

## Specifications: HP 71450B/1B/2B (HP 70950B/1B/2B)

<b>Wavelength</b>	
Range	600 nm–1700 nm
Span Range (continuously variable)	0.2 nm—full range and zero span
Absolute Accuracy*	±1 nm
HP 71450B/1B* (after user calibration)	±0.3 nm
HP 71452B* (after user calibration)	±0.2 nm
HP 71452B* (after user calibration, within 40 nm of cal signal) (Characteristic)	±0.05 nm
Span Linearity for spans ≤ 40 nm* (Characteristic)	±0.05 nm
Span Linearity HP 71452B* (1530 nm — 1570 nm) (Characteristic)	±0.02 nm
Reproducibility (1 minute)	±0.005 nm
Reproducibility (1 minute), HP 71452B* (Characteristic)	±0.001 nm
Tuning Repeatability	±0.005 nm
Tuning Repeatability HP 71452B* (Characteristic)	±0.001 nm
Settability	0.005 nm
Readout Resolution (Characteristic)	Span / Trace Length

<b>Resolution Bandwidth*</b>	
FWHM	< 0.08 and 0.1 nm—10 nm in a 1,2,5 sequence.†
FWHM of < 0.08 nm setting, HP 71452B (1530 nm — 1570 nm) (Characteristic)	0.065 nm ±15%
Resolution Accuracy: ≥0.5 nm, 1250 nm—1600 nm	±20%
0.1 nm—10 nm, 600 nm—1700 nm (Characteristic)	±30%‡
Corrected bandwidth accuracy for noise markers (1250 nm — 1600 nm):	
≥0.5 nm	±3%
0.2 nm, HP 71452B (Characteristic)	±5%
0.2 nm, HP 71452B Option 122	±5%

\* With applied input fiber 9/125 μm.

† Resolution of 10 nm is available in first order only.

‡ The 2.0 nm resolution is nominally 2.5 nm in second order.

Specifications and Characteristics

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**HP 71450B/1B/2B (HP 70950B/1B/2B)**

<b>Amplitude<sup>‡‡</sup></b>				
Calibration Accuracy <sup>*,†</sup> at -30 dBm, 1300 nm		±0.5 dB		
Scale Fidelity <sup>‡</sup>		<b>HP 71450B/1B</b>	<b>HP 71452B</b>	
	Autorange Off	±0.1 dB	±0.05 dB**	
	Autorange On	±0.2 dB	±0.07 dB**	
Step Response Accuracy		<b>HP 71450B/1B</b>	<b>HP 71452B</b>	
	2 μs after rising edge	±0.2 dB (Char.)	±0.2 dB (Char.)	
	10 μs after falling edge <sup>***</sup>	±0.2 dB (Char.)	±0.2 dB	
Signal-to-Noise Measurement Accuracy <sup>†††</sup>		<b>HP 71450B/1B</b>	<b>HP 71452B</b>	
	CW	±0.63 dB	±0.18 dB	
	Pulse mode	±0.68 dB	±0.29 dB	
Display Resolution	Log	0.01 dB		
	Linear	0.23% of measurement + 0.01% of reference level		
Display Scale		0.01 -20 dB log in 0.01 dB steps, and linear		
Flatness <sup>§§</sup>		<b>HP 71450B/1B</b>	<b>HP 71452B</b>	
	1290 nm—1330 nm*	±0.25 dB	±0.25 dB	
	1530 nm—1570 nm*	±0.25 dB	±0.2 dB	
	1250 nm—1600 nm*	±1 dB	±1 dB	
	750 nm—1600 nm <sup>§</sup>	±1.5 dB (Char.)	±1.5 dB (Char.)	
	600 nm—1700 nm <sup>§</sup>	±2 dB (Char.)	±2 dB (Char.)	
Polarization Dependence HP 71450B/1B/2B <sup>†</sup>		<b>1250 nm—1600 nm*</b>	<b>750 nm—1600 nm<sup>§</sup></b>	<b>600 nm—1700 nm<sup>§</sup></b>
		±0.5 dB**	±1.5 dB (Char.)	±2.5 dB (Char.)
Polarization Dependence HP 71452B <sup>†, *, **</sup>		<b>1542 nm—1562 nm</b>	<b>1300 nm—1320 nm</b>	
		±0.05 dB	±0.125 dB	

\* With applied input fiber 9/125 μm.

† For resolutions ≥0.2 nm.

‡ With sample detector. Within 20 dB of the sensitivity noise limit, noise effects dominate and may be reduced with video averaging. Scale fidelity is applied only once for marker delta measurements.

§ With applied input fiber that is standard single mode at wavelength of interest.

\*\* Temperature range 20 °C to 30 °C.

‡‡ With physical contact connectors. Connector variations can affect amplitude accuracy which varies with such factors as connector type and quality, connector cleanliness, temperature, damage, and wear.

§§ Between 1350 nm and 1420 nm absorption of light by atmospheric moisture affects flatness. At room temperature, total humidity effects should be < 1 dB.

\*\*\* With ≤27 dB extinction ratio.

††† 1.15 x RSS of polarization sensitivity, scale fidelity, and resolution bandwidth accuracy (and step response accuracy in pulse mode).

**Specifications:**  
**HP 71450B/1B/2B (HP 70950B/1B/2B)**

<b>Sensitivity*</b>	
600 nm–750 nm (second order only)	–60 dBm
750 nm–900 nm (second order)	–75 dBm
750 nm–900 nm (first order)	–65 dBm
900 nm–1200 nm	–75 dBm
1200 nm–1600 nm	–90 dBm
1600 nm–1700 nm <sup>†</sup>	–80 dBm

\* Sensitivity is defined as signal value  $\geq 6 \times$  the RMS noise value.

<sup>†</sup> Temperature range 20 °C to 30 °C.

<b>Dynamic Range<sup>†</sup></b> (in 0.1 nm resolution) Excluding Multiple Order Grating Responses  <i>Chop Mode On (Characteristic)</i> <b>Dynamic Range, HP 71452B Option 122<sup>†</sup></b> Excluding Multiple Order Grating Responses In 0.2 nm resolution In 0.2 nm resolution <i>In 0.1 nm resolution (Characteristic)</i> <i>In 0.1 nm resolution (Characteristic)</i>	<b>1250 nm–1600 nm</b> –55 dB at $\pm 0.5$ nm –60 dB at $\pm 1$ nm –70 dB at $\pm 0.5$ nm, $\pm 1$ nm, $\pm 5$ nm	<b>600 nm–1700 nm</b> –50 dB at $\pm 1$ nm
	<b>1250 nm–1600 nm</b> –58 dB at $\pm 0.5$ nm –65 dB at $\pm 1$ nm –60 dB at $\pm 0.4$ nm –65 dB at $\pm 0.8$ nm	

<sup>†</sup> With applied input fiber 9/125  $\mu$ m.

<b>Input Power</b>	
0.05 dB Compression Level, Within Selected Resolution (Characteristic)	$\geq 10$ dBm
Maximum Displayed Level (Characteristic)	$\geq 15$ dBm
Maximum Safe Input Level	+20 dBm per 5 nm, +30 dBm total