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25GbE SMF Baseline Proposal Adjustments

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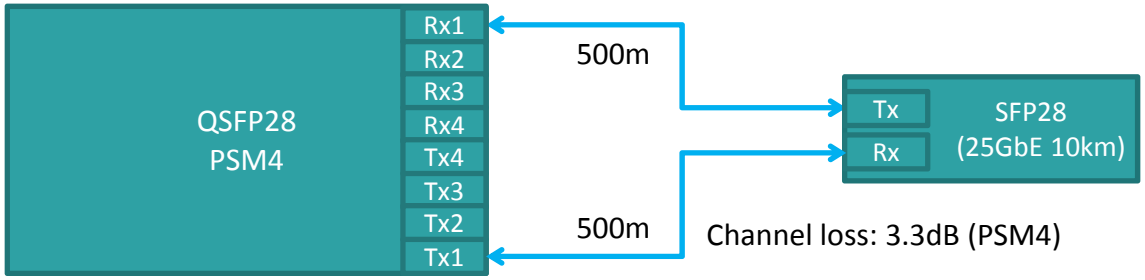
Outline

1. For 25GbE 10km baseline, match maximum average launch power to existing specifications (i.e. FibreChannel, PSM4) to allow broader interoperability.
    1. Note: Items can be left TBD
2. Hear opinions on adopting TDEC over TDP for simplified testing
3. Supporters

25GbE-10km Interoperation With PSM4



Compare worst-case Tx to worst-case Rx.

Tx: 25GbE-10km Rx: PSM4	25GbE SMF Tx Out (dBm)	PSM4 Channel Loss (dB)	PSM4 Rx In (dBm)	PSM4 Rx Spec (max)	Result
Tx OMA - TDP (min)	-5	3.3	-8.3	≥ -9.6	OK
Average Power (max)	2.5	0	2.5	≤ 2	Rx overload
Tx: PSM4 Rx: 25GbE-10km	**PSM4 Tx Out (dBm)**	**PSM4 Channel Loss (dB)**	**25GbE SMF Rx In (dBm)**	**25GbE SMF Rx Spec (dBm)**	**Result**
Tx OMA - TDP (min)	-7.25	3.3	-10.55	≥ -11.3	OK
Average Power (max)	2	0	2	≤ 2.5	OK

- Maximum power exceeds PSM4 Rx by 0.5 dBm.
- Otherwise, not compliant, but interoperable.

25GbE-10km Transmit Characteristics

Description	Units	32GFC	CWDM4	PSM4	Possible 25GbE-10km Spec
Operating range (max)	km	10	2	0.5	10
Signaling rate	Gbps	28.05	25.78125	25.78125	25.78125
Operating BER		$1.0x10^{-6}$	$5.0x10^{-5}$	$5.0x10^{-5}$	$5.0x10^{-5}$
Wavelength (max)	nm	1325	1337.5	1325	1325
Wavelength (min)	nm	1295	1264.5	1295	1295
Average launch power (max)	dBm	2	2.5	2	2.5
Average launch power (min)	dBm	-5	-6.5	-9.4	-6.5
OMA (max)	dBm	-	2.5	2.2	2.5
OMA (min)	dBm	-2	-4	-	-4
Launch power in OMA minus TDP (min)	dBm	-5	-5	-7.25 (center) [a] -3.4 (edge)[a]	-5
Transmitter and dispersion penalty (max)	dB	2.7	3	2.9	3
Extinction ratio (min)	dB	4	3.5	3.5	3.5
Transmitter eye mask	{X1,X2,X3, Y1,Y2,Y3}	{0.22, 0.4, 0.45, 0.31, 0.33, 0.5}	{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}	{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}	{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}

[a] At TDP MAX of 0.8-2.9dB.

TDP vs TDEC

- TDP
  - Perform BER measurement after transmission over maximum dispersion fiber and compare against “ideal” transmitter
- TDEC
  - Use oscilloscope as reference receiver
  - Use calculations to find sensitivity
  - No need for reference transmitter
- Should we write the 25GbE SMF specification with TDEC?
  - 100GBASE-SR4 used TDEC and SEC for stressed receiver test, but no single mode specification to reference.
  - TDP can reference existing specs (easy, fast), but seek what is best for 25GbE SMF.
  - New data needed for TDEC?

Summary

1. Change baseline proposal to maximum average power of 2dBm.
2. Summarize opinions on TDP vs TDEC.