

Updated parameter template for 400GBASE-ZR

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Introduction

During the IEEE 802.3 Plenary Meeting in Vienna, July 2019, [motion #5](#) passed adopting the list of parameters on slides 4 – 6 of [stassar_3ct_02_0719](#) for the 400GBASE-ZR PMD specification

At the cw interim teleconference meeting on 2 April [motion #4](#) passed, carrying the decision of the Vienna meeting, outlined on slide 3 of [dambrosia_3cw_01_200227](#), into the cw Task Force

During the development of the 100GBASE-ZR specification towards draft D1.3 the list of parameters has undergone some changes

In this presentation an updated list of parameters is proposed to support the development of a baseline for the 400GBASE-ZR PMD specification while maintaining a high level of consistency with the 100GBASE-ZR specification

Parameters for 400GBASE-ZR transmit characteristics

Parameter Name	Units
Signaling rate (range)	GBd
Modulation format	—
Minimum channel spacing	GHz
Average channel output power (max)	dBm
Average channel output power (min)	dBm
Nominal center frequency	THz
Spectral excursion (max)	GHz
Side-mode suppression ratio (SMSR), (min)	dB
Laser linewidth (max)	kHz
Offset between the carrier and the nominal center frequency (max)	GHz
Power difference between polarizations (max)	dB
Skew between the two polarizations (max)	ps

Parameters for 400GBASE-ZR transmit characteristics, continued

Parameter Name	Units
Error vector magnitude (max)	%
I-Q offset (max)	dB
Transmitter OSNR(193.6) (min)	dB
Average launch power of OFF transmitter (max)	dBm
Transmitter reflectance (max)	dB

Parameters for 400GBASE-ZR receive characteristics

Parameter Name	Units
Signaling rate (range)	GBd
Modulation format	—
Nominal center frequency	THz
Damage threshold	dBm
Maximum average input power	dBm
Minimum average input power [amplified]	dBm
Minimum average input power [unamplified]	dBm
Minimum OSNR(193.6) [amplified]	dB (0.1 nm)
Minimum OSNR(193.6) [unamplified]	dB (0.1 nm)
Receiver OSNR tolerance(193.6)	dB (0.1 nm)
Maximum reflectance of receiver	dB

Parameters for 400GBASE-ZR black link characteristics

Parameter Name	Units
Maximum ripple	dB
Maximum optical path OSNR penalty	dB
Maximum chromatic dispersion	ps/nm
Minimum chromatic dispersion	ps/nm
Fiber dispersion slope (min) (S_0)	ps/nm ² .km
Minimum optical return loss at TP2	dB
Maximum differential group delay, DGD_max	ps
Maximum polarization dependent loss	dB
Maximum polarization rotation speed	krad/s
Maximum inter-channel crosstalk at TP3	dB
Maximum interferometric crosstalk at TP3	dB

Further parameters?

In view of the discussion around the reduction of minimum channel spacing from 100 GHz to 75 GHz for 400GBASE-ZR it may be necessary to modify/add some parameters to better define the spectral characteristics of the 400GBASE-ZR transmitter and/or black link

Thanks!