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Fiber transmission experimental test of an 800G-LR4 OSFP module

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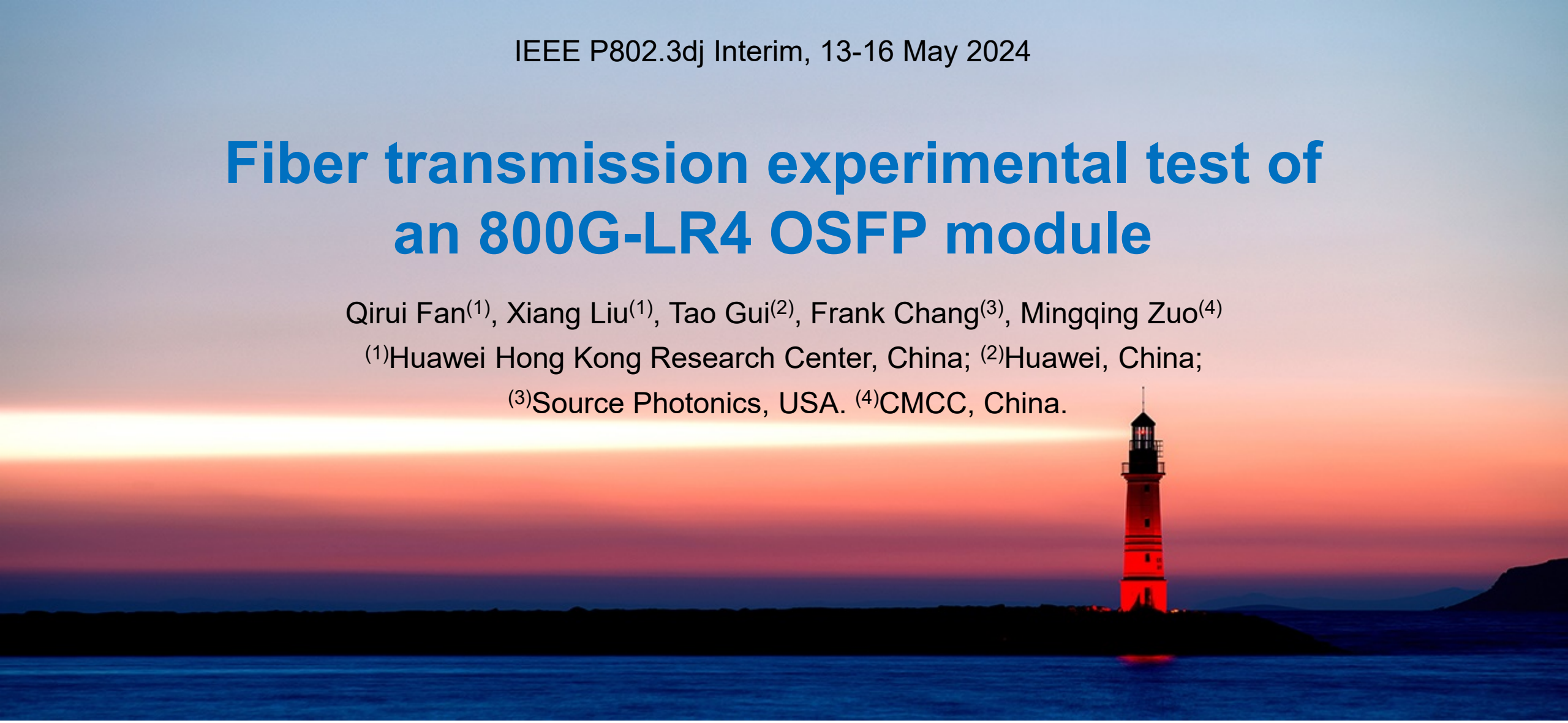
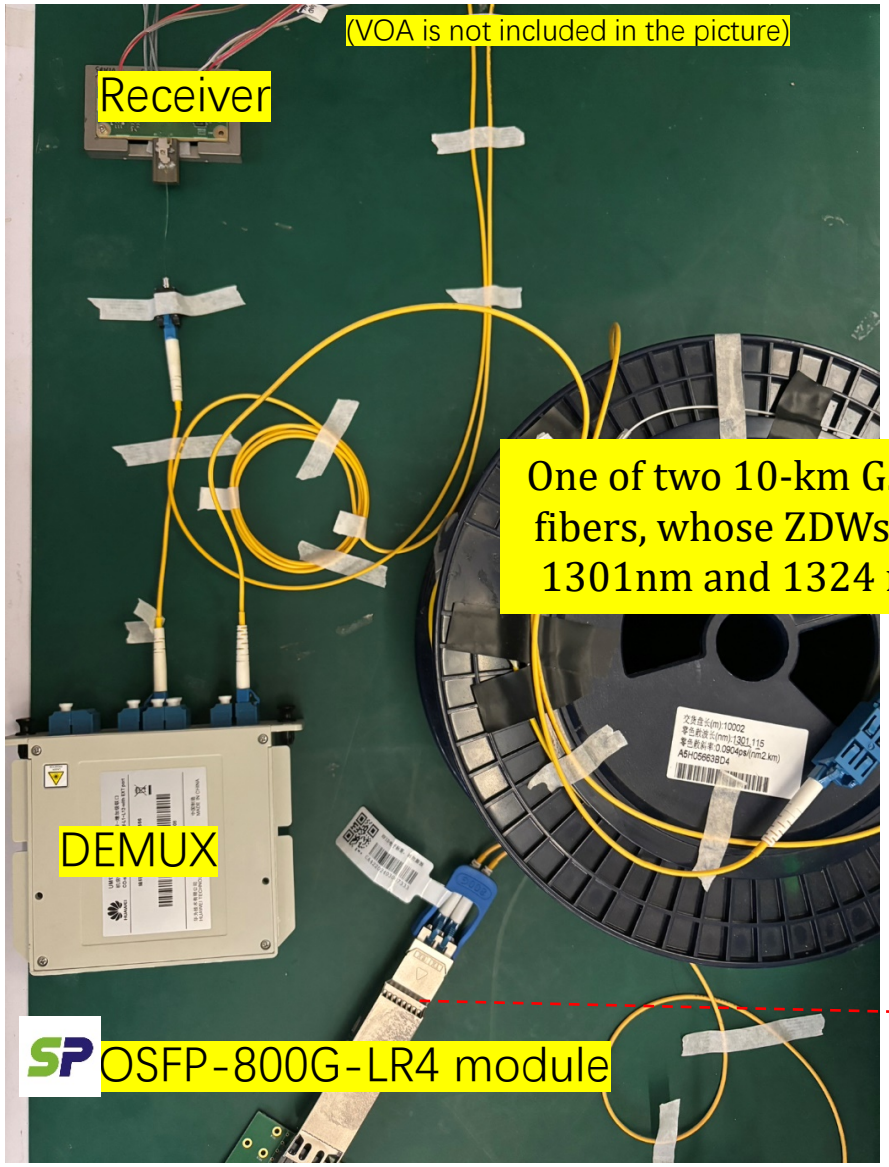


Introduction

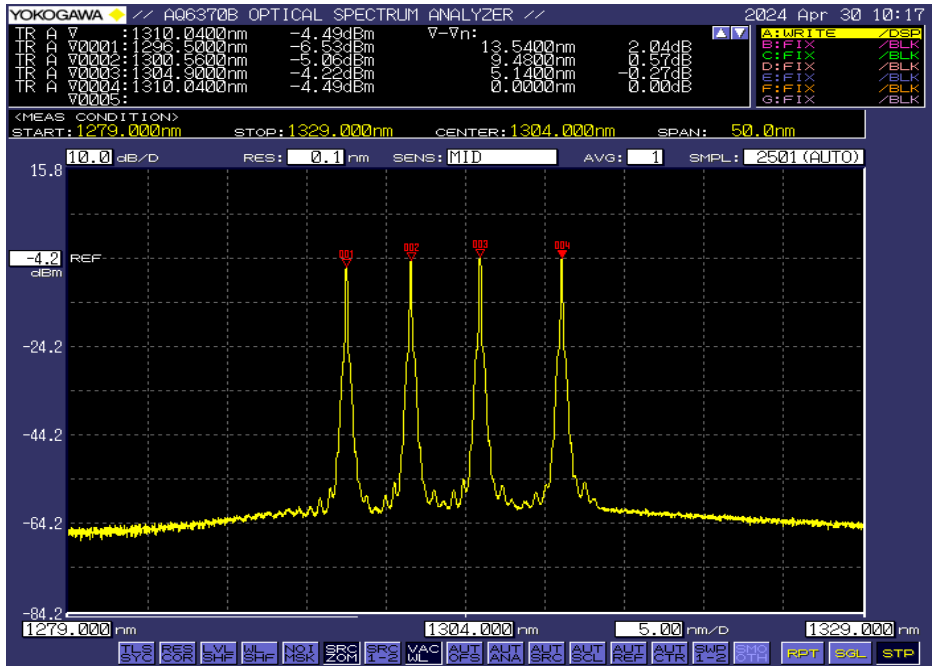
- In recent 802.3dj adhoc meetings, the management team called for contributions to up-to-date experimental confirmation of the CD tolerance based on real 800G pluggable modules implementing 226G/Lane optics.

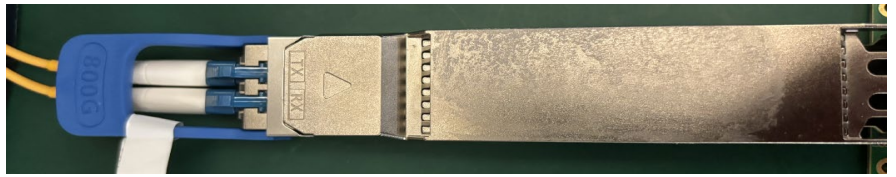
- In this contribution, we report the experimentally measured CD tolerance with FFE equalization using one commercial 800G-LR4 OSFP module.

800G-LR4 Transmission Test Setup



We scanned the input power to the receiver from -5 dBm to -9 dBm to determine the receiver sensitivity at a pre-FEC of BER=4.85E-3.





OSFP-800G-LR4 module

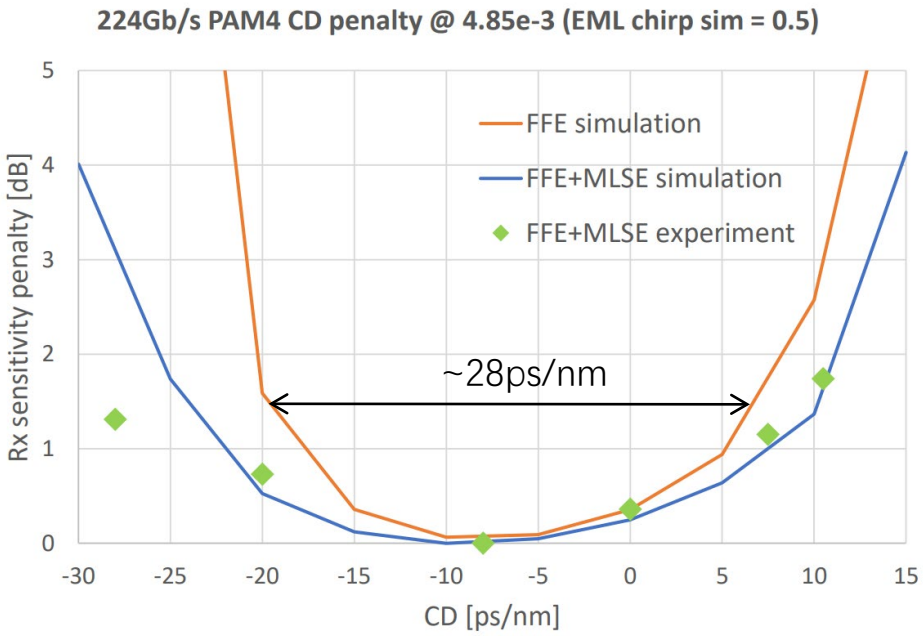
800G-LR4 OSFP Performance without CD

The Experiment Results with CD

- rodes_3dj_01a_2403, attached in Liaison IEEE_802d3_to_ITU_3dj_2403 , states the CD range limit of ~28 ps/nm with FFE by simulation, which is consistent with simulation results in kuschnerov_3df_02_221012, showing ~28 ps/nm CD range at 1.5dB sensitivity penalty.

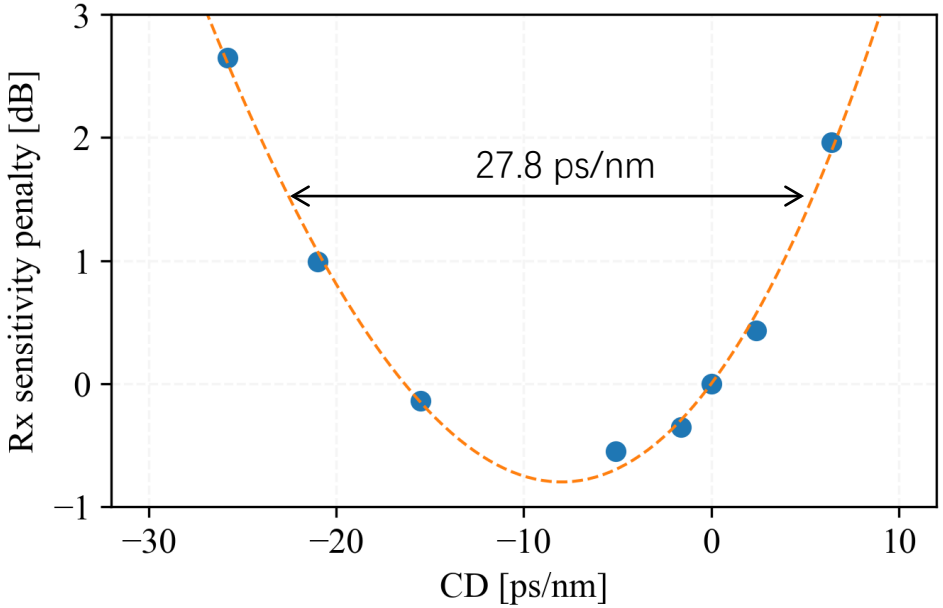
Simulation:

kuschnerov_3df_02_221012



Experiment:

113Gbaud (226Gb/s per channel) OSFP 800G-LR4 Tx and custom ROSA with FFE equalization only



✓ The new experimental results report the ~28ps/nm CD range@1.5dB penalty, which is close to the simulated ranges in **kuschnerov_3df_02_221012** and **rodes_3dj_01a_2403**

The Experiment Results with CD - cont'd

Wavelength	1295 nm		1300 nm		1305 nm		1309 nm	
Dispersion[(1)] (ps/nm)	-31	-5.1	-25.8	-1.6	-21	2.4	-15.5	6.4
Penalty[(2)] (dB)	NA[(3)]	-0.55	2.65	-0.35	0.99	0.43	-0.14	1.96

(1) There two dispersion values for each wavelength channel are corresponding to two 10-km G.652 fibers whose ZDWs are 1324 nm and 1301 nm, respectively.
(2) The sensitivity penalty is measured w.r.t. the case of CD=0.
(3) Dispersion of -31 ps/nm@1295nm leads to a raw BER that is above the pre-FEC threshold of 4.85E-3.

Conclusion

- Based on a commercial OSFP 800G-LR4 module, we have conducted experiments to measure its CD range limit with FFE equalization.
- The measured CD tolerance of ~28ps/nm is consistent with the simulated ranges reported in kuschnerov_3df_02_221012 and rodes_3dj_01a_2403.
- This contribution is for information only.

Thank you!