TP2 testing
10GBASE-LR compliant eyes fail the TWDP test

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Outline

- Introduction to the problem
- Presentation of Data
- Analysis of Data
- Where do we go from here
- Conclusion

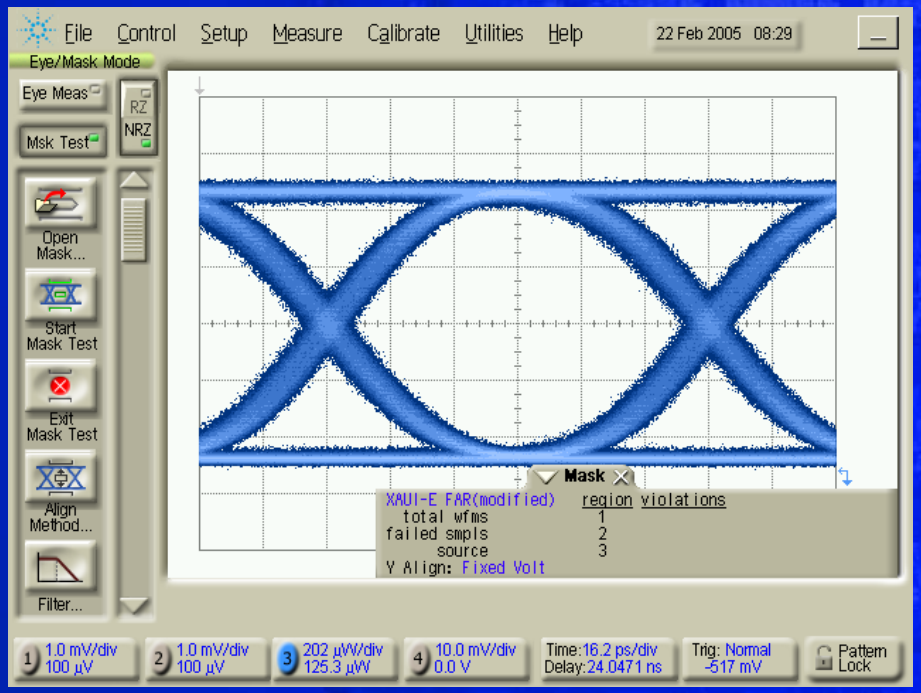
Transmitter Testing

- **10-BASE-LR transmitters were tested to the 10G-BASE-LRM draft 1.1 specifications**
- **All 10km compliant parts passed the Jitter and RIN-OMA test.**
- **Several 10km compliant parts were marginal or did not pass the TWDP test.**

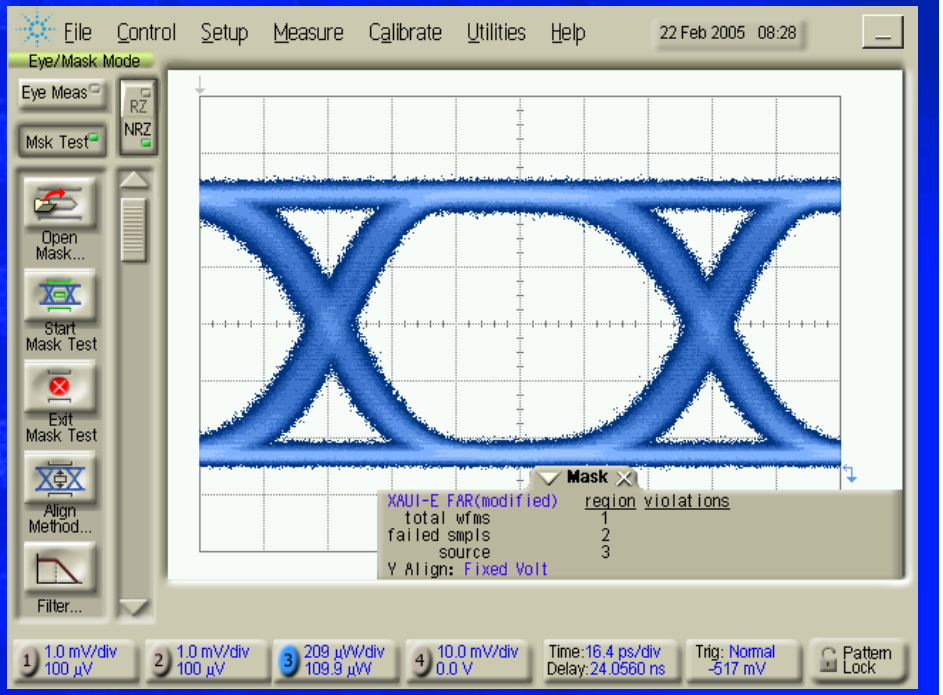
Experiments

- **Tested several good and bad transmitters, using the TWDP test.**
- **Good transmitters (currently shipping in 10km parts) are marginal on the TWDP test.**
- **All TWDP penalties were measured using a PRBS9 waveform**

Reference Transmitter

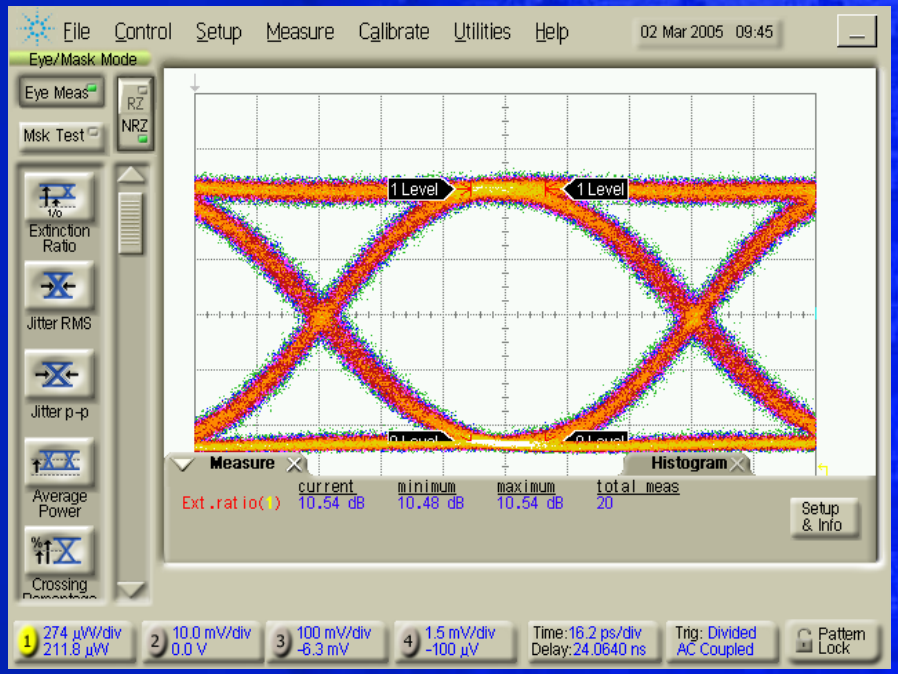


4.9 dB TWDP

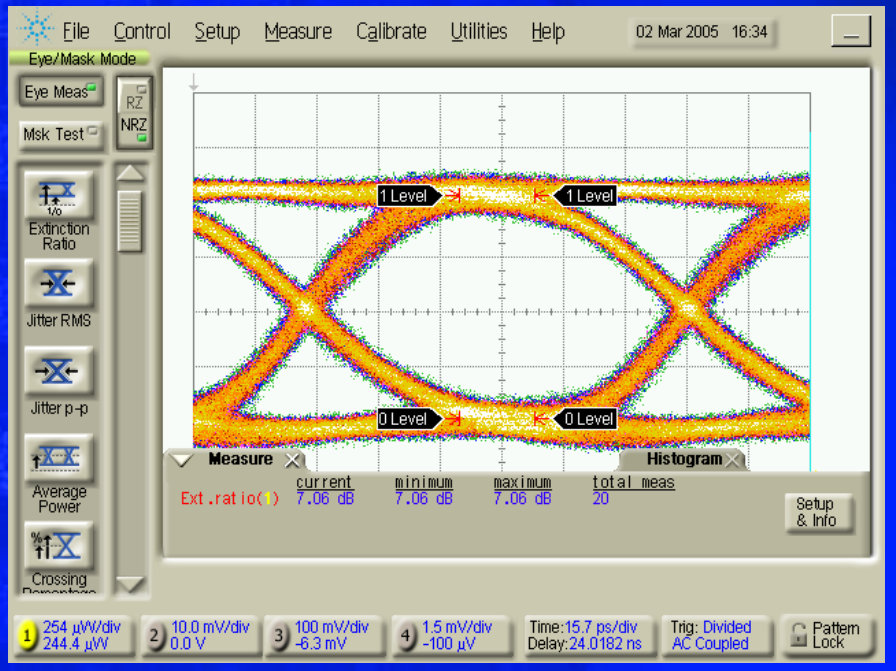


4.6 dB TWDP

10km 1310nm LR optic

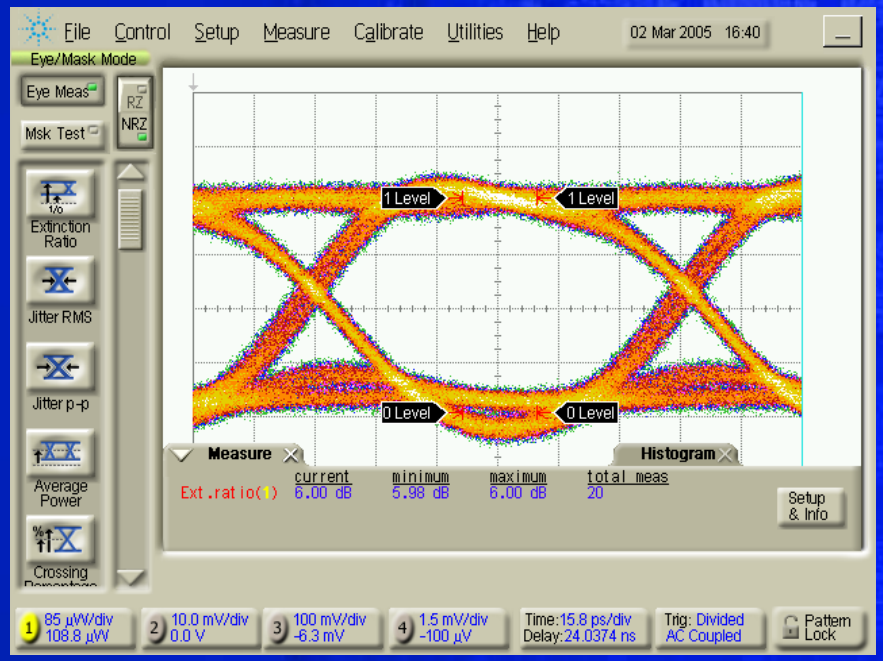


4.95 dB TWDP

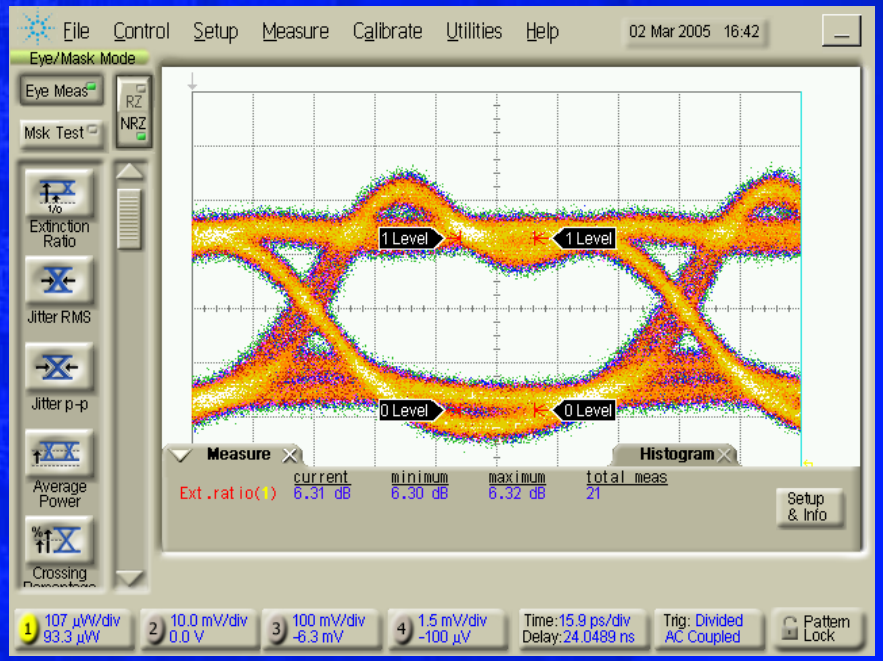


4.6 dB TWDP

1310nm DFB



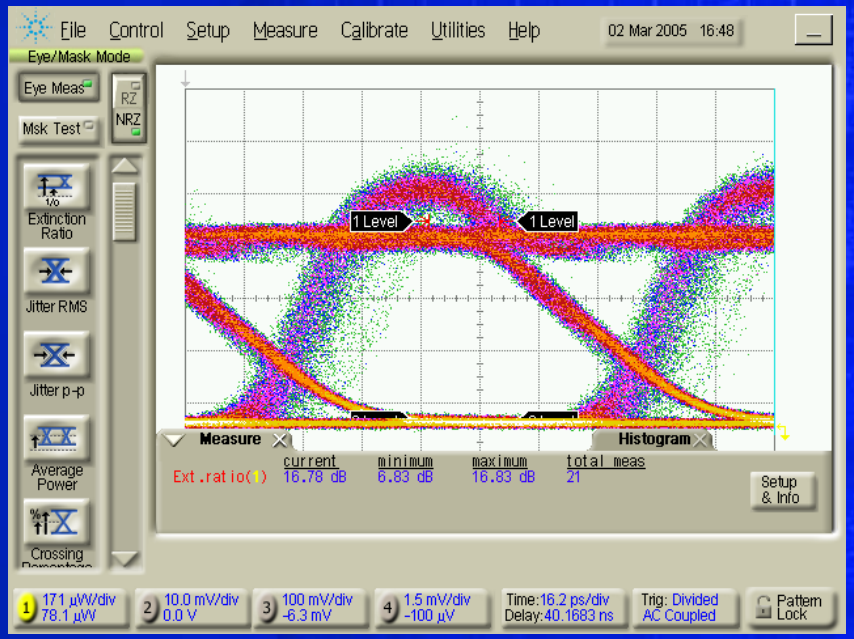
4.7 dB TWDP



4.4 dB TWDP

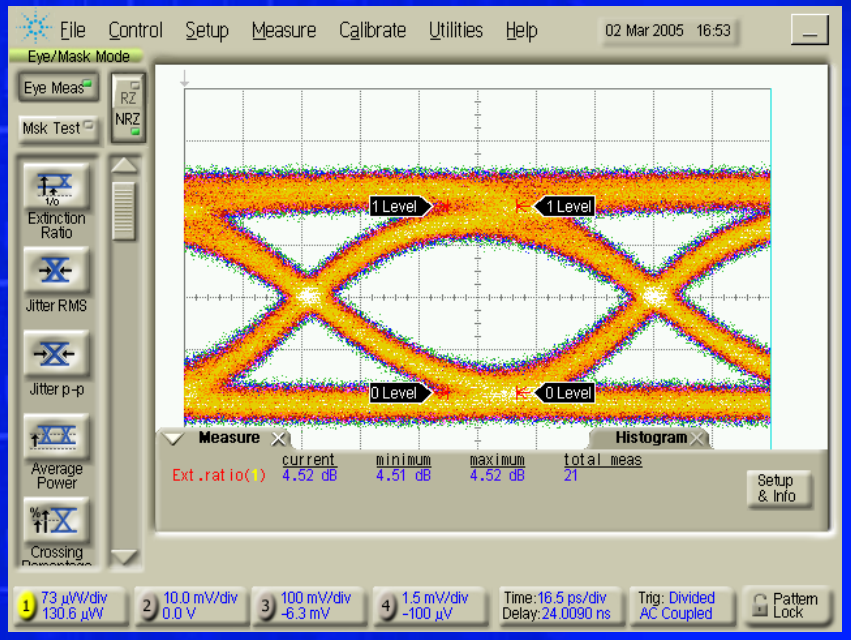
1310nm DFB Sanity Check

Over Driven Transmitter



6.2 dB TWDP

Filtered (slow) Transmitter



5.8 dB TWDP

The Problem

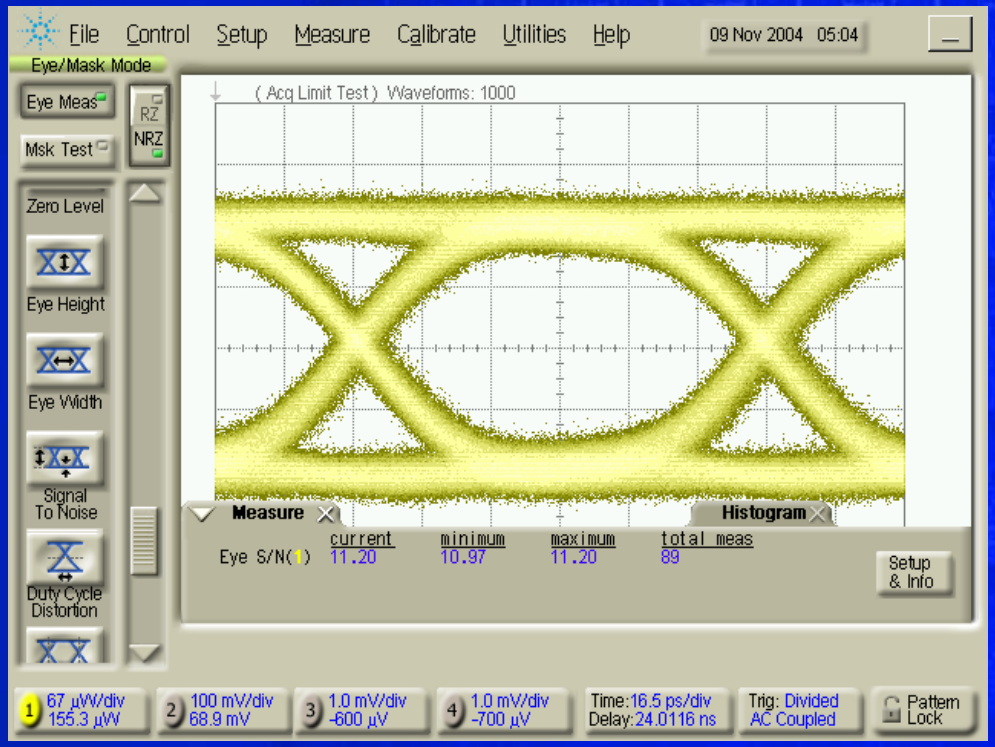
- Good LR optics are failing the TWDP test
- The TWDP method doesn't seem to differentiate between good/bad "real world" transmitters
- Passing the TWDP test requires high-bandwidth optics; fast rise/fall times help with TWDP
- Fast rise times with ringing are encouraged
- Noisy transmitters are not penalized

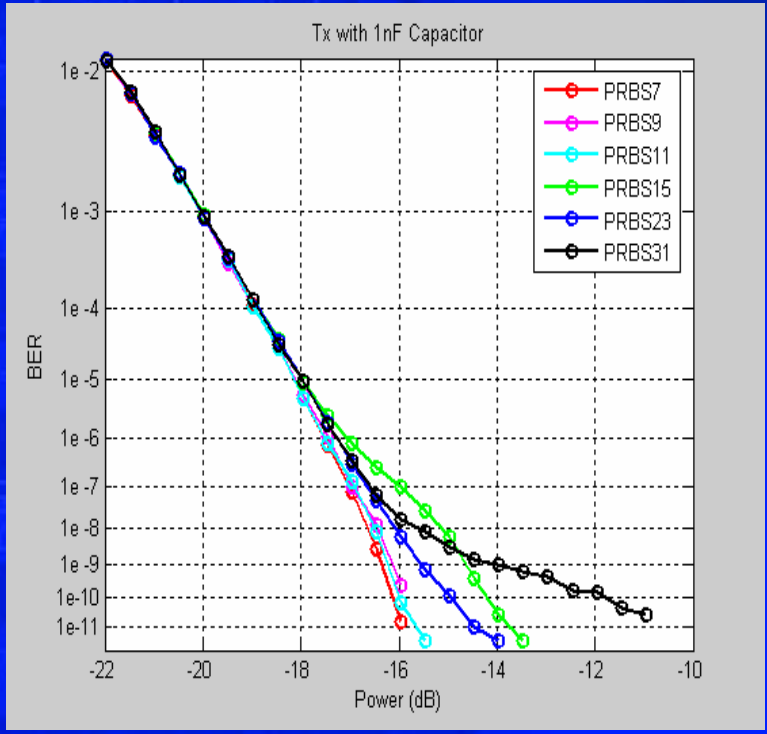
Conclusion

- **We need a test that is viable**
  - **Passing -LR optics should be allowed**
  - **Test method should differentiate optics**
- **We need experimental verification of the TWDP test methodology**
  - **Currently only simulations have been presented, no actual optics in actual links**

Back Up Material

Tx that Fails in (non-EDC) Link, passes TWDP test.





5.0 dB TWDP