP 8593E	86-127, or 195-250 Vrms; 47-66 Hz, 400 Hz + 10% Power consumption < 300 VA
Weight	
HP 11982A	3.76 kg (8.4 lbs)
HP 8593E	16.4 kg (36 lbs)
Dimensions	
HP 11982A	102 mm (4.02") height, 213 mm (8.39") width, 368 mm (14.49") length
HP 8593E	213 mm (8.4") height, 366 mm (14.4") width, 460 (18.1") length
* Refers to electrical power units	
** Option 130 only	

Ordering Information

- HP 83810B** Lightwave Signal Analyzer
- Option 010** Built-in Tracking Generator 300 kHz to 2.9 GHz
 - Option 023** Substitute RS-232 for HP-IB
 - Option 094** Replace HP 8593E with HP 8594E
 - Option 095** Replace HP 8593E with HP 8595E
 - Option 110** Delete FC/PC Connector
 - Option 130** Narrow Resolution Bandwidths
 - Option 301** AM/FM Demod/TV Sync Trigger/Fast Time Domain Sweep

Recommended Accessories

- HP 11980A** Fiber-Optic Interferometer
- HP 11742A** Blocking Capacitor
- HP 5952-9654** Fiber-Optics Handbook
- HP 85700A** 32 Kbyte Blank Memory Card
- HP 2225A/D** HP ThinkJet Printer

For more information concerning these products contact your local Hewlett-Packard sales representative or sales office.

Data Subject to Change
Printed in U.S.A. 9/92
5952-2164E