

# OPTICAL COMPONENT TEST

## Optical Loss Analyzer and Automatic Polarization Controllers

HP E5574A, 11896A, 8169A

- 0.005 dBp-p PDL/PDG measurement accuracy
- Complies with Fiber-Optic Test Procedure FOTP 157
- 2.2% power measurement accuracy
- No PDL reference measurement required

- $\pm 0.002$  dB insertion loss variation with adjustment (HP 11896A)
- 1250 nm to 1600 nm coverage (HP 11896A)
- Synthesis of states of polarization (HP 8169A)



HP E5574A 

### HP E5574A Optical Loss Analyzer

The HP E5574A optical loss analyzer is a complete solution for the loss/gain characterization of active and passive optical components. At the touch of a button you can measure the various contributions to the total loss of your device—all together in one affordable instrument. It is especially optimized for polarization dependent and gain measurements. Whether you are concerned with the ease of use in manual applications on the bench or with the highest quality and measurement speed on the production floor, this optical loss analyzer is the perfect tool.

The HP E5574A optical loss analyzer offers flexible solutions. A variety of Fabry-Perot laser sources can be ordered. For swept wavelength measurements, an external tunable laser source or a white light source is also available.

A pigtailed optical output provides polarization dependent loss measurements with the highest performance. Two other customer exchangeable connector interface options for straight or angled contact connectors provide superb flexibility. A selection of optical heads covers 800 to 1700 nm wavelengths and power levels between +27 and -90dBm. For best PDL measurement performance between 1250 and 1600 nm, the HP 81521B Option 001 optical head should be used.

#### Specifications


**Wavelength Range** (with external source): 1250 to 1600 nm  
**Display Resolution:** 0.0001 dB  
**Absolute PDL/PDG Uncertainty:**  
 $\pm 0.005$  dB +0/-2.5% of measured PDL (for PDL  $\leq 0.2$  dB);  
 $\pm 0.005$  dB +0/-5% of measured PDL (for  $0.2$  dB  $<$  PDL  $\leq 5$  dB)  
**Absolute PDCR Uncertainty:**  
 $\pm 0.01$  dB +0/-5% of measured PDCR (for PDCR  $\leq 0.2$  dB);  
 $\pm 0.01$  dB +0/-10% of measured PDCR (for  $0.2$  dB  $<$  PDCR  $\leq 5$  dB)  
**Repeatability for PDL/PDG:**  $\pm 0.001$  dB  $\pm 2\%$  of measured PDL  
**Repeatability for PDCR:**  $\pm 0.002$  dB  $\pm 4\%$  of measured PDCR  
**PDL/PDG/PDCR Range:** 0 to 5 dB  
**Max Insertion Loss of DUT:** 20 dB

#### Ordering Information

One connector adapter (HP 81000xA) per optical head and one connector interface (HP 81000xI) for both the optical output and optical input are required for each HP E5574A.

- HP E5574A Optical Loss Analyzer
- Opt 013 1310 nm Fabry Perot Laser Source
  - Opt 015 1550 nm Fabry Perot Laser Source
  - Opt 135 Dual Wavelength Laser Source
  - Opt 020 Bare Fiber Pigtail Output
  - Opt 021 Straight Contact Connector Output
  - Opt 022 Angled Contact Connector Output
  - Opt 521 Add Second HP 81521B Option 001 Optical Head



HP 11896A and 8169A 

### HP 11896A Polarization Controller

The HP 11896A adjusts polarization and not power. Its optical fiber loop design provides all states of polarization with extremely small optical insertion-loss variations ( $\pm 0.002$  dB) over a wide spectral range (1250 to 1600 nm). This performance combination maximizes measurement accuracy for power-sensitive applications like polarization-dependent loss and gain. This is because the measurement uncertainty contributed by the polarization controller is minimized.

### HP 8169A Polarization Controller

The HP 8169A provides polarization synthesis relative to a built-in linear polarizer. The internal quarter-wave plate and half-wave plate are individually adjusted to create all possible states of polarization. Predetermined algorithms within the HP 8169A enable the transition path from one state of polarization on the Poincare sphere to another to be specified along orthogonal great circles. These features are important because device response data can be correlated to specific states of polarization input to the test device.

#### Specifications

Note: Fiber pigtail interface assumed in all cases.

	HP 11896A	HP 8169A
<b>Operating Wavelength Range (nm):</b>	1250 to 1600	1470 to 1570
<b>Insertion Loss:</b>	<1.5 dB	<1.5 dB
<b>Variation w with Adjustment:</b>	$\leq \pm 0.002$ dB	$\leq \pm 0.03$ dB
<b>Variation w with Wavelength:</b>	$< \pm 0.1$ dB	$< \pm 0.1$ dB

#### Ordering Information

- HP 11896A Lightwave Polarization Controller  
 Standard instrument includes FC/PC connector interfaces
- Opt 010 Delete FC/PC Connector Interfaces
  - Opt 025 One Meter Pigtail Fiber w/ FC/PC Connector Interfaces
- HP 8169A Lightwave Polarization Controller  
 (Polarization controller must be ordered with connector option)
- Opt 020 Pigtailed Fiber Ports
  - Opt 021 Straight Contact Connectors
  - Opt 022 Angled Contact Connectors

To have a Hewlett-Packard representative help you place an order or to get more information see inside back cover