

**Considerations on power levels
for 400GBASE-FR8 and -LR8
as input to
Comment resolution on Draft 1.2**

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Supporters

- TBD

Introduction

- During the SMF Ad Hoc on 1 March 2016 consensus was reached on reflection values, MPI penalties and associated power budget modifications for 400GBASE-DR4, -FR8 and -LR8.
- In this presentation considerations are provided (related to comments #173 and #174) proposing a slight modification of the provisionally agreed levels for Minimum Transmitter $\text{OMA}_{\text{outer}}$ and Receiver $\text{OMA}_{\text{inner}}$ in 400GBASE-LR8 and -FR8

Values proposed for 400GBASE-LR8 in anslow_01_0316_smf

	Baseline, Draft 1.0	Draft 1.2	Ad Hoc proposed	Unit
Tx Outer Optical Modulation Amplitude (OMA_{outer}), each lane (min)	0.5	0.5	0.7	dBm
Launch power in OMA_{outer} minus TDP, each lane (min)	-0.5	-0.5	-0.3	dBm
Assumed Modulation Penalty	5	4.8	4.8	dB
Channel loss	6.3	6.3	6.3	dB
Assumed MPI penalty	0	0	0.5	dB
Receiver sensitivity (OMA_{inner}), each lane (max)	-11.8	-11.6	-11.9	dBm

Considerations on 400GBASE-LR8

- ❑ During the SMF Ad Hoc on 1 March consensus was reached on the proposed values in anslow_01_0316_smf.
- ❑ It was provisionally agreed to increase the Tx power by 0.2 dB and improve the receiver sensitivity by 0.3 dB, taking into consideration that we would need to take care to not increase the Tx power too much.
- ❑ Looking however at the initial baseline values in D1.0, the Tx power has been increased by 0.2 dB and the Rx sensitivity was improved by 0.1 dB.
- ❑ Taking into consideration (again) that it would be preferable to keep the Tx power as low as possible, it would seem advised to slightly modify the values proposed in anslow_01_0316_smf by increasing the Tx power by 0.1 dB and improving the D1.0 receiver sensitivity by 0.2 dB

Alternative proposal for 400GBASE-LR8

	Baseline, Draft 1.0	Draft 1.2	Ad Hoc proposed	Alternative proposal	Unit
Tx Outer Optical Modulation Amplitude (OMA_{outer}), each lane (min)	0.5	0.5	0.7	0.6	dBm
Launch power in OMA_{outer} minus TDP, each lane (min)	-0.5	-0.5	-0.3	-0.4	dBm
Assumed Modulation Penalty	5	4.8	4.8	4.8	dB
Channel loss	6.3	6.3	6.3	6.3	dB
Assumed MPI penalty	0	0	0.5	0.5	dB
Receiver sensitivity (OMA_{inner}), each lane (max)	-11.8	-11.6	-11.9	-12	dBm

Values proposed for 400GBASE-FR8 in anslow_01_0316_smf

	Baseline, Draft 1.0	Draft 1.2	Ad Hoc proposed	Unit
Tx Outer Optical Modulation Amplitude (OMA_{outer}), each lane (min)	0	0	0.3	dBm
Launch power in OMA_{outer} minus TDP, each lane (min)	-1	-1	-0.7	dBm
Assumed Modulation Penalty	5	4.8	4.8	dB
Channel loss	4	4	4	dB
Assumed MPI penalty	0	0	0.6	dB
Receiver sensitivity (OMA_{inner}), each lane (max)	-10	-9.8	-10.1	dBm

Considerations on 400GBASE-FR8

- During the SMF Ad Hoc on 1 March consensus was reached on the proposed values in anslow_01_0316_smf.
- It was provisionally agreed to increase the Tx power by 0.3 dB and improve the receiver sensitivity by 0.3 dB.
- Looking however at the initial baseline values in D1.0, the Tx power has been increased by 0.3 dB and the Rx sensitivity was improved by 0.1 dB.
- Taking into consideration that it would be preferable to keep the Tx power as low as possible, it would seem advised to slightly modify the values proposed in anslow_01_0316_smf by increasing the Tx power by 0.2 dB and improving the D1.0 receiver sensitivity by 0.2 dB

Alternative proposal for 400GBASE-FR8

	Baseline, Draft 1.0	Draft 1.2	Ad Hoc proposed	Alternative proposal	Unit
Tx Outer Optical Modulation Amplitude (OMA_{outer}), each lane (min)	0	0	0.3	0.2	dBm
Launch power in OMA_{outer} minus TDP, each lane (min)	-1	-1	-0.7	-0.8	dBm
Assumed Modulation Penalty	5	4.8	4.8	4.8	dB
Channel loss	4	4	4	4	dB
Assumed MPI penalty	0	0	0.6	0.6	dB
Receiver sensitivity (OMA_{inner}), each lane (max)	-10	-9.8	-10.1	-10.2	dBm

Summary

- For the FR8 and LR8 power budgets alternative proposals have been made for Transmitter power level and Receiver sensitivity.

Q & A

Thank you