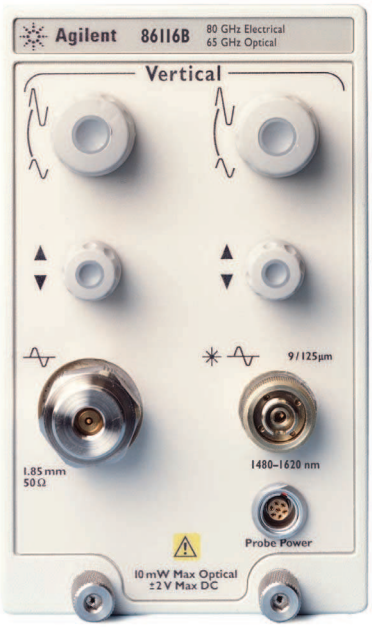
Agilent 86116B 65 GHz Optical and 80 GHz Electrical Plug-in Module

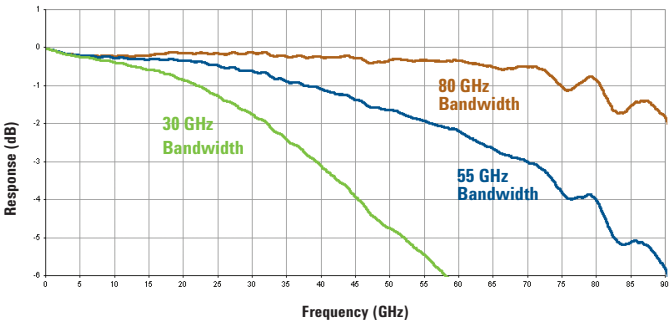
Accurate Analysis of 40 Gb/s Waveforms



The widest optical and electrical bandwidths available in one module.

Good 40 Gb/s component and subsystem designs require accurate characterization of very high-speed signals. The return-to-zero modulation formats for optical transmission and the fast edge speeds of electrical signals require the widest bandwidth available for accurate waveform characterization and measurement. The 86116B represents one of the fastest solutions available for measuring high-speed communication signals. With 65 GHz optical and 80 GHz electrical bandwidth, this product is the perfect tool, allowing optical/electrical designers to accurately see the signals from their devices. The well-designed frequency response and minimal aberrations in the pulse response allow design engineers to see eye diagram measurements indicative of the device under test, not the test equipment.

The optical channel features a very wide 65 GHz bandwidth, and user selectable bandwidth settings of 60 and 55 GHz. The 65 GHz bandwidth setting provides the best pulse fidelity mode for measurement and display of very high-speed waveforms and provides a fast full-width, half-max (FWHM) of 7.4 ps.



Typical electrical channel frequency response.

The electrical channel features a super wide 80 GHz bandwidth, and user selectable bandwidth settings of 55 and 30 GHz. The 80 GHz bandwidth setting provides the best pulse fidelity mode for measuring and displaying very high-speed waveforms. It also provides a very fast risetime of 4.4 ps. The electrical input is a 1.85 mm male connector.

For applications where low noise levels are important, the 86116B has user selectable bandwidth settings that provide lower levels of noise. The highest bandwidth mode provides high fidelity display and measurement of very high-speed waveforms. The lower bandwidth modes provide excellent oscilloscope noise performance for accurate measurement of low-level signals.

The Agilent 86116B optical and electrical plug-in module integrates with the 86100A/B Infiniium digital communications analyzer (DCA). The 86100A/B can

86116B

Specification or *Characteristic (in italics)*[1]
Wavelength range 1480 – 1620 nm
Optical FWHM < *7.4 ps @ 65 GHz bandwidth*
Optical bandwidth *65, 60, 55 GHz*
Optical noise[2]
< 245 uW/*140 uW* (65 GHz)
< 150 uW/*70 uW* (60 GHz)
< 85 uW/*50 uW* (55 GHz)
Electrical bandwidth 80, *55, 30* GHz
Electrical risetime[3]
4.4 ps (80 GHz)
6.4 ps (55 GHz)
11.7 ps (30 GHz)
Electrical noise[4]
2.2 mV/*1.1 mV* (80 GHz)
1.1 mV/*0.6 mV* (55 GHz)
0.8 mV/*0.5 mV* (30 GHz)

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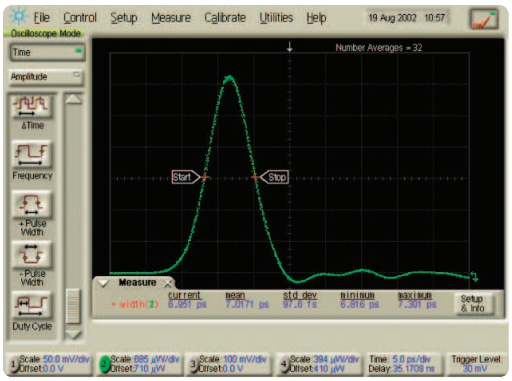
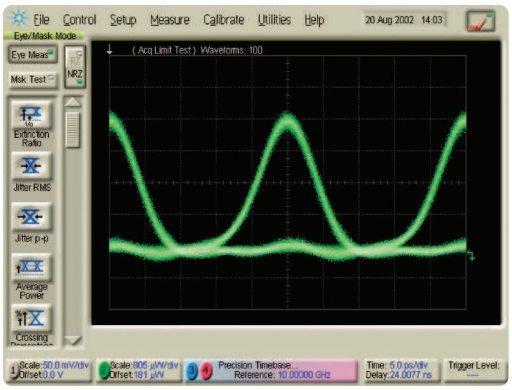
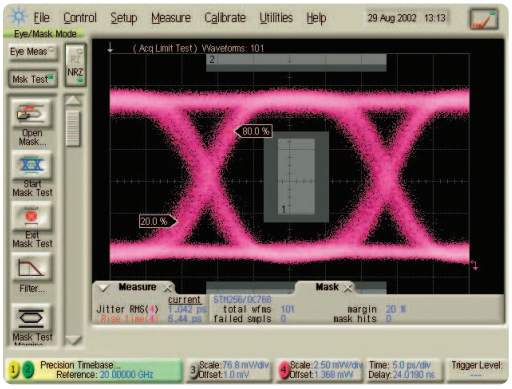


Typical optical impulse response; FWHM pulse width < 7 ps.



Typical RZ optical eye measurement.



Typical NRZ optical eye measurement.

hold up to two modules for a total of four measurement channels. For applications requiring extremely low jitter measurements, the 86107A precision timebase reference module can be used with the 86116B to significantly reduce the inherent jitter from the measurement system.

The 86116B with the 86100A/B Infiniium DCA has the look and feel of an analog oscilloscope. The module provides user adjustable control knobs for quick and easy vertical positioning and scaling.

A typical optical impulse response is shown at top left. Note the FWHM pulse width of less than 7 ps. This fast response is vital for accurate characterization of very high-speed signals.

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1. Specifications describe warranted performance over the temperature range +10°C to +40°C unless otherwise noted. Characteristics provide useful, non-warranted information about the functions and performance of the instrument. Characteristics are printed in italics.
2. The noise specification is over the full temperature range of +10°C to +40°C. The characteristic noise represents typical module performance.
3. Electrical risetime is a calculated value from bandwidth; risetime = 0.35/bandwidth.
4. The noise specification is over the full temperature range of +10°C to +40°C. The characteristic noise represents typical module performance.

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