

Concerning Comments on 25GBASE-ER Budget

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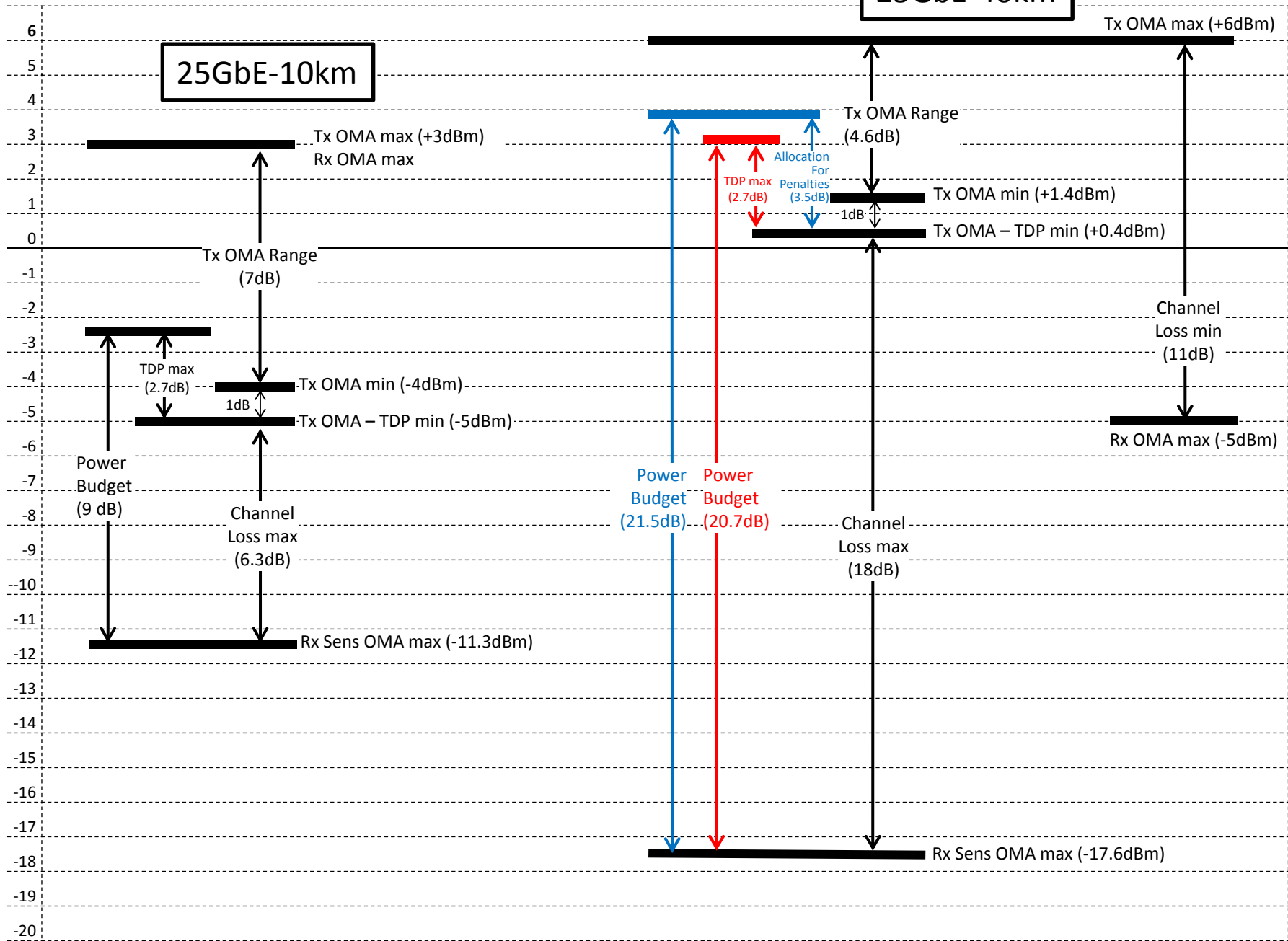
Chief Editor

20160914

Background

1. These slides are to facilitate discussion during comment resolution on 25GBASE-ER baseline.
2. Editors note in 200.6.2 mentions budget methodology inconsistency that exists in 25GBASE-ER baseline. Next slide explains the inconsistency to motivate decision to accept Comments 22-25.
3. In addition, Editor would like to bring to attention that the baseline for 25GBASE-ER reused ITU-T specifications for 100G over 40km with FEC (4L1-9D1F, see “tamura_160314e_40km_25GSMF.pdf”). However, Rx Sens in ITU-T is defined for worst-case input signal, which is different from IEEE, which assumes an ideal input signal (see 200.7.9). The current baseline value of -17.6 dBm should be revised to reflect IEEE methodology . For guidance, examples of published Rx Sens measurements from 25G APD receivers is included, and reviewers are encouraged to propose values in future comments.

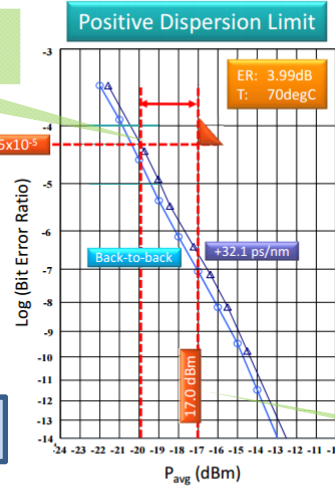
25GbE SMF Link Budget Summary



Reference 1

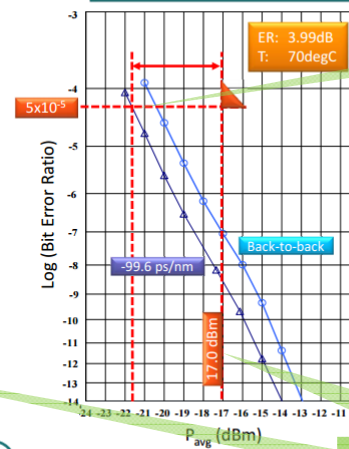
Technical Feasibility Of 40km With DML + APD

25.8G OMA@5E-5 BER: **-20.6 dBm**
(after +32.1 ps/nm)



Negative Dispersion Limit

25.8G OMA@5E-5 BER: **-22.3 dBm**
(after -99.6 ps/nm)



http://www.ieee802.org/3/25GSMF/public/1603_Macau/tamura_160314e_40km_25GSMF.pdf

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ITU-T Rx Sens Pavg max corresponds to OMA max -17.6 dBm

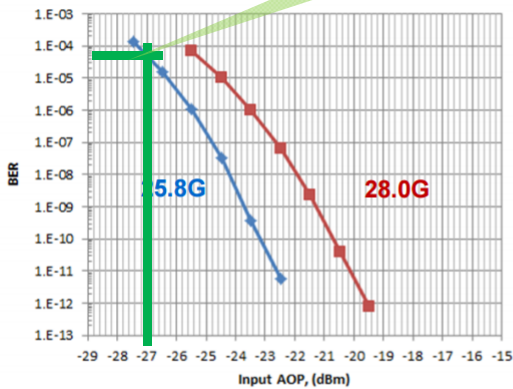
Reference 2



25.8G OMA@5E-5 BER: **-24.7 dBm**

EML TX, APD RX BER

2



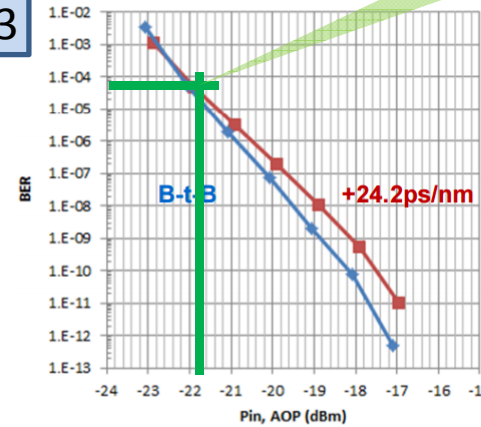
BtB Input AOP @ 5e-5 BER	
25.8G	28.0G
-27.0dBm	-25.4dBm

- λ = 1310nm
- TX ER = 10.7
- MM = 38%

DML TX, APD RX BER

28.0G OMA@5E-5 BER: **-21.5 dBm**
(after +24.2 ps/nm)

3



28.0G Input AOP @ 5e-5 BER	
B-t-B	24.2ps/nm
-22.0dBm	-21.8dBm

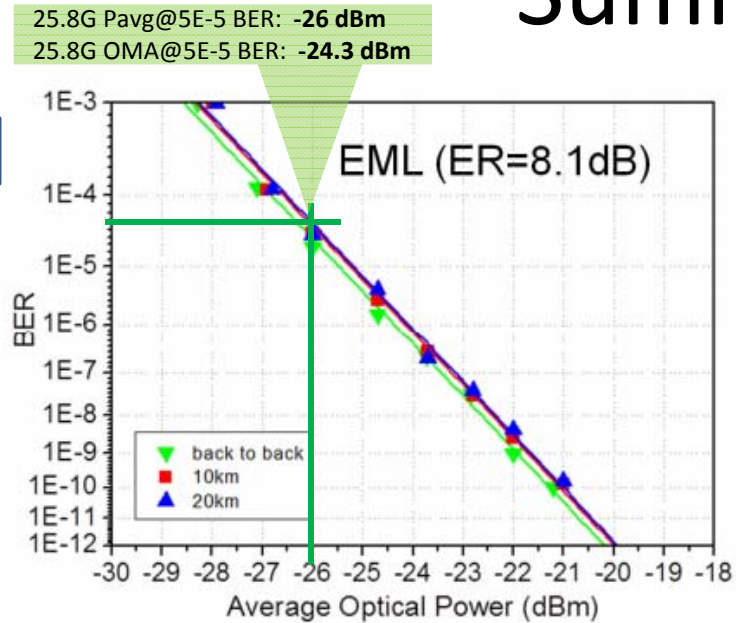
- λ = 1308.8nm
- TX ER = 5.24
- MM = 24%

Interpret this as very good Ref Tx into very good 1ch APD Rx?

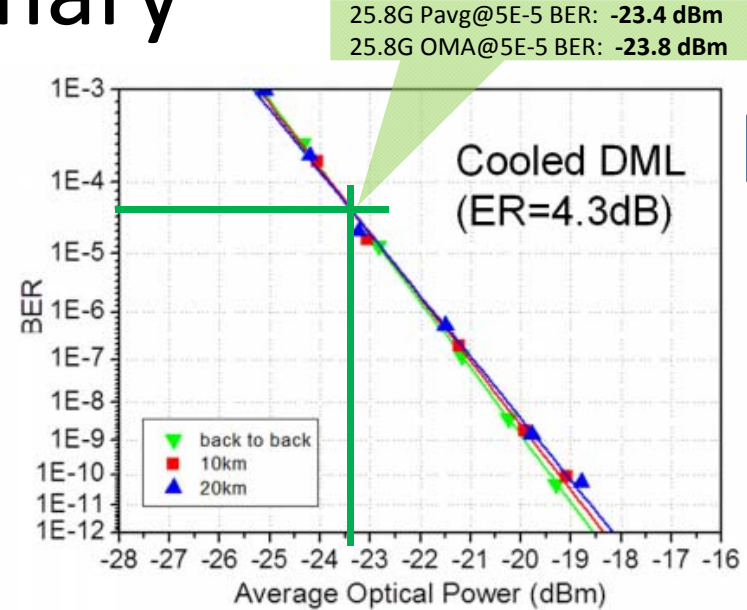
Example 3

Summary

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http://www.ieee802.org/3/ca/public/meeting_archive/2016/09/pan_3ca_1_0916.pdf

Summary of Published Data With 25G APD Rx

#	Tx	Rx	ER (dB)	Rate (Gbps)	Rx Sens @5e-5 (dBm)	GVD (ps/nm)
1	DML	APD	3.99	25.8	-20.6	+32.1
2	EML	APD	10.7	25.8	-24.7	-
3	DML	APD	5.24	28.0	-21.5	+24.2
4	EML	APD	8.1	25.8	-24.3	-
5	DML	APD	4.3	25.8	-23.8	-

Summary

1. 25GBASE-ER baseline inconsistency corrected by accepting Comments 22-25.
2. Reviewers encouraged to propose alternate values for Rx Sens OMA (max), as current baseline is based on ITU-T specification (4L1-9D1F) that assumes worst case input signal, which is different from the ideal input signal assumed in IEEE.