

# Agilent 86105D Broad Wavelength Plug-in Module for High-Speed Optical Transceiver Test

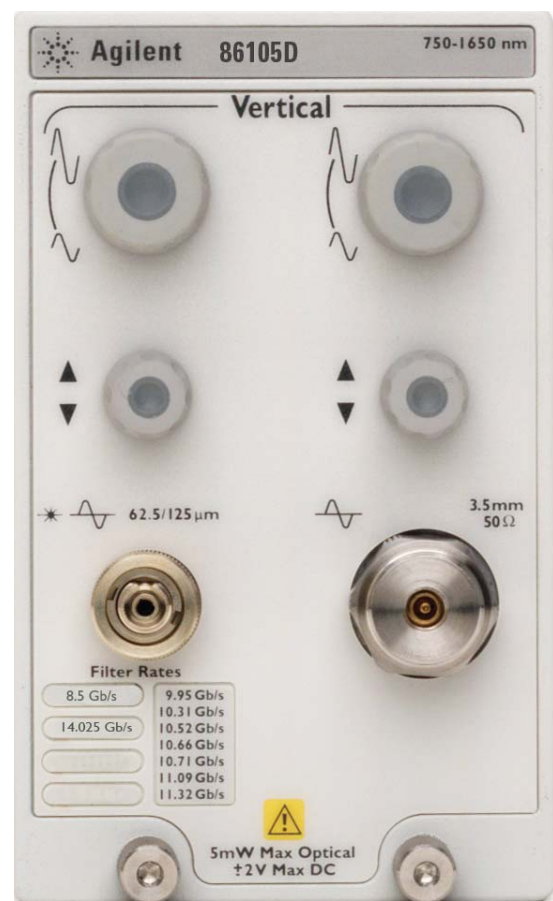
The 86105D is the ideal solution for waveform analysis of transceivers operating at 8.5 Gb/s (8X Fibre channel), 9.953 Gb/s (OC-192/STM-64), 10.3125 Gb/s (10 Gb Ethernet), 10.52 Gb/s (10X Fibre channel), all common 10 Gb/s FEC rates, and 14.025 Gb/s (16X Fibre channel) rates. The integrated optical receiver has an unfiltered bandwidth of 20 GHz. The well-designed magnitude and phase response provides high-fidelity waveforms and accurate analysis of high-speed laser designs. Switchable reference receiver capability is also available for eye-mask compliance testing at the rates mentioned above. The optical channel uses a broad wavelength photodetector operating from 750 to 1650 nm. The 62.5/125  $\mu\text{m}$  connector is compatible with both multimode and single-mode fibers. An electrical channel with 35 GHz bandwidth can be used to characterize transceiver electrical signal performance.

## Comparing modules in the 86105 series

The 86105D provides superior value with its ability to accurately test a wide range of transceiver technologies from early research and development to high-volume manufacturing. Like the 86105C plug-in, the 86105D is compatible with short and long wavelength optical signals. (The 86105C provides reference receiver coverage at rates from 155 Mb/s to 11 Gb/s and is amplified, providing very high sensitivity.) Like the 86105B, the 86105D has a wide bandwidth providing very high-fidelity waveforms both in filtered and unfiltered mode. The 86105D can operate at higher rates than the 'B' or 'C' models and a wider range of wavelengths than the 'B' model.

For reduced cost option 100 eliminates the 16xFC (14 Gb/s) filter and option 200 provides only the 16xFC filter (no 8xFC or 10 Gb/s filters). If neither option is selected, all filters are provided.

- 20 GHz optical channel
- Multimode and single-mode capability
- 750 to 1650 nm wavelength range
- 35 GHz electrical channel
- Compliance test solution for 8X Fibre channel, 10 Gb/s, and 16X Fibre channel rates



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## Configuring a complete test system

The 86105D is a plug-in module used with the 86100C/D<sup>1</sup> digital communications analyzer (DCA-J). The 86100C/D requires a timing reference (trigger) to acquire waveforms. This can be achieved with a synchronous clock or pattern trigger from a pattern generator or bit-error-ratio-tester (BERT) such as the N4903B. If the system being measured is not driven by a pattern generator and a synchronous timing signal is not available, the 83496B clock recovery module can be used to derive a trigger from the data being observed. The 83496B operates continuously (no gaps) from 50 Mb/s to 14.2 Gb/s<sup>2</sup>.

### Preliminary specifications:

	Optical channel	Electrical channel
<b>Bandwidth</b>	20 GHz (-3 dBo)	25 and 35 GHz
<b>Wavelength range</b>	750 to 1650 nm	
<b>RMS noise</b>	1310/1550 nm	250 uV (25 GHz BW)
	8 and 10 G rates: 7 uw (5 uw) 16xFC: 12 uw (8 uw)	450 uV (35 GHz BW)
	850 nm	
	8 and 10 G rates: 12 uw (10 uw) 16xFC: 24 uw (16 uw)	
<b>Eye-mask sensitivity<sup>3</sup></b>	1310/1550 nm	
	8 and 10 G rates: -12 dBm 16xFC: -9 dBm	
	850 nm	
	8 and 10 G rates: -9 dBm 16xFC: -6 dBm	

- 1 Requires 86100C firmware revision 8.1. The 86105D is not compatible with the 86100A or B mainframes. For information regarding trade-in opportunities from A or B mainframes to C mainframes, contact your local Agilent representative
- 2 Requires 83496B option 200 or 201 and 86100C firmware revision 8.1. No modification of the 83496B hardware is required to extend its maximum operating range from 13.5 to 14.2 Gb/s
- 3 Sensitivity parameter indicates the average power level where eye-mask 'hits' occur due to the oscilloscope noise. 10 dB extinction ratio assumed. Used for a relative comparison to other optical receivers

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