

Testing Transceivers for Chromatic Dispersion

One of the key challenges when testing transceivers and digital signal processing algorithms (DSP) for chromatic dispersion robustness is generating significant amounts of chromatic dispersion. While the most intuitive solution would be to use a transmission fiber setup, as it closely replicates field conditions, is this the most effective solution from a cost and performance standpoint?

TeraXion's ClearSpectrum™ CDE is a fixed, entirely passive chromatic dispersion emulator that has been developed to test the dispersion robustness of transceivers and DSP over thousands of kilometers of transmission fiber.

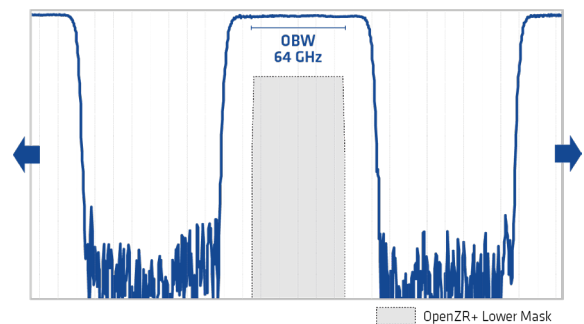
Based on TeraXion's reliable fiber Bragg grating technology, the CDE is significantly more cost-effective than a transmission fiber setup, it has a very low insertion loss and can emulate up to 45 000 ps/nm of dispersion in a very compact half 1U 19-inch rack module.

Suitable for Advanced Modulation Formats

Thanks to the different configurations offered, the CDE can be used to test a multitude of modulation formats, at different data rates.

The CDE has a proven track record in labs worldwide for testing the robustness of 100G/200G coherent DP-QPSK transceivers and DSP algorithms.

400G-and-above transceivers such as OSFP and QSFP-DD, are now tested for chromatic dispersion robustness, as per new established standards such as OpenZR+. Thanks to its wide bandwidth, the CDE can emulate dispersion to test 16QAM signals at 32 Gbaud/s, 64 Gbaud/s, and even higher baud rates.



Coherent Bandwidth	CDE Config
800G and beyond	Single-Channel 350 GHz
400G	Multi-Channel 64GHz OBW
200G	Multi-channel 50GHz OBW
100G	



A Highly Customizable Solution

	Single-channel Module	C-band / L-band		O-band [†]
		Multi-channel Module	Single-channel Module	Single-channel Module
Channel Grid	N/A	200 GHz	100 GHz	Upon request
Minimum Optical Bandwidth	350 GHz	64 GHz	50 GHz	Upon request
Dispersion Level per Module*	Up to 15 000 ps/nm	Up to 36 000 ps/nm	Up to 45 000 ps/nm	Upon request

* Modules can be cascaded to reach hundreds of thousands of ps/nm

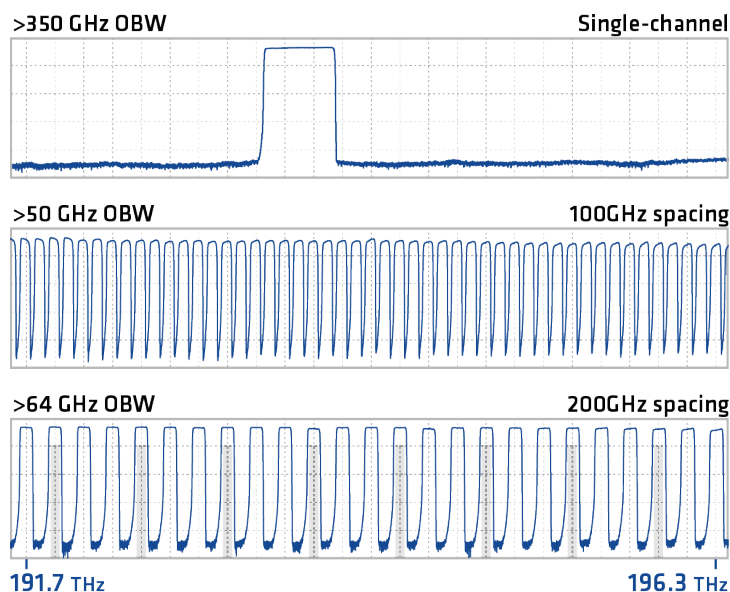
[†] 100 G Lambda MSA compatible

One CDE, Many Configurations

The CDE can be used in most transmission applications, as it is offered in C-band and L-band configurations, and even an O-band configuration upon request.

The C-band and L-band CDEs are offered in a multi-channel profile for testing 100G-400G optical modules at multiple wavelengths at once, or in a very wide bandwidth single-channel profile for the latest and upcoming high data rate applications.

C-band Profile Examples



Massive Levels of Dispersion

While a single half 1U 19-inch module for C- or L-band can provide up to 45 000 ps/nm, it is possible to cascade multiple modules to reach massive levels of chromatic dispersion.

CDE vs Transmission Fiber

Save on the cost and space of fiber spools and EDFAs with a ClearSpectrum™ CDE.

Thanks to TeraXion's FBG-based design, the CDE emulates the dispersion of thousands of kilometers of transmission fiber in a single compact module and with fewer EDFAs, driving the total cost of acquisition down. And the CDE is as convenient to use as it gets; just plug and play.

Up to **3x**
LESS EXPENSIVE

Up to **10x**
LOSS REDUCTION

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