802.3dj 800GBASE-LR1 Optical Parameter updates

Addressing D1.3 comments 397, 398, 399

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IEEE P802.3dj

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Comment addressed

CI **185**	*SC* **185.6.1**	*P* **550**	*L* **42**	*#* **397**

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Comment Type **T**   *Comment Status* **X**

The Transmitter OSNR specification of 35dB is lower than required for an unamplified Transmitter, and requires allocating additional penalty due to the additional noise.

SuggestedRemedy

Change the value of Transmitter OSNR from 35 dB to 40 dB.

Proposed Response   *Response Status* **O**

CI **185**	*SC* **185.6.1**	*P* **550**	*L* **52**	*#* **398**

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Comment Type **T**   *Comment Status* **X**

Tx laser frequency slew rate: post acquisition (max) is currently listed as TBD. The slew rate post acquisition should be slower than the pre-acquisition rate.

SuggestedRemedy

Replace the TBD for Tx laser frequency slew rate: post acquisition (max) with 1 GHz/s.

Proposed Response   *Response Status* **O**

CI **185**	*SC* **185.6.2**	*P* **551**	*L* **34**	*#* **399**

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Comment Type **T**   *Comment Status* **X**

In order to ensure interop with OIF 800LR, a higher damage threshold should be specified.

SuggestedRemedy

Increase specification for Receiver Damage threshold to -2 dBm.

Proposed Response   *Response Status* **O**

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Overview

D1.3 had one remaining TBD to be addressed

Two other parameters' values have new proposed values

Note: Updates are included intending to allow interop between IEEE 800GBASE-LR1 and OIF 800LR

Tx Frequency Slew Rate

802.3dj has a specification for the laser slew rate prior to acquisition, but not post acquisition

Tx laser frequency slew rate: pre acquisition (max)	10	GHz/s
Tx laser frequency slew rate: post acquisition (max)	TBD	GHz/ms

Prior to acquisition, fast tuning is required to ensure fast acquisition (~1-2 seconds timeframe)

Post acquisition, frequency changes will be gradual, and fast frequency ramps are not required

A Post acquisition slew rate of 1GHz/s is sufficient for in-service tracking

Transmitter OSNR

A transmitter OSNR of 35 dB/12.5GHz was included in the optical specifications to allow potential interop between specifications defined around both Amplified and Unamplified transmitters

No optically amplified specification is currently included for 800GBASE-LR1

The 35 dB/12.5GHz Tx OSNR specification results in 0.6 to 0.8 dB SNR penalty, depending on the Tx implementation assumptions

Changing the Tx OSNR to 40 dB/12.5GHz reduces the penalty to ~0.2dB SNR

Rx Damage threshold

OIF 800LR is specifying an 8dB loss budget, to allow additional losses for optical circuit switching

To align Rx specifications, OIF has a higher minimum Tx optical power, and specifies -4 dBm as the Maximum Tx power

- In D1.3 800GBASE-LR1 specifies -4 dBm as the Damage threshold

To align these specs, 800GBASE-LR1 should increase the damage threshold to -2 dBm

Damage threshold[a]	−4	dBm
Average receive power (max)	−6	dBm

Average receive power (min)
    for ETCC $\leq$ 1 dB
    for 1 < ETCC $\leq$ 3.4 dB
	
	−17.5
	−18.5 + ETCC
		dBm

Summary

The following updates are provided for Clause 185:

- A value for the Post acquisition slew rate
- Updated values for the Tx OSNR and the Receiver Damage Threshold

Thanks!