Call for a review of the SMF optical powers

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Introduction

- It's been two years since we adopted the SMF baselines. The state of the art in PAM4, our understanding, and the specs have evolved since then. There are recent reports of receiver margin to spare for some PMDs.
- Now, near the end of the project, is the time to stand back and review spec alignment to the technology sweet spot (optical power levels and TDECQ in particular)
- This is a call for the information we need to "sign off" these PMDs
- Relates to comments 28, 36, 37

50G/lane optical PMD

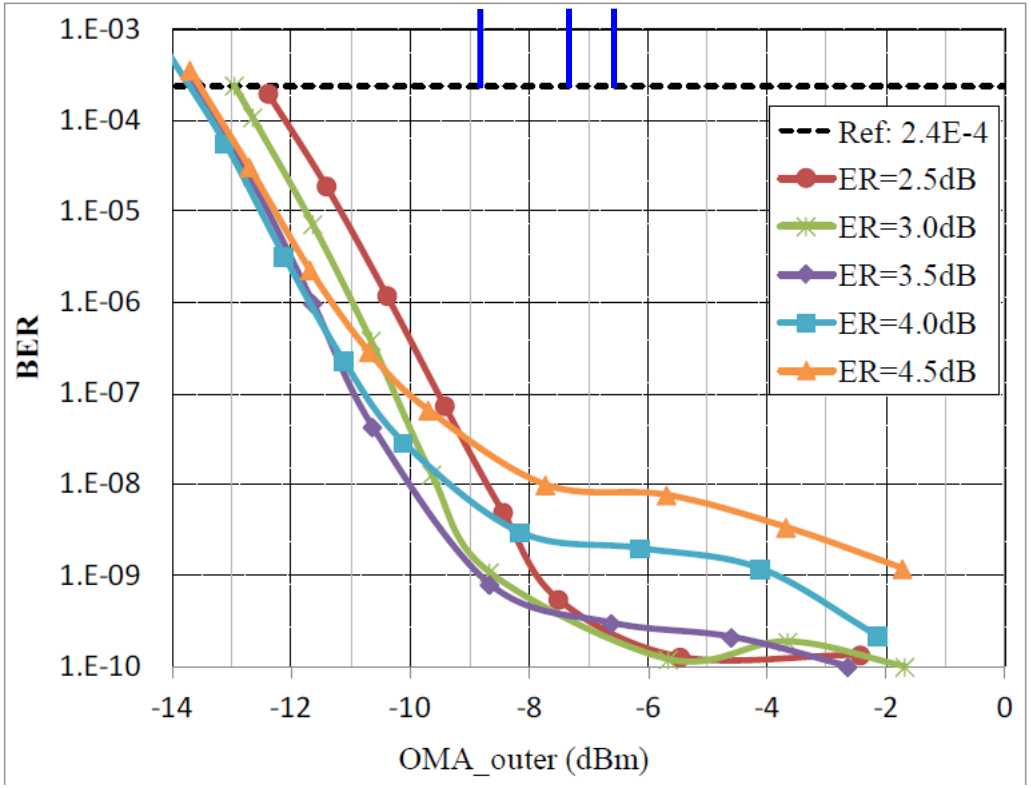

Chart from stassar_061417_3cd_adhoc-v2

Rx @ 25C
Source: DML
Pattern: PRBS31

- Blue lines represent unstressed sensitivity (informative) for 50GBASE-LR (-8.8 dB), 50GBASE-FR (-7.3 dB) and 200GBASE-DR4 (-6.6 dB)
- There is possibly 4 dB margin for LR, 5½ dB for FR, 6 dB for DR4, plus the SECQ of this test transmitter
- This is much more encouraging than the early results with PAM4
  - Is this representative of performance during the life of the standard?

Is this the right amount of margin?

- From this margin, we need to allow for:
  - Manufacturing variation
  - Measurement inaccuracy
  - Temperature – see stassar_061417_3cd_adhoc-v2.pdf
  - Ageing
  - Possibly worse transmitters
  - For 200GBASE-FR4, 200GBASE-LR4, 400GBASE-FR8, and 400GBASE-LR8, WDM losses and sometimes little more MPI and chromatic dispersion
- However, the transmitter usually costs more
  - Particularly power consumption
- So we should set the optical power levels so as not to waste sensitivity

How much lower should the power levels be set?

	200GBASE-DR4	200GBASE-FR4	200GBASE-LR4	400GBASE-FR8	400GBASE-LR8
0 dB					
0.5 dB					
1 dB					
1.5 dB					
Need more information					
Don't care					

100G/lane optical PMD

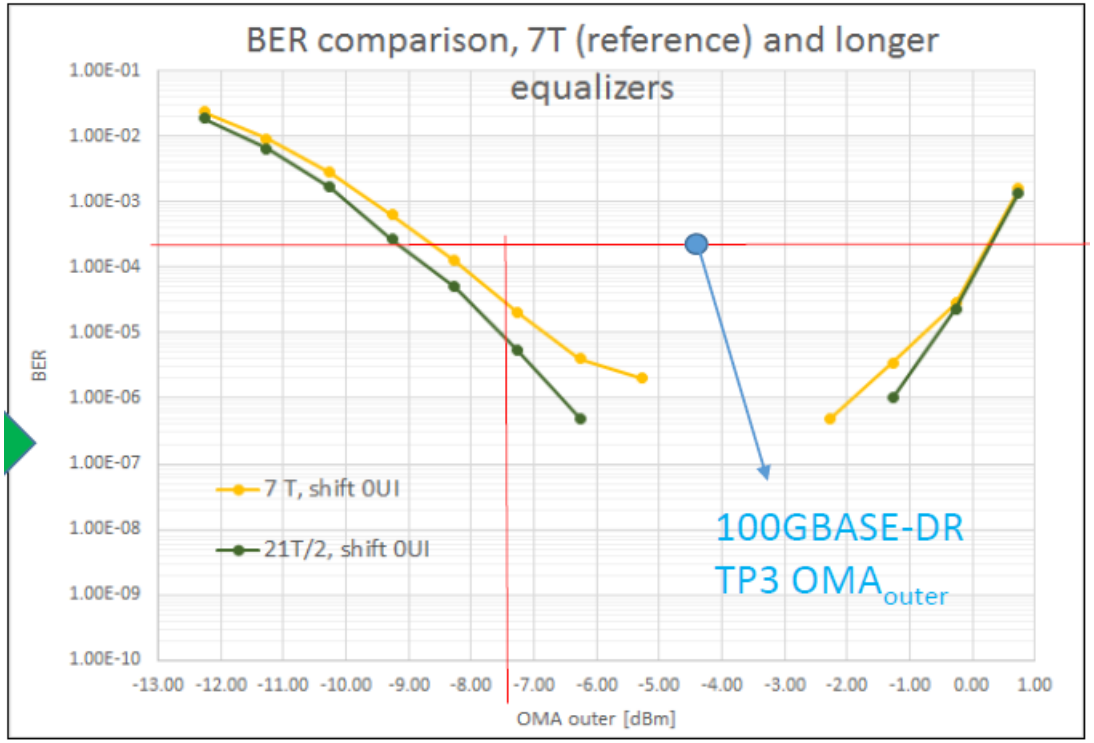

Chart from mazzini_051017_3cd_adhoc

- Blue dot represents unstressed sensitivity (informative) for 100GBASE-DR and 400GBASE-DR4 (-4.4 dB)
- There is possibly 4 dB margin
- This is much more encouraging than the early results with PAM4
  - Is this representative of performance during the life of the standard?

How much lower should the power levels be set?

	400GBASE-DR4
0 dB	
0.5 dB	
1 dB	
Need more information	
Don't care	