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

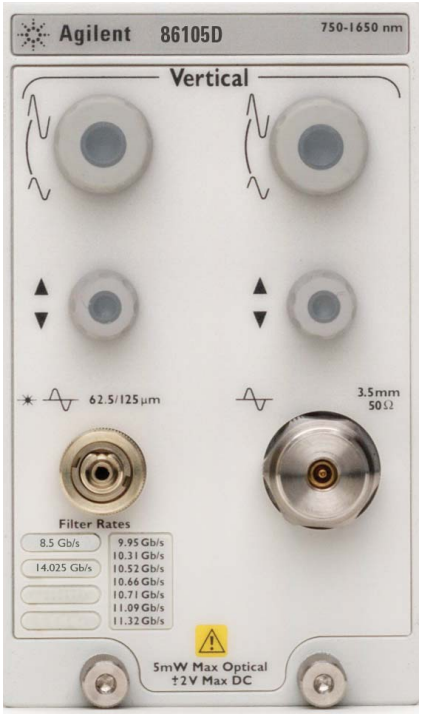
The 86105D is the ideal solution for waveform analysis of transceivers operating at 8.5 Gb/s (8X Fibre Channel), 9.953 Gb/s (OC-192/STM-64), 10.3125 Gb/s (10 Gb Ethernet), 10.52 Gb/s (10X Fibre Channel), and 14.025 Gb/s (16X Fibre Channel) rates. The integrated optical receiver has an unfiltered bandwidth of 20 GHz[1]. 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 µm 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.

[1] Bandwidth at 0.707 power point (dBe). Bandwidth at half power point (dBo) approximately 25 GHz

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 modes. The much wider bandwidth of both the optical and electrical channels of the 86105D allow it to provide accurate waveforms at higher rates than the 'B' or 'C' models and a wider range of wavelengths than the 'B' model.

- 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[1] Digital Communications Analyzer (DCA-J). The 86100C 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[2].

Preliminary specifications:

	Optical channel	Electrical channel
Bandwidth	20 GHz[3]	25 and 35 GHz (user selectable)
Wavelength range	750 to 1650nm	
RMS noise	5 uW (10 Gb receiver 1310 nm) to 8 uW (16xFC receiver 850 nm)	250 uV (25 GHz BW) 450 uV (35 GHz BW)
Eye-mask sensitivity[4]	-12 dBm	
Input connector	62.5/125 um	3.5 mm
Reference receiver filter settings	8x FC 10 Gb SONET/SDH 10xFC 11xFC 16xFC 10.66/10.71/11.1/11.3 Gb/s (FEC rates)	

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 Bandwidth at 0.707 power point (dBe). Bandwidth at half power point (dBo) approximately 25 GHz

4 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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