

IEEE P802.3dj Plenary meeting, July 14, 2024

Update on the impact of CD limits on RX sensitivity penalty and TDECQ measurements

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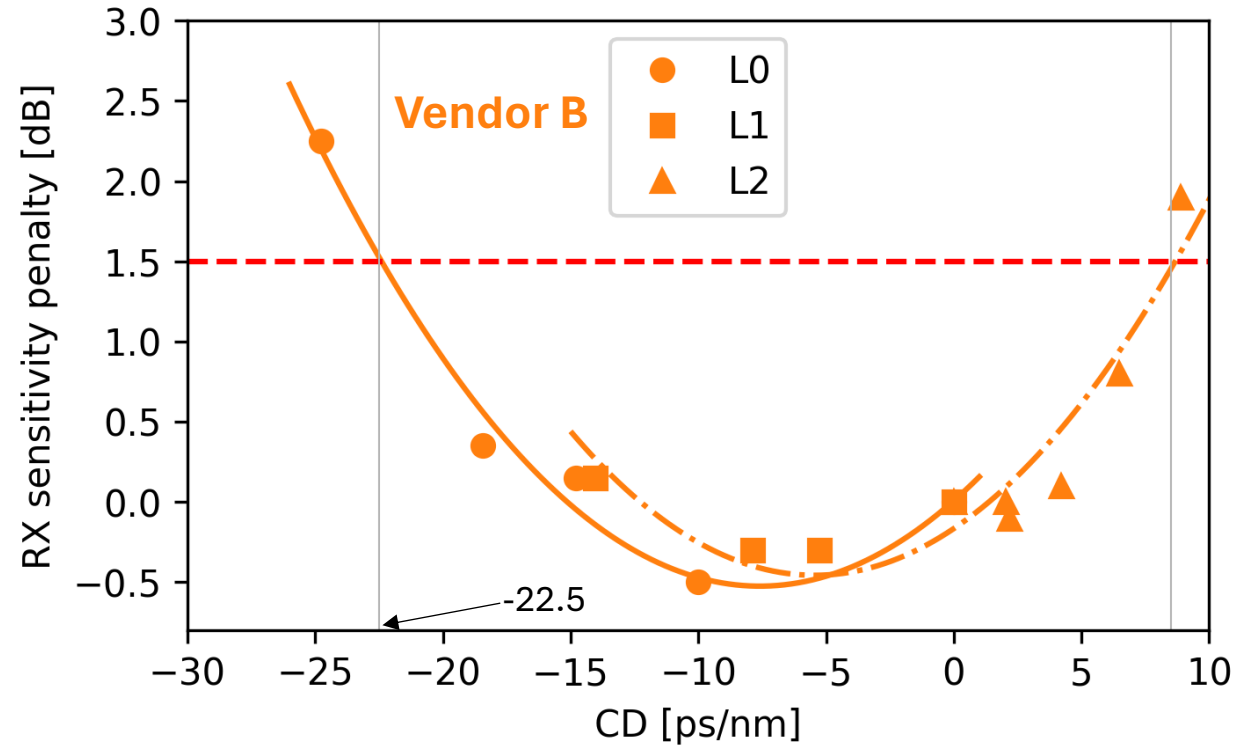
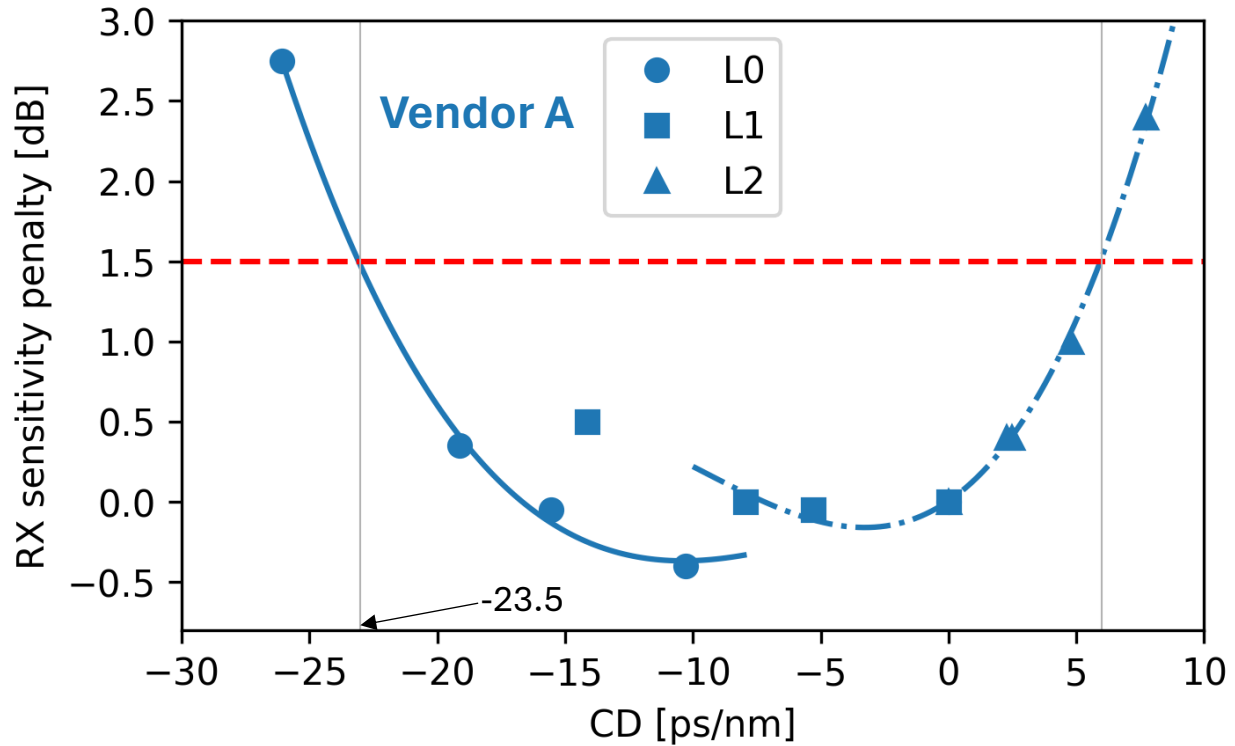


Introduction

- In [fan_3dj_01a_2405](#), we reported the experimentally measured CD tolerance with FFE equalization using one commercial 800G-LR4 OSFP module.
- In this contribution, we repeat the experiments to another 2 modules.
- Also, we experimentally show that the dispersion penalty at CDmin can be reduced by increasing the EML chirp.

Measurements under the factory configurations

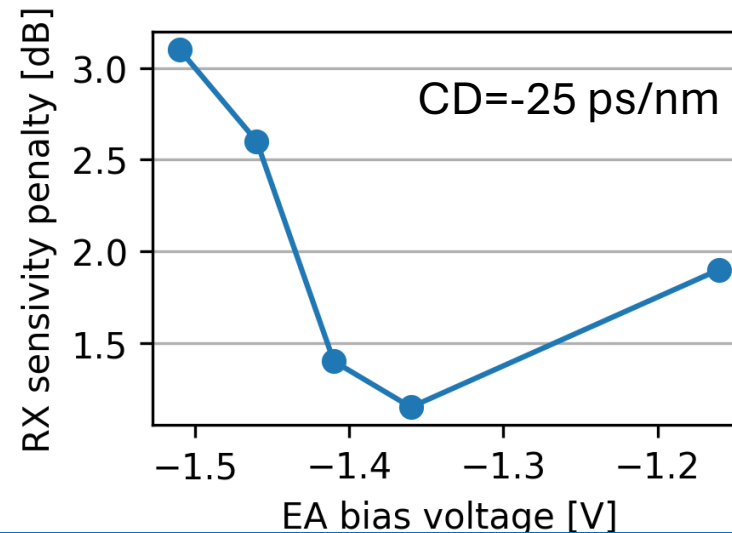
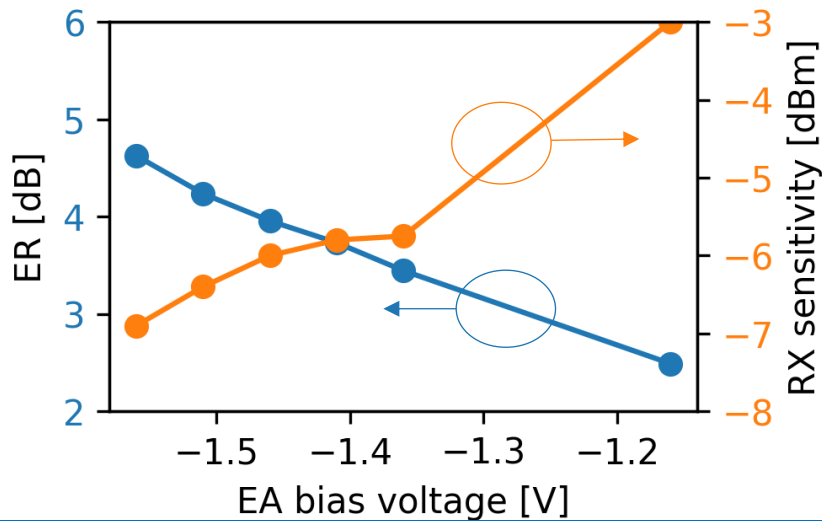
- 113GBd Transmitter Module+custom RoSA with FFE



EML chirp tuning for reducing the RX sensitivity penalty at CD_{min}

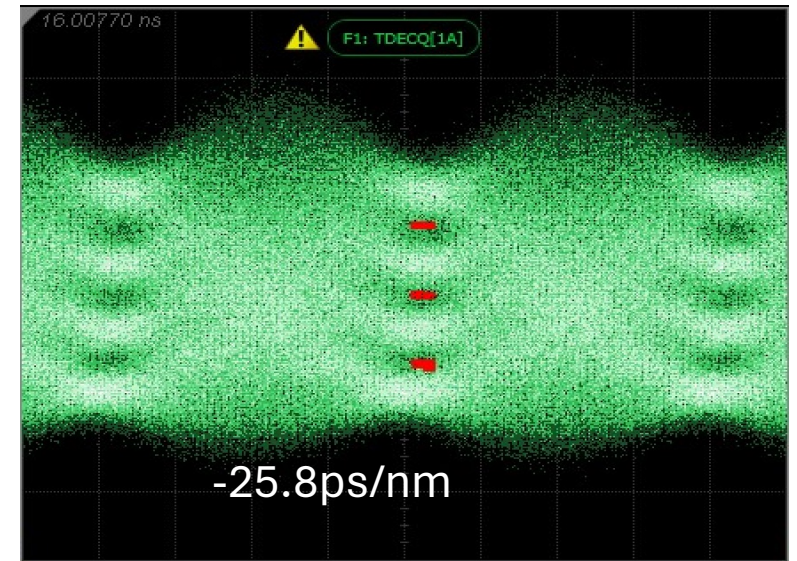
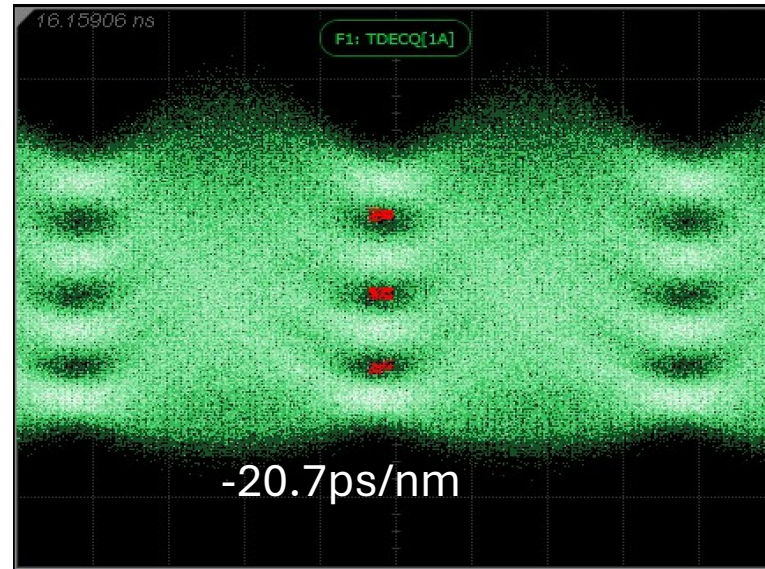
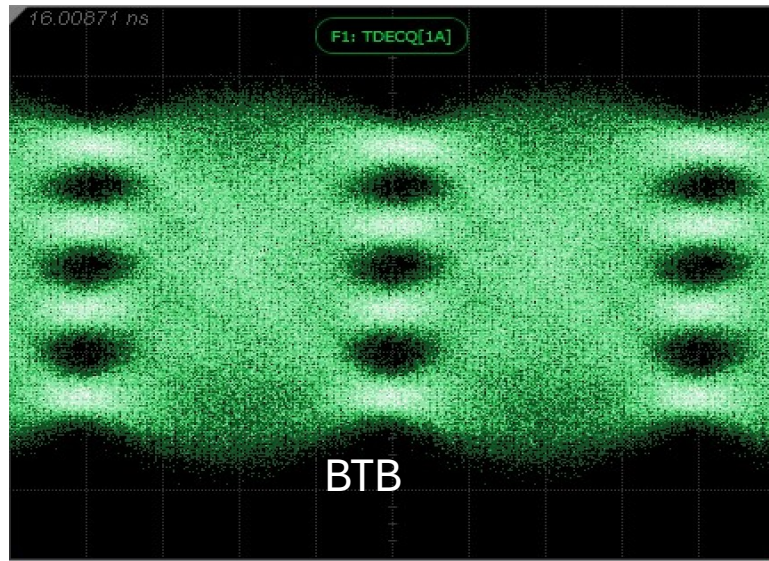
As shown in [johnson_3dj_optx_01_240627](#), the EML chirp is related to EA bias voltage.

measured from a Vendor A 113GBd module					
EA bias voltage [V]	ER [dB]	Chirp	RX Sen [dBm] (BTB)	RX Sen [dBm] (-25 ps/nm)	Penalty [dB] w.r.t. EA=1.56
(factory) -1.56	4.624	Smaller	-6.9	exceeding BER_{ref}	NA
-1.51	4.235	↓	-6.4	-3.8	3.1
-1.46	3.956		-6	-4.3	2.6
-1.41	3.732		-5.8	-5.5	1.4
-1.36	3.445		-5.75	-5.75	1.15
-1.16	2.49		Larger	-3	-5



✓ Low RX sensitivity penalty can be obtained at -25ps/nm when the EML chirp is increased.

The impact of CD on current TDECQ measurements



- So far, we are unable to make reasonable TDECQ measurements, likely due to equipment limitations. More works are to be done.

Concluding remarks

- We experimentally verify that -24.6ps/nm is acceptable with $<1.5\text{dB}$ RX sensitivity penalty @ $\text{BER}=4.85\text{E}-3$ by optimizing the EML chirp (using FFE only, Rx with stronger equalizer could work with worse link dispersion).
- The TDECQ measurement setup will need to be improved.
- This contribution is for information only