

The background of the slide features a large, light blue watermark of the Yonsei University seal. The seal is circular with the text 'YONSEI UNIVERSITY' around the top and 'YONSEI' in Korean at the bottom. In the center is a shield with a book, a torch, and a central circle, with the year '1885' at the bottom.

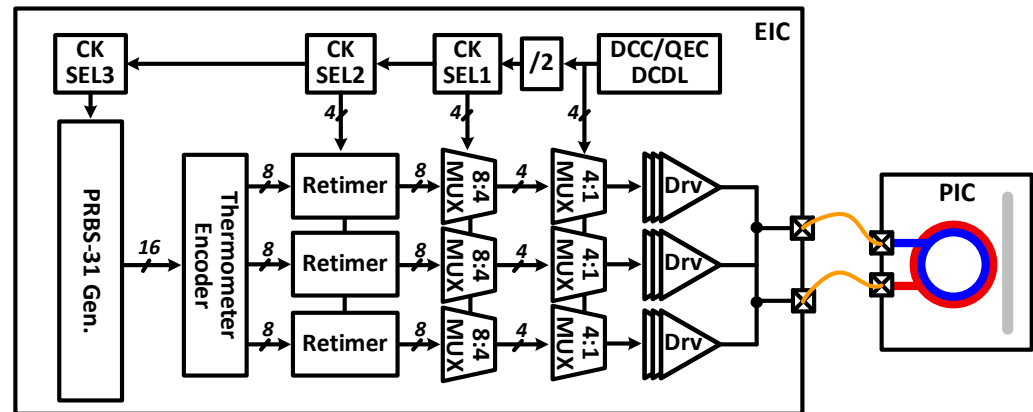
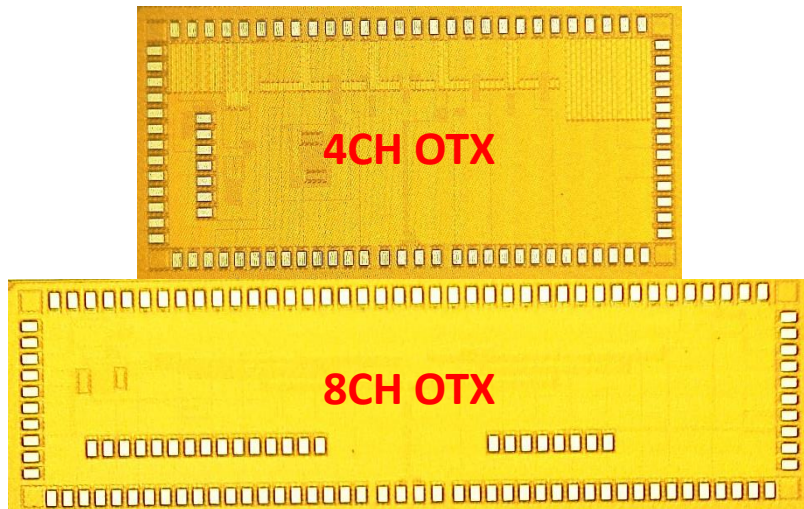
2025 Workshop

Dong-Hyeon Kim

**High-Speed Circuits & Systems Lab.
Dept. of Electrical and Electronic Engineering
Yonsei University**

2025 Works

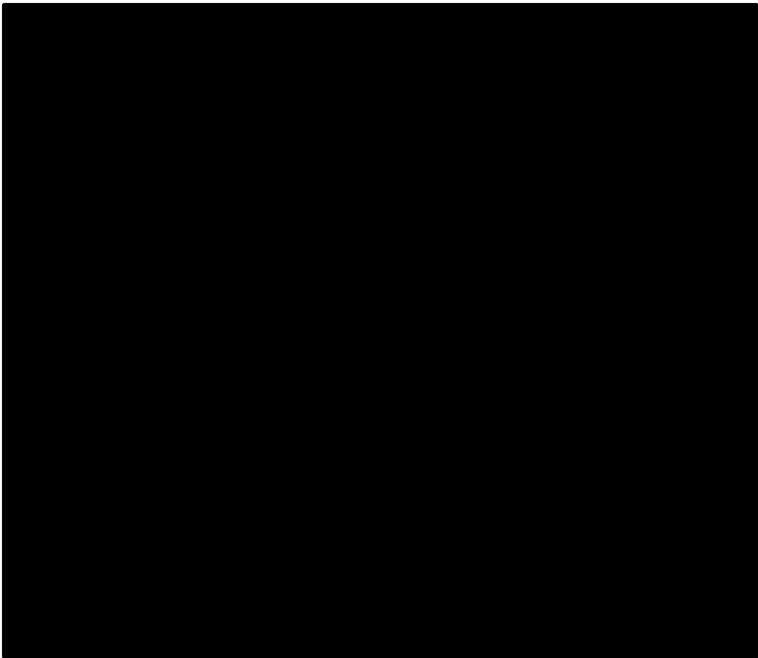
Si Micro-Ring Modulator Transmitter



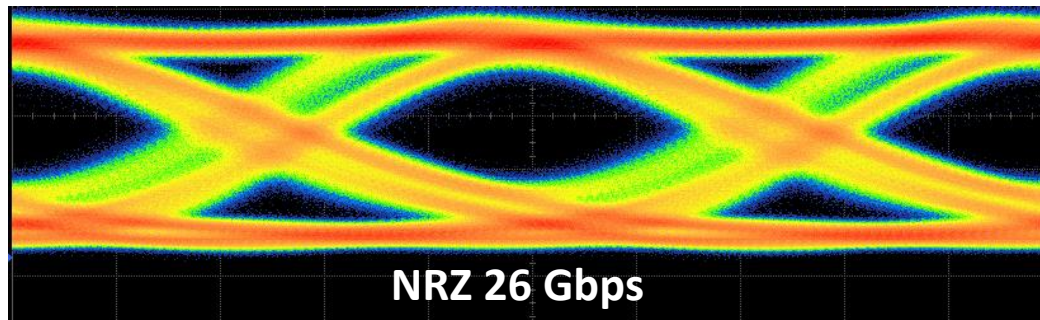
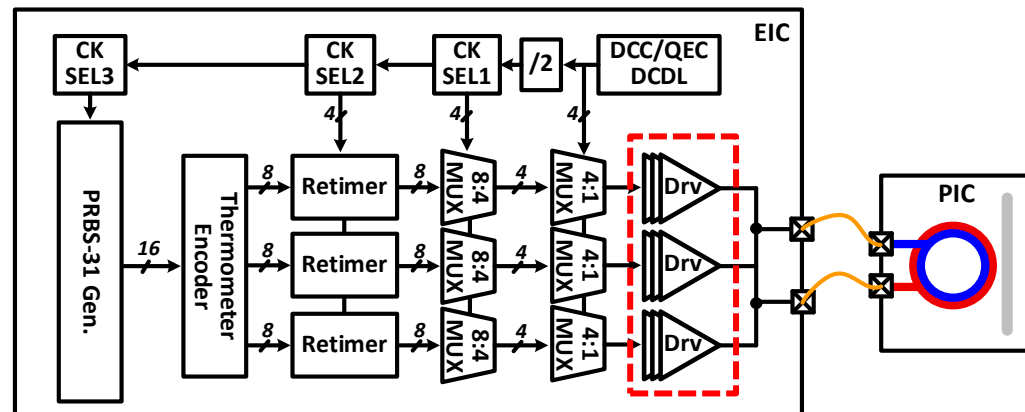
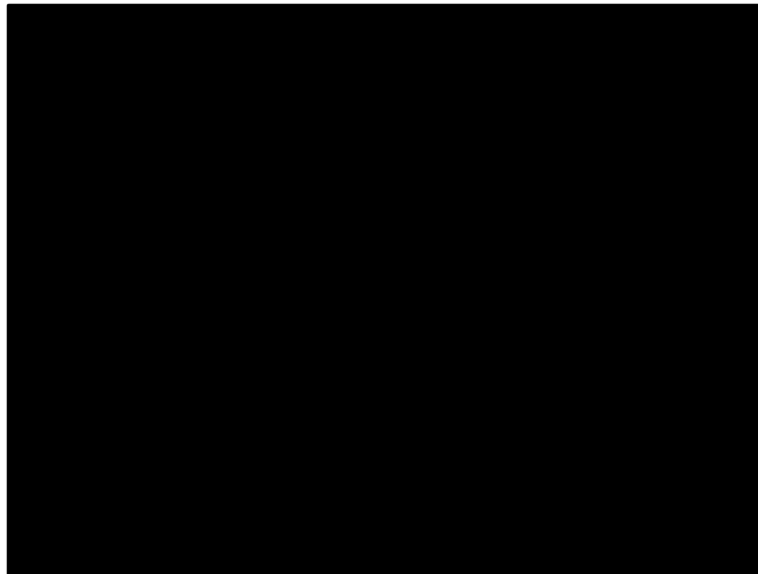
✓ 4Vpp output swing

✓ HPF less output driver

Level Shifter Based Driver

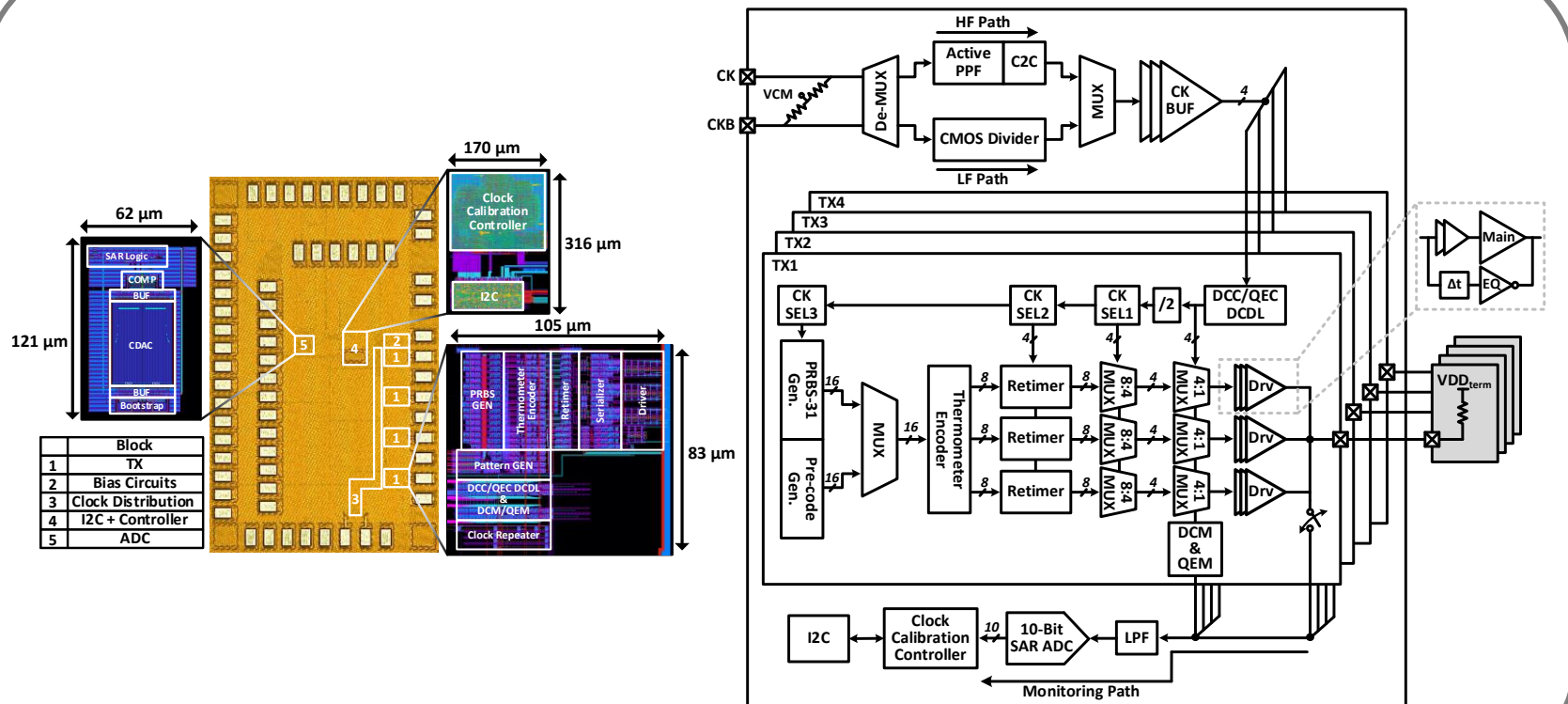


High Pass Filter Based Driver



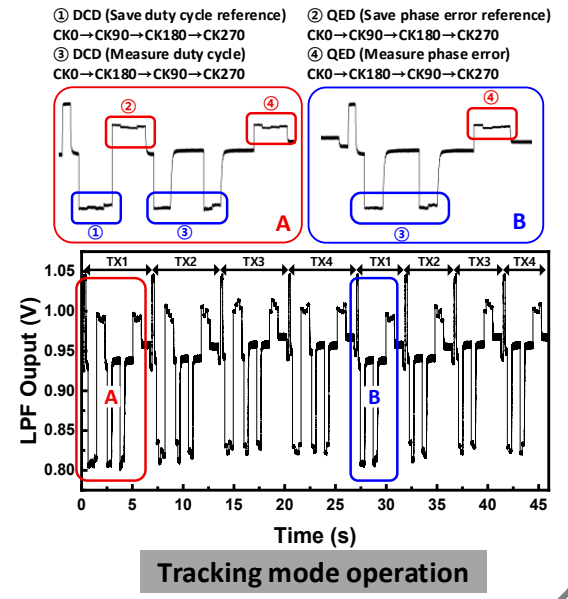
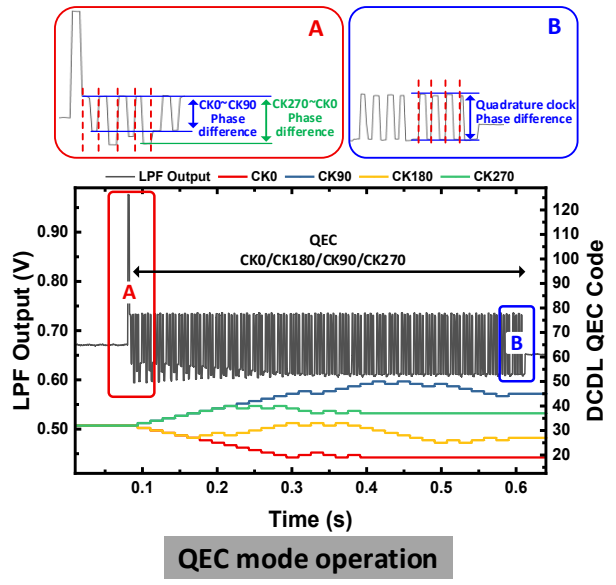
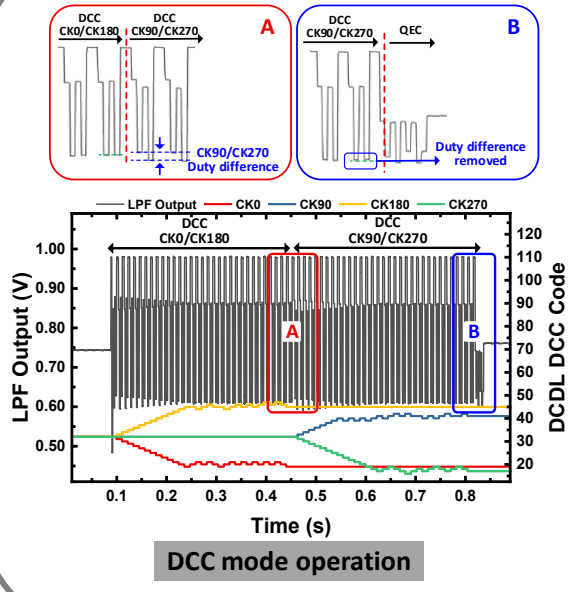
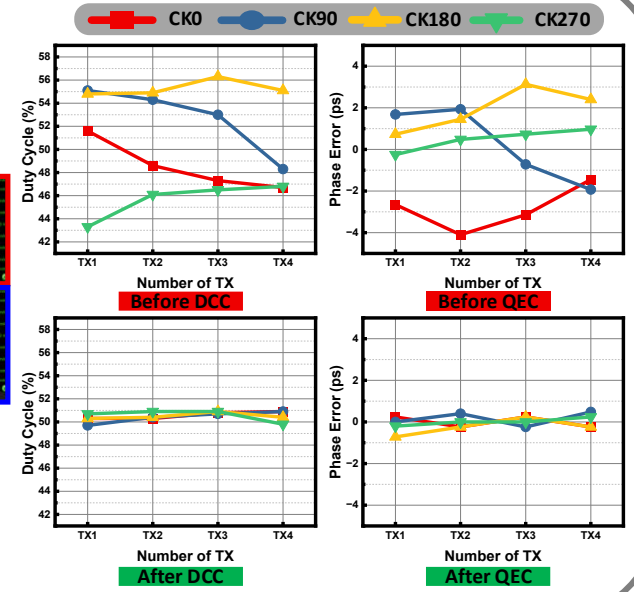
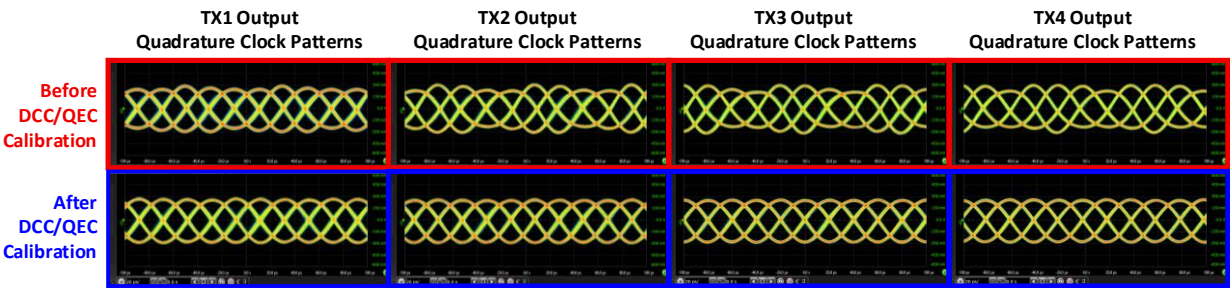
2025 Works

A 4 × 100-Gb/s Single-Ended PAM-4 Transmitter with a Novel Clock-Distortion Compensation Technique



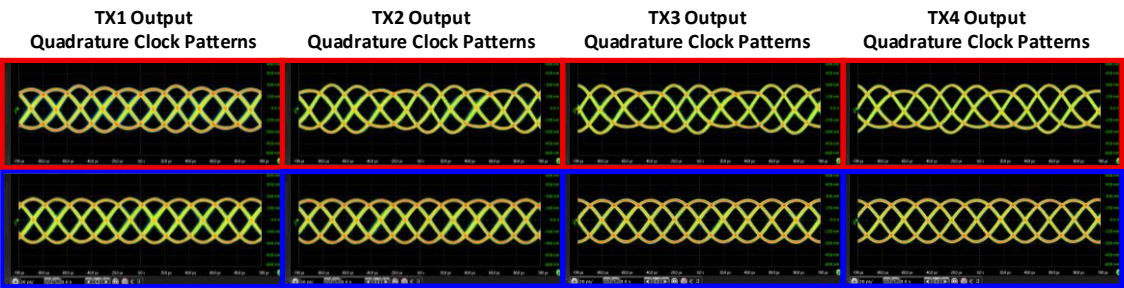
✓ On-Chip DCC/QEC Calibration

✓ Clock Background Tracking

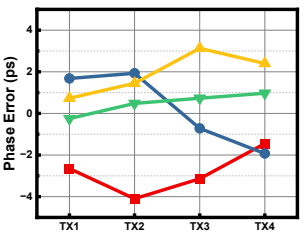
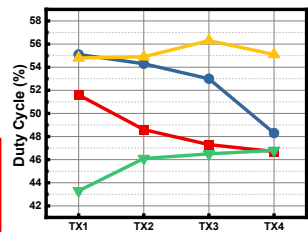


Before
DCC/QEC
Calibration

After
DCC/QEC
Calibration

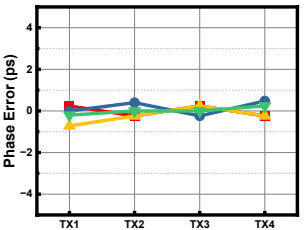
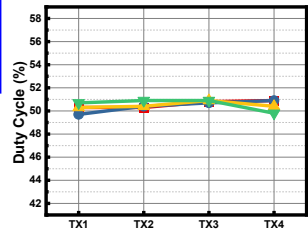


CK0 CK90 CK180 CK270



Number of TX
Before DCC

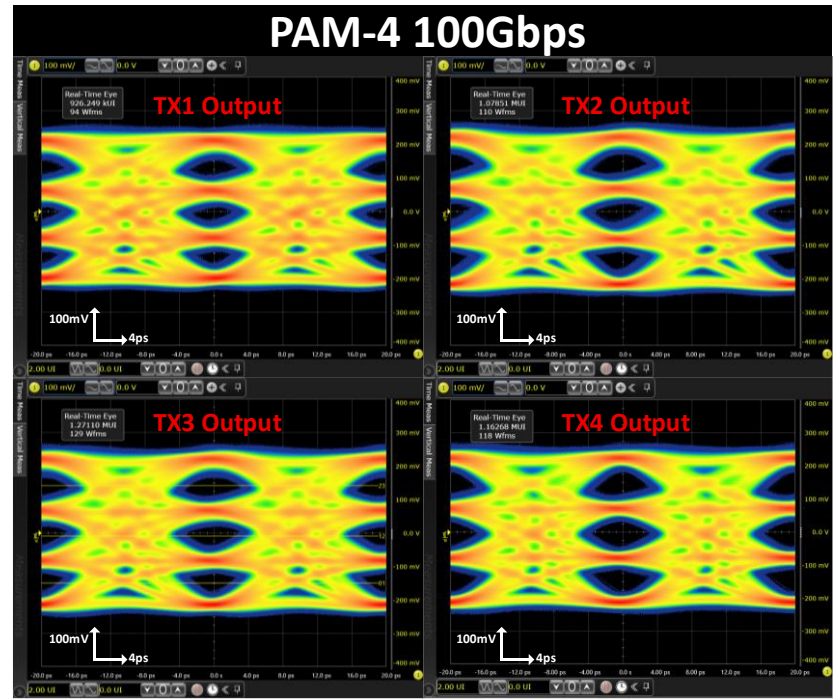
Number of TX
Before QEC



Number of TX
After DCC

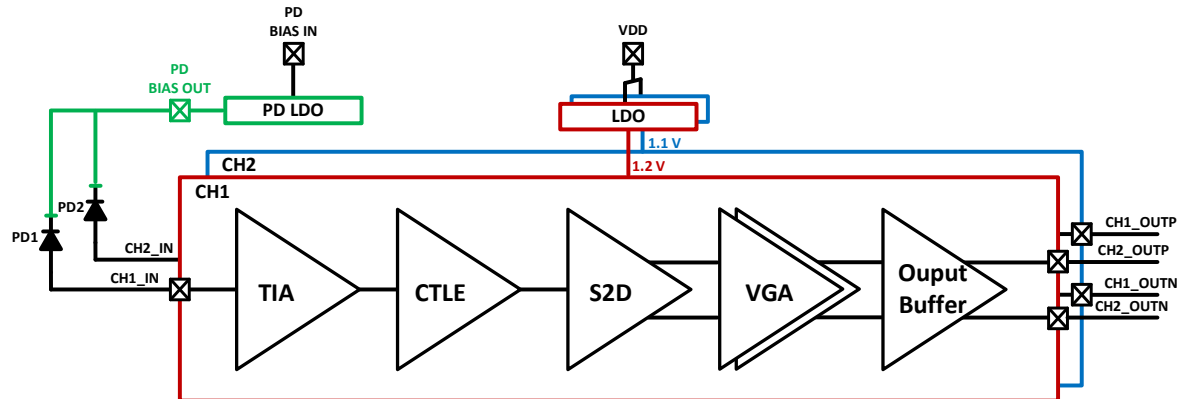
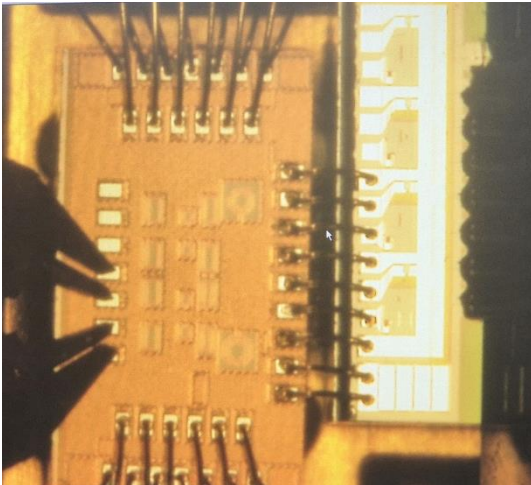
Number of TX
After QEC

PAM-4 100Gbps



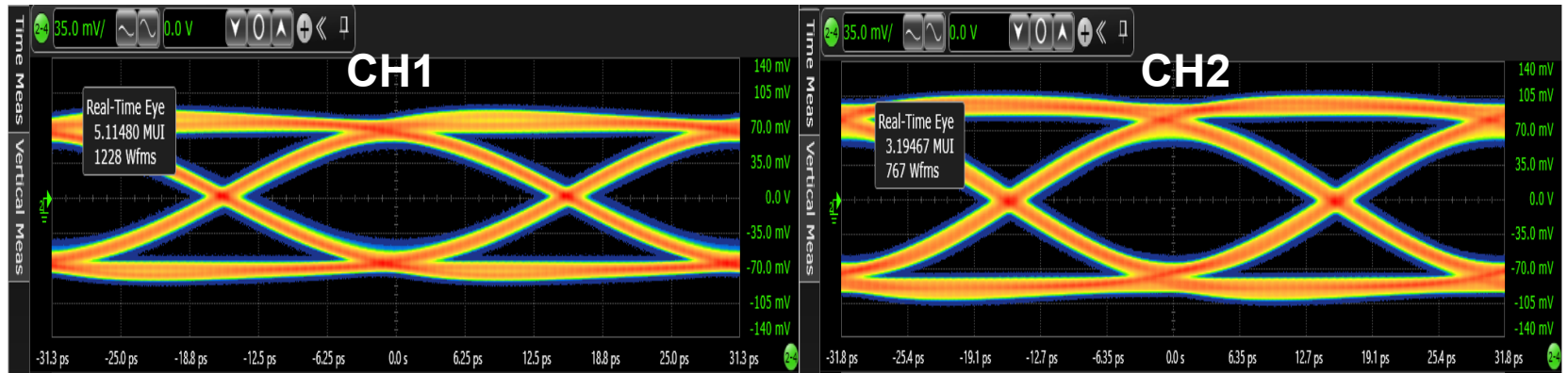
2025 Works

64Gbps PAM-4 Si Micro Ring Resonator Receiver

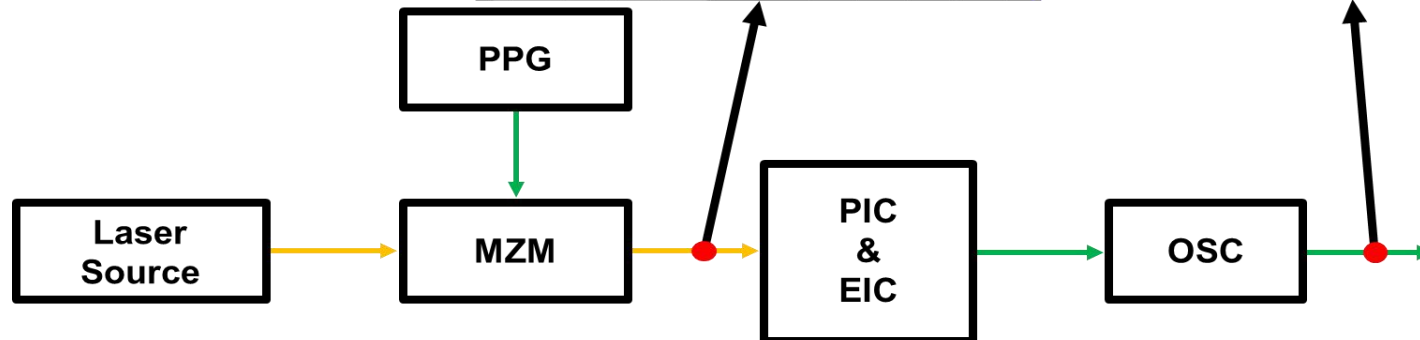
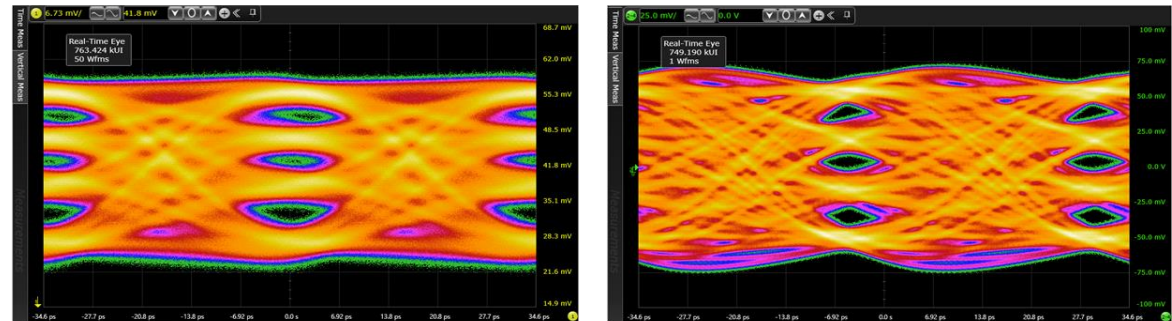


✓ New core amp design ✓ Inverter based CTLE ✓ Interpolation based S2D

32Gbps NRZ (Input optical power -3dBm)

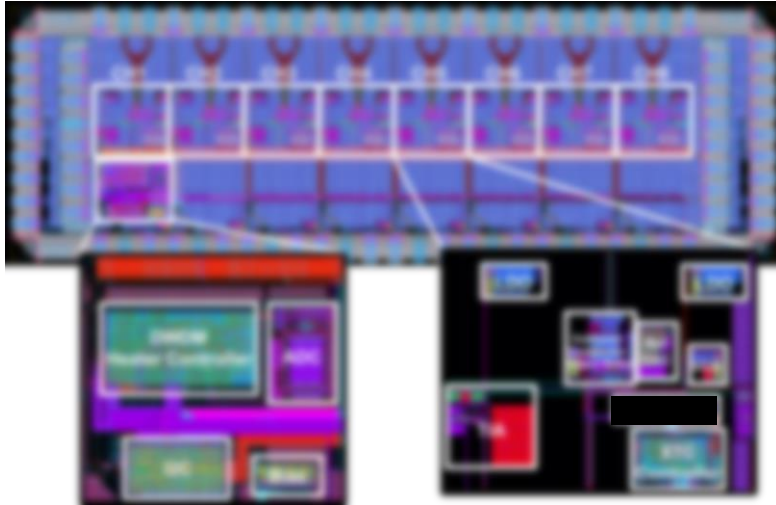


57.8Gbps PAM-4 (Input optical power -3dBm)

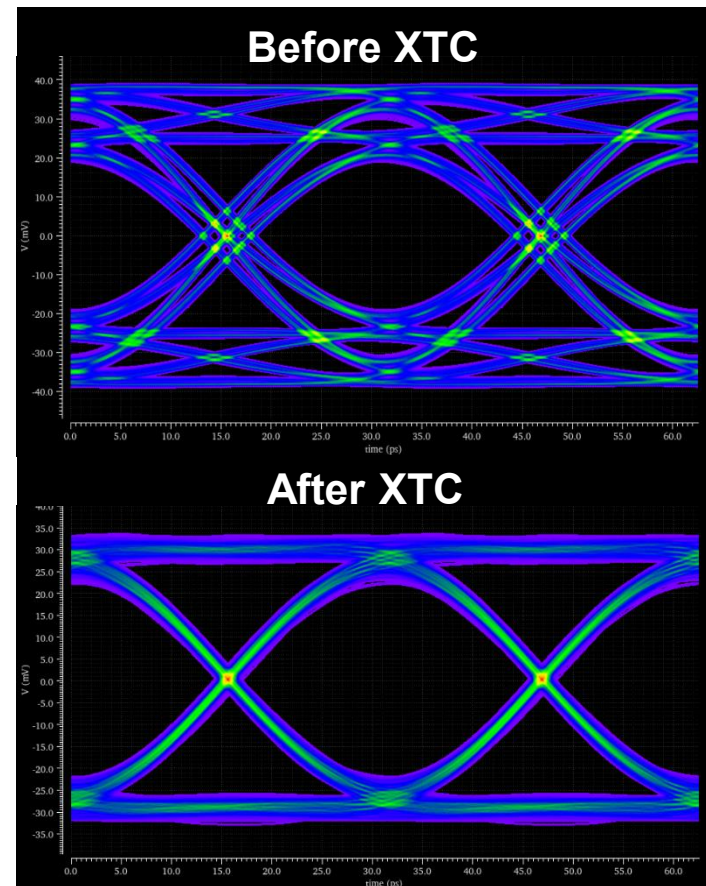
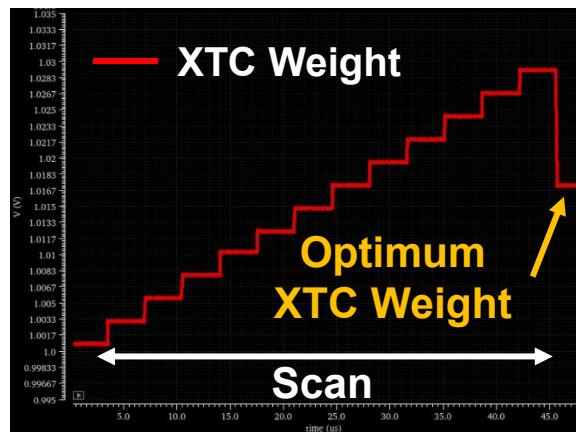


2025 Works

8CH XTC Micro Ring Resonator Receiver

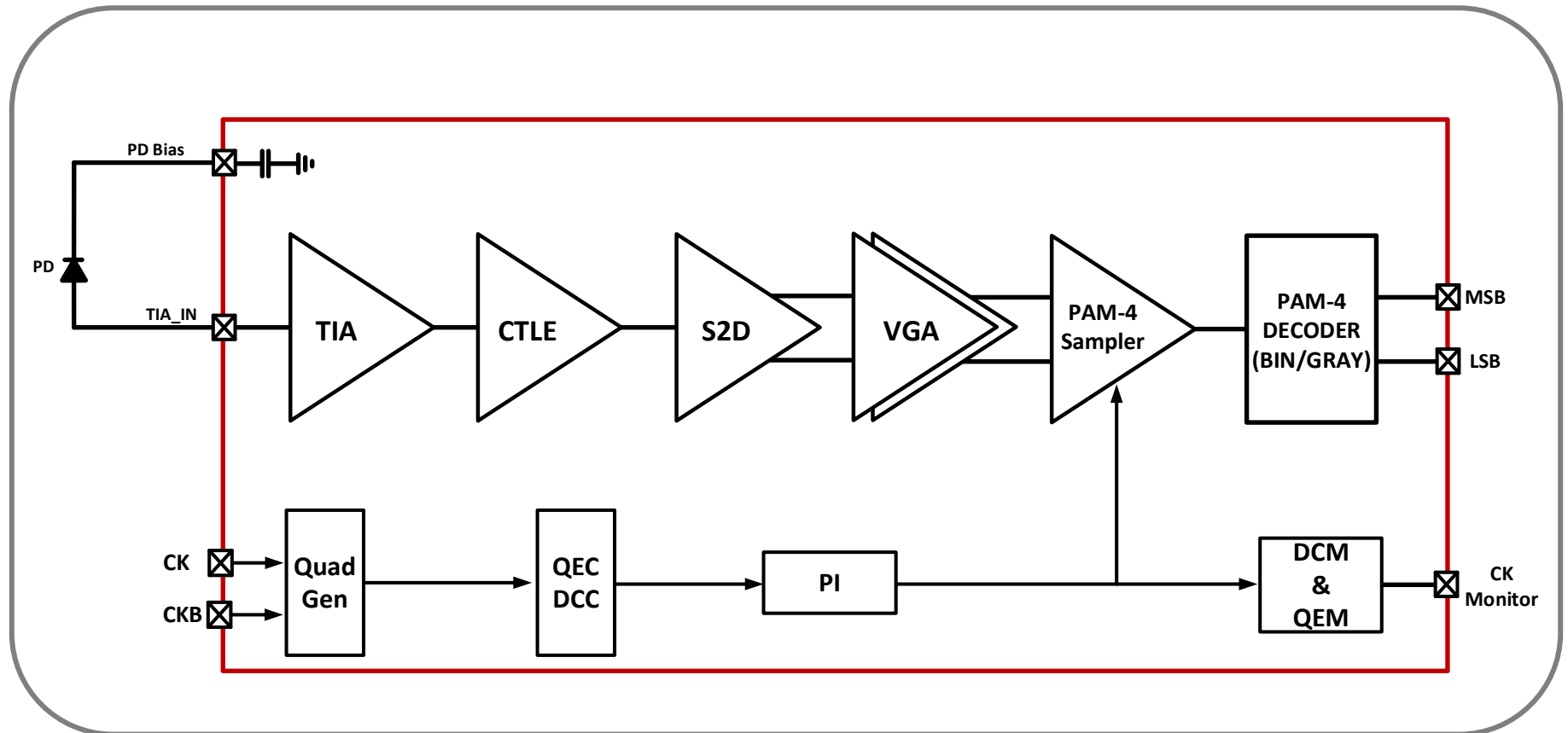


- ✓ Inductor-less ORX
- ✓ On-chip DWDM heater controller
- ✓ On-chip XTC controller



2025 Works

80Gbps PAM-4 Si Micro Ring Resonator Receiver



✓ High-speed ORX

✓ PAM-4 sampler