



*Think fast.*

# Inphi Moves Big Data Faster

Pluggable Modules for Coherent Optical Interconnects

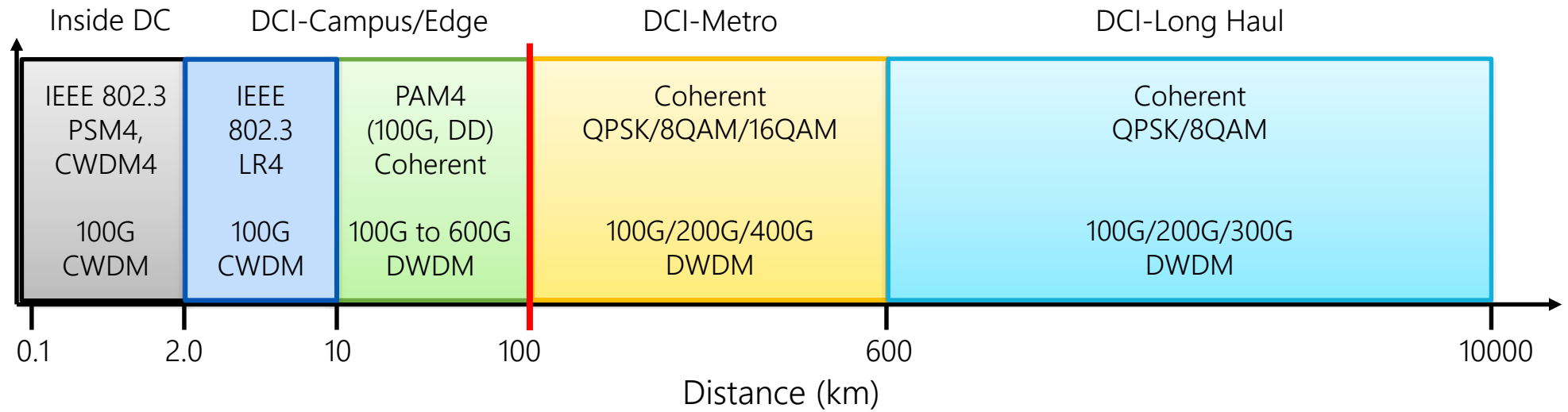
Radhakrishnan Nagarajan, Ph.D.

September 8, 2020

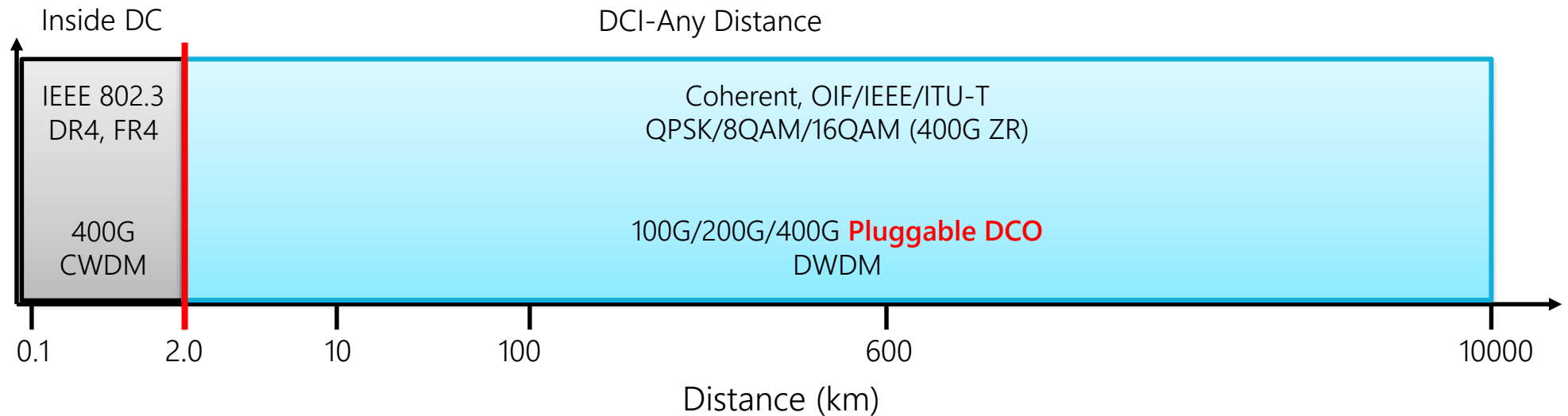
EPIC meeting on New Pluggable Transceivers

# Technology choices in data center interconnects (DCI)

View at 100G



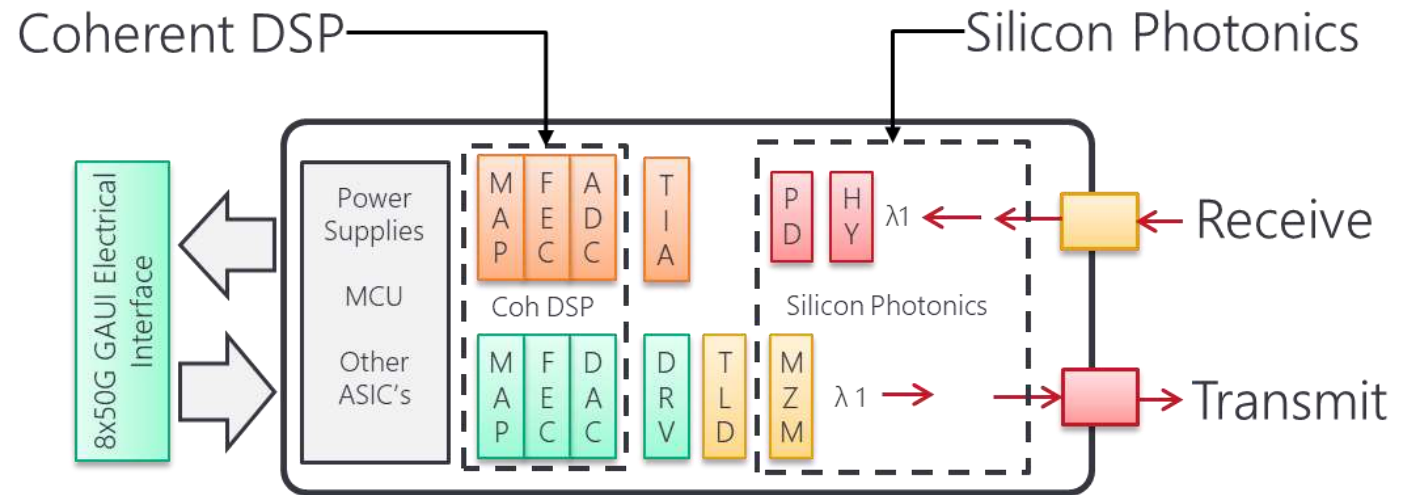
View at 400G



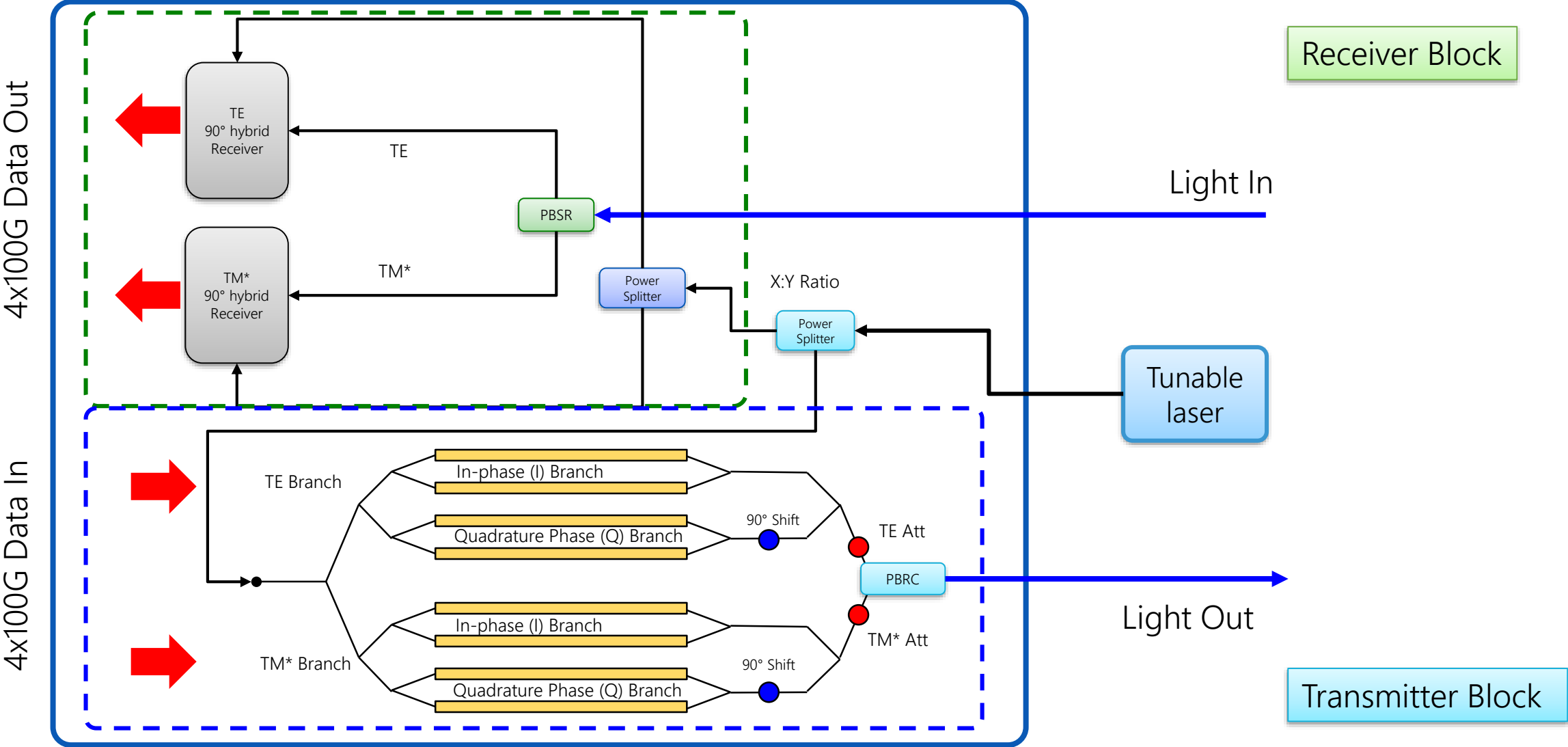
# Silicon photonics based 400G ZR coherent modules



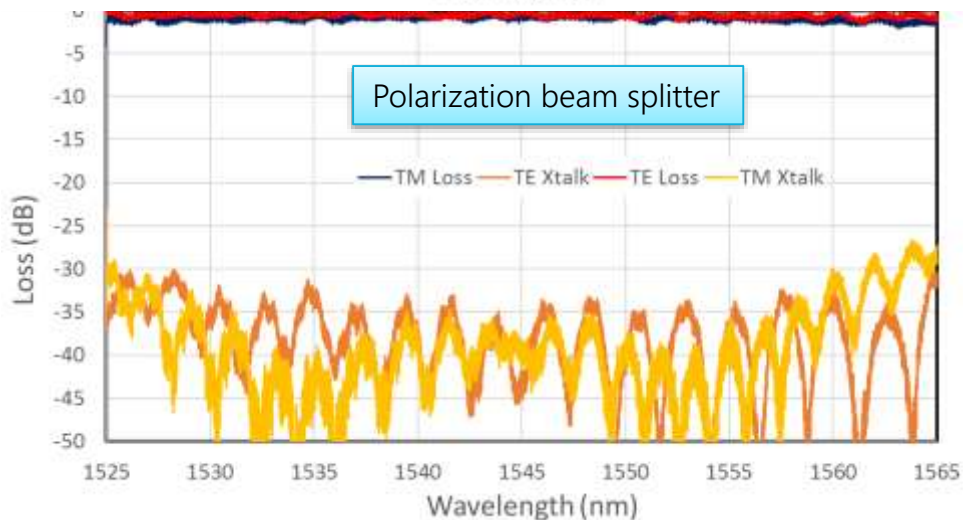
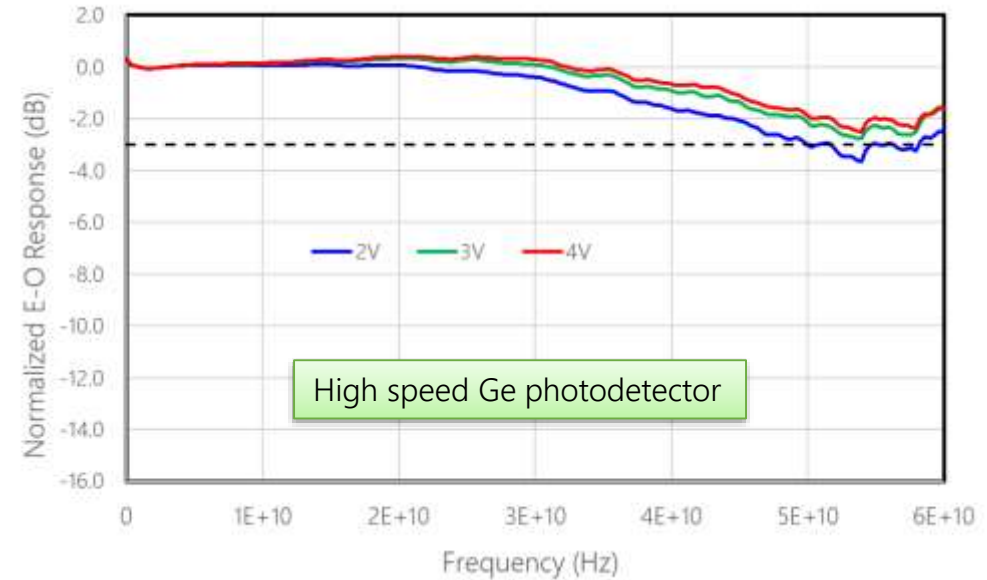
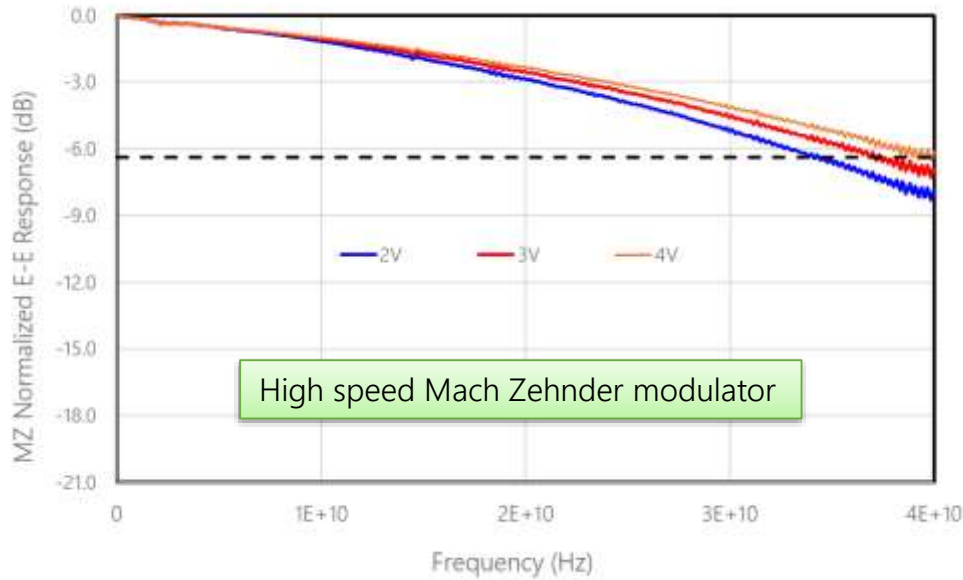
- QSFP-DD module
- Advanced 7nm CMOS DSP, Canopus
- Advanced silicon photonics node from Bi-CMOS foundry
- Electrical Input: 8 x 26.5625 Gbaud PAM 4, IEEE 802.3bs
- Optical Output: 1 x 59.8 Gbaud QAM 16, 1  $\lambda$
- Nominally 120km single span reach



# Highly integrated silicon photonics architecture for coherent transmission



# Silicon photonics performance at C band for coherent links

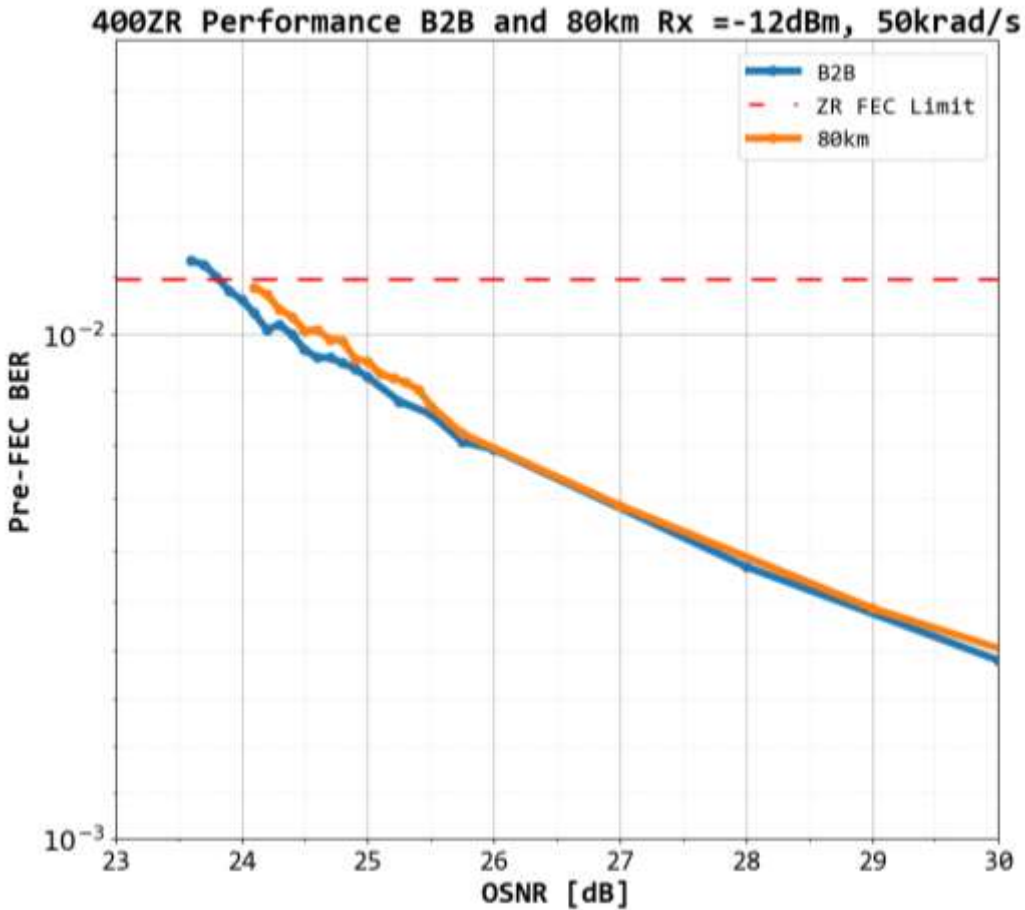


- Performance of key components in the integrated Silicon photonics chip across C band.
  - High speed Mach Zehnder modulator
  - High speed Ge photodetector
  - Low loss, high extinction ration polarization beam splitter.



# Module performance at 80km for single span optical links

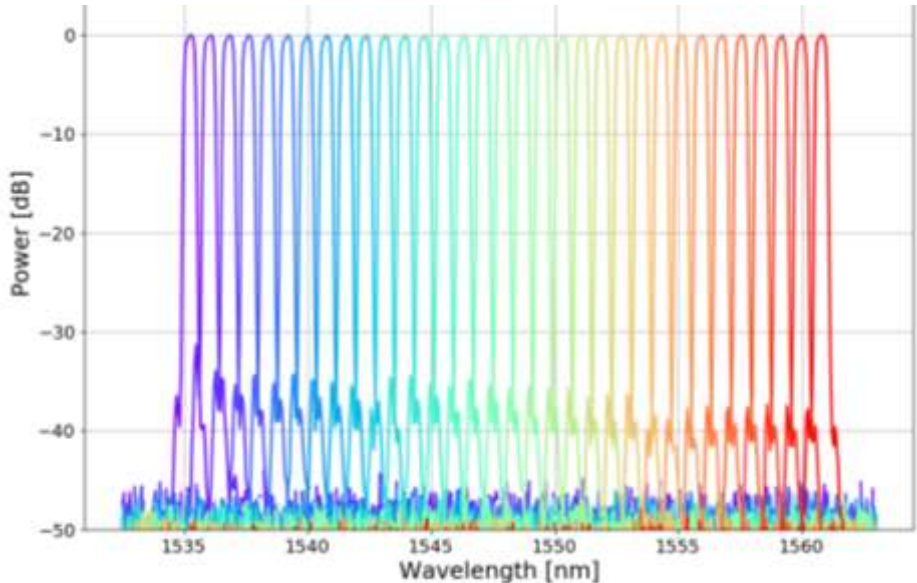
- Polarization scrambled at 50krad/s
- < 0.5dB polarization penalty



400G switch



Multi-channel spectrum





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