

40GE SMF PMD – RX Feasibility and Design Margins

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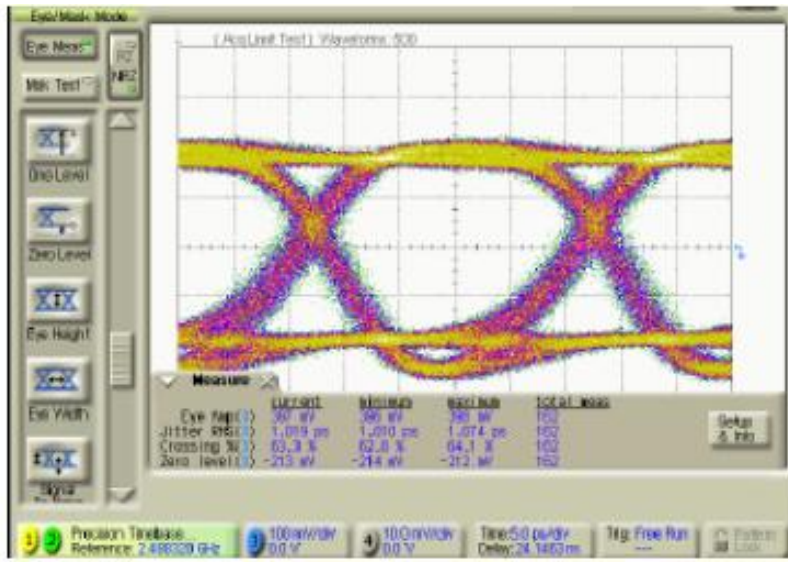
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40G VSR Key Target Spec

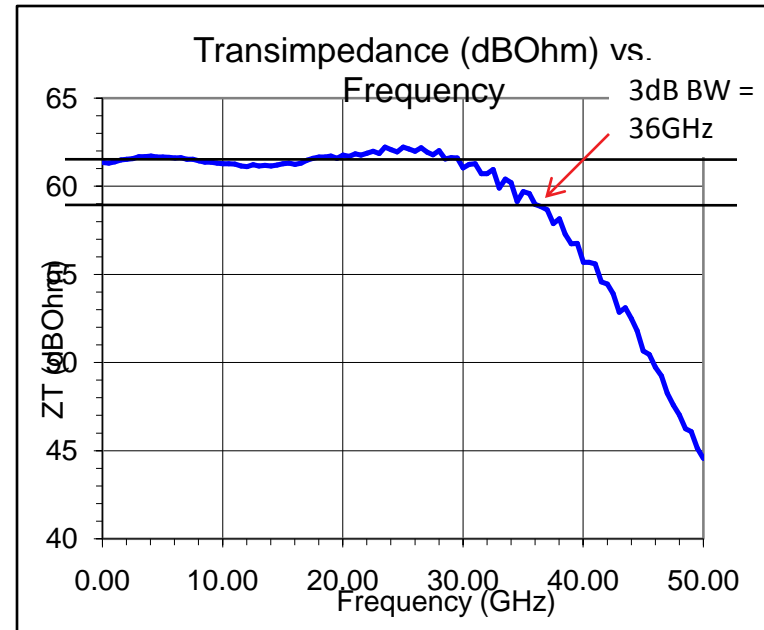
	VSR2000-3R2 (1550nm)*	VSR2000-3R1 (1310nm)	P111-3D1 (1310nm)	Unit
Wavelengths	1530-1565	1290-1330	1307-1317	nm
Pout	+3 to 0	+3 to 0	+4 to 0	dBm
ER	8.2	8.2	8.2	dB
Psens	-6	-5	-7	dBm
Distance	2	2	10	km
Attenuation	4	4	6	dB
Penalty	2	1	1	dB
Document	G.693	G.693	G.959.1	

*** VSR2000-3R2 is the only interface known to be deployed.**

Time Domain and Frequency Domain Measurement Results



Eye Diagram at 40Gb/s

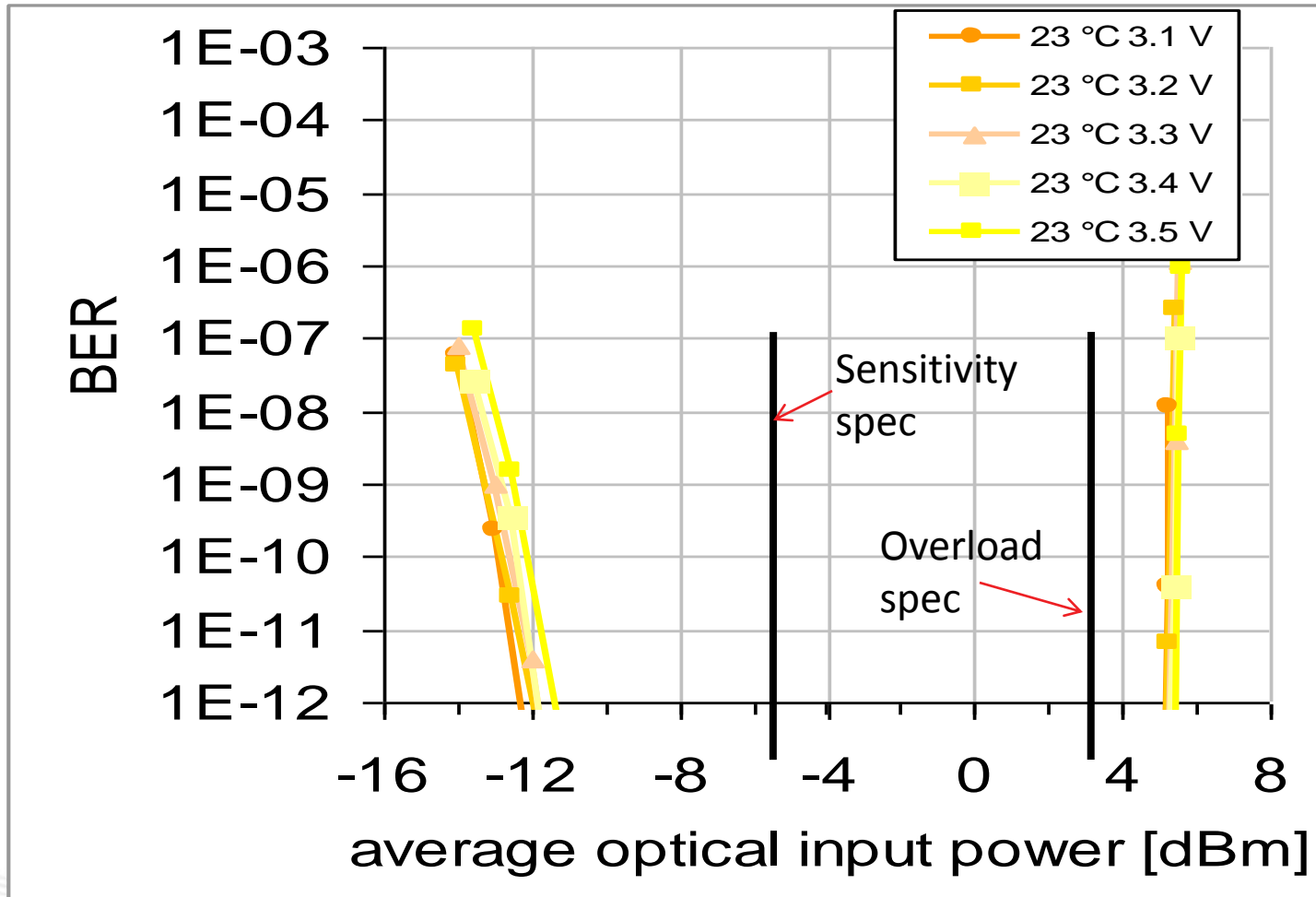


Frequency Domain Response

- Courtesy U2T Photonics

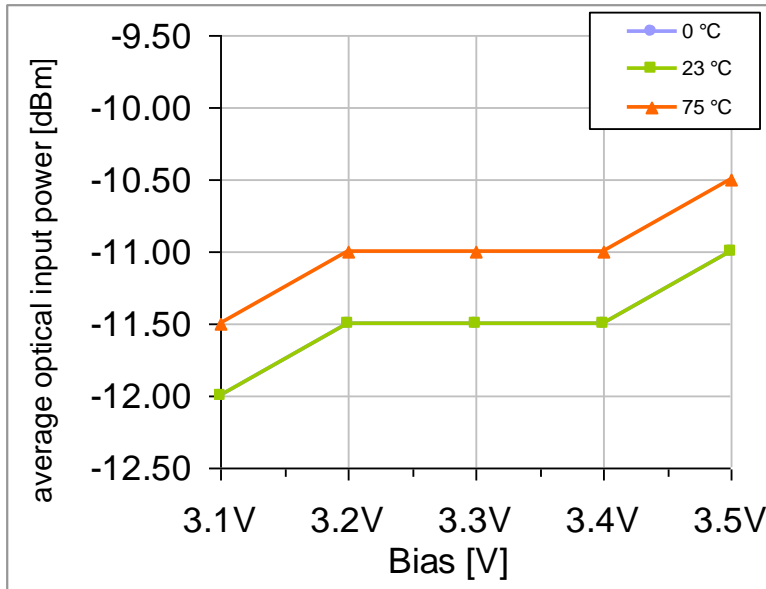
Clean eyes with 36GHz small signal BW.

BER Bath-tub curves

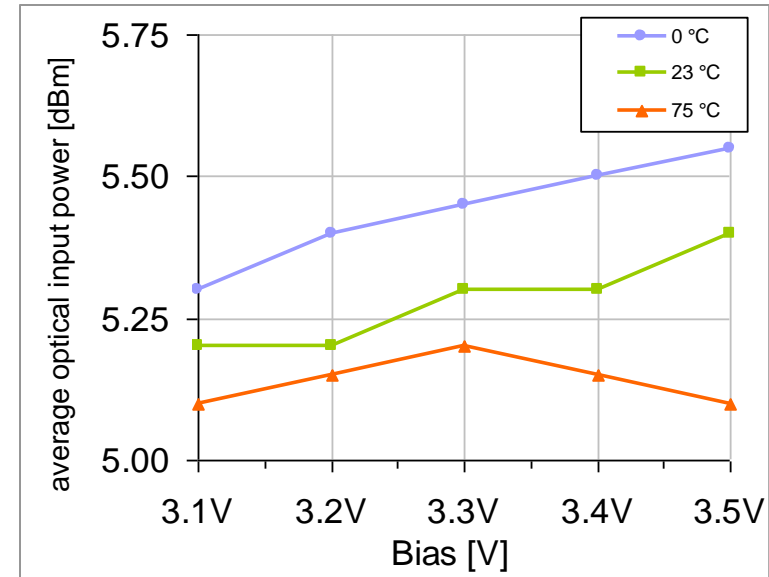


- Courtesy U2T Photonics

BER Sensitivity and Overload



Back to Back Sensitivity



Overload

- Courtesy U2T Photonics

**Back to back sensitivity better than -10dBm (VSR Spec -6dBm → 4dB margin)
Overload better than 5dBm (VSR spec +3dBm → 2dB margin)**

Conclusions

- The TIA used in 40G VSR are mature products.
- There is significant design margin
 - 2dB of design margin on overload
 - 4dB of design margin on Back to Back sensitivity
- Our recommendation is to keep VSR2000-3R2 spec for optical power budget