



# Updated 1060nm Data

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January 21, 2026

IEEE P802.3ds 200 Gb/s per Wavelength MMF PHYs Task Force Interim Meeting

# Supporters

# Data presented to 200 Gb/s MMF study group

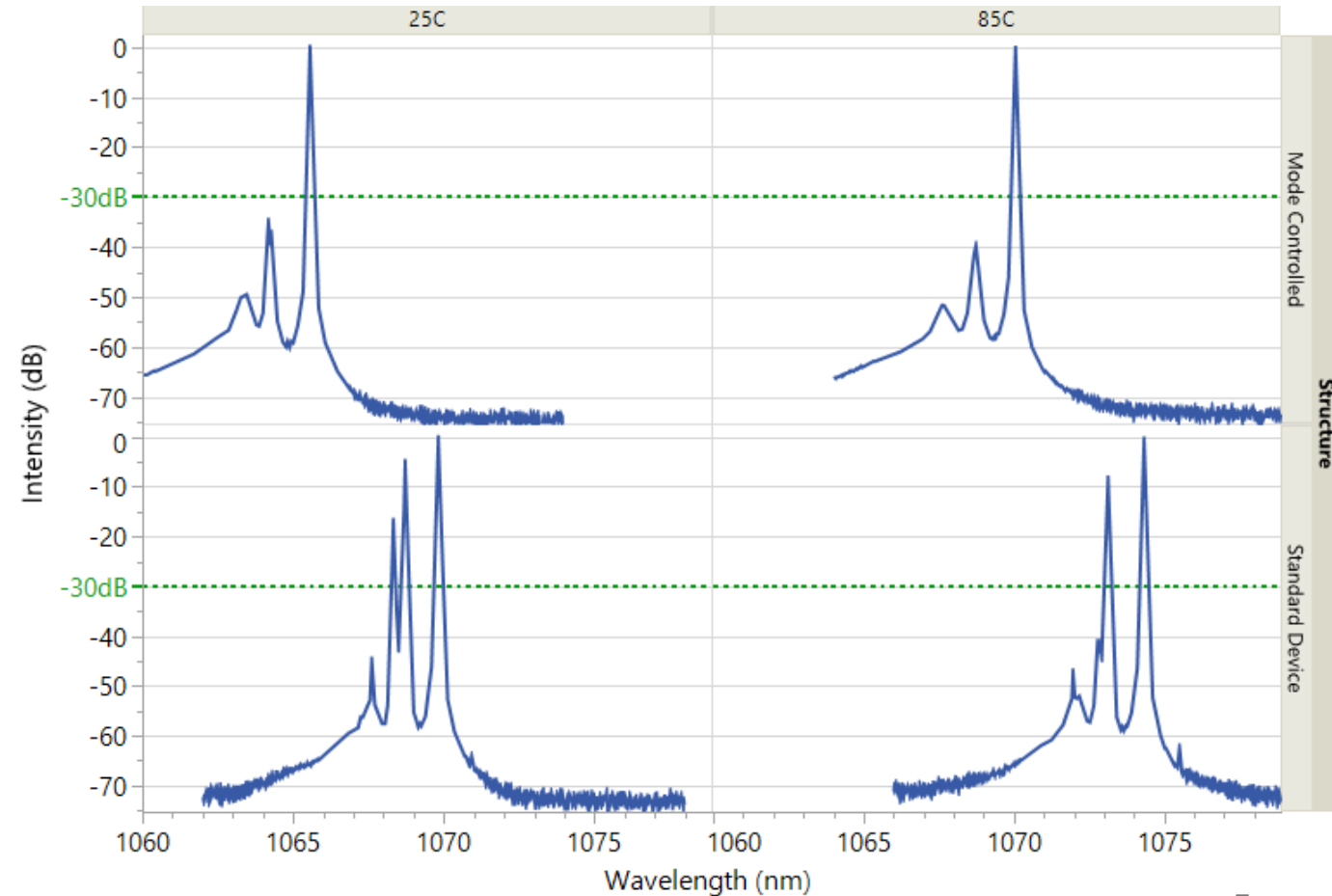
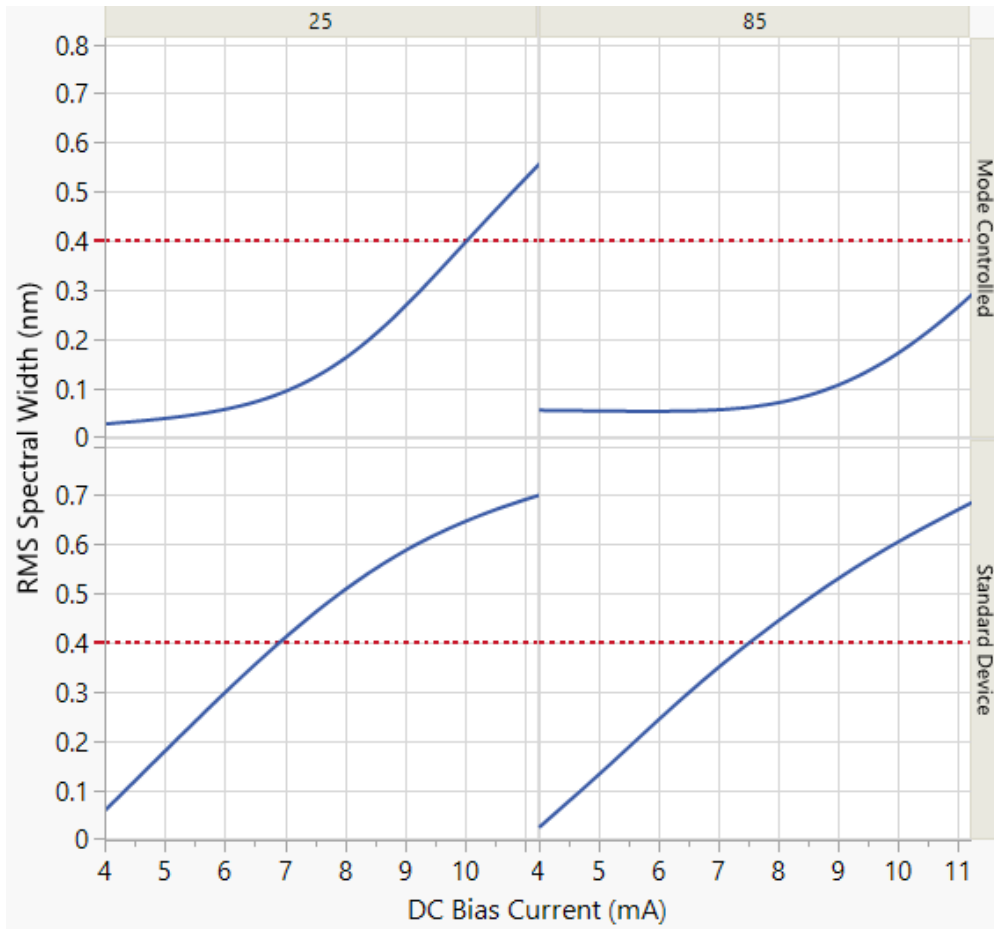
- Dec 17<sup>th</sup> 2025 telephonic interim: [lewis\\_200gmmf\\_adhoc\\_01b\\_251217.pdf](#)
  - VCSEL S21 through OM2, OM4, OM5 and "OM1060" fibers
  - PAM4 and NRZ eyes at 50-60 GBd over fiber
  - Bottom emitting 2D array tests at 32 Gb/s NRZ
  - High temperature reliability test data
- Sep 17<sup>th</sup> 2025 interim: [muhigana\\_200gmmf\\_01b\\_2509.pdf](#)
  - Revised proposal for 30 m and 50 m links at 1060 nm
- Sep 4<sup>th</sup> 2025 telephonic interim: [muhigana\\_200gmmf\\_adhoc\\_01a\\_250904.pdf](#)
  - Proposal for 10 m links at 1060 nm
  - LIV curves and reliability data for 1060 nm VCSELs
  - Need for 1060 nm optimized MMF fiber

# This contribution

- Reduced spectral width 1060 nm devices
- Fiber bandwidth measurements from 2 vendors
- 50 Gb/s NRZ eyes over 2 different vendor fibers
- S21 measurements with 1060 VCSEL and reduced core size 1060 nm fibers (32 and 24 microns)

# 1060nm VCSEL with Spectral Width Reduction

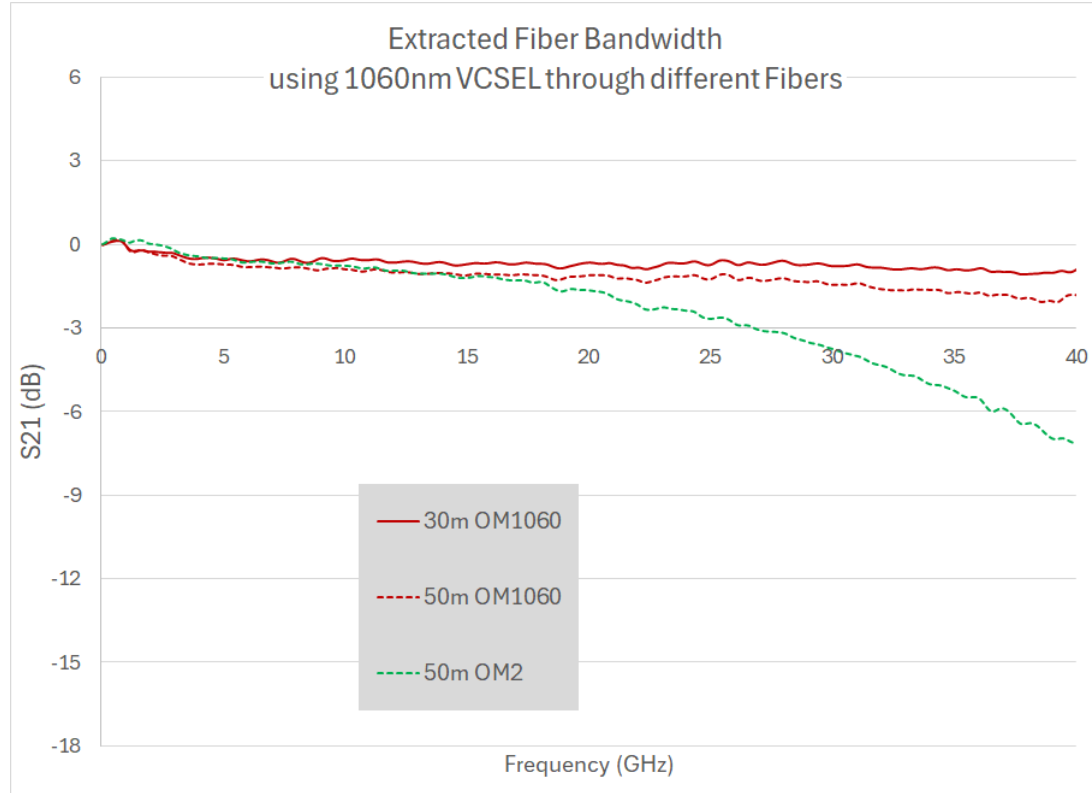
- Narrower spectral width can reduce the dispersion impact of the optical fiber
- Demonstrated mode control structures in 1060nm VCSELs that significantly reduce the spectral width and improve side-mode suppression ratio without significant penalty in bandwidth
- Next Steps – validate high-speed performance later this year



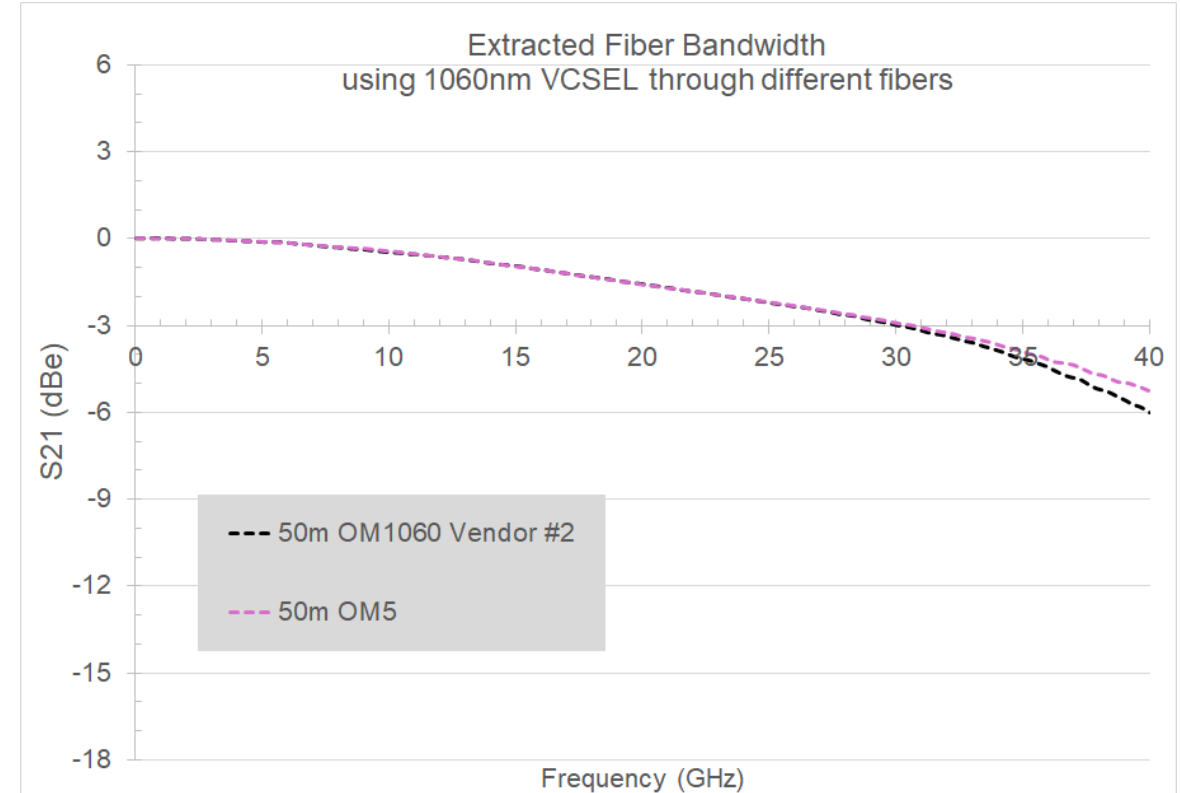
# 1060nm Optimized Fiber – BW including Vendor #2 Sample

- Previously presented OM1060 fiber with much higher bandwidth than OM2 or OM5
- Evaluated another vendor's OM1060 fiber with bandwidth higher than OM2 but similar to OM5.
- Next step: Vendor #2 provided second set of fiber samples with potentially higher bandwidth at 1060nm and will measure in next few weeks

Presented at Study Group Meeting Dec 17, 2025



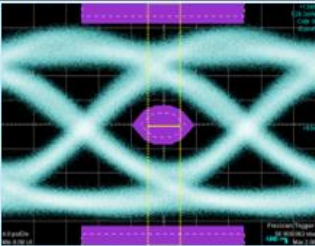
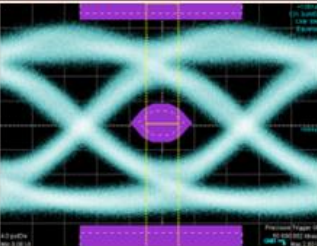
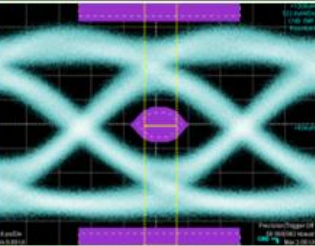
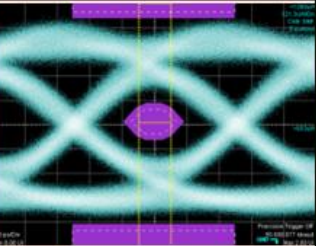
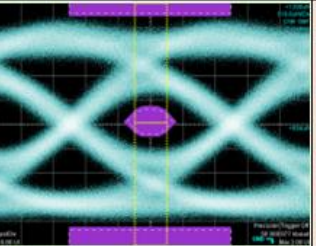
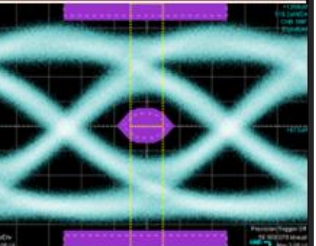
New Data : Fiber Vendor #2



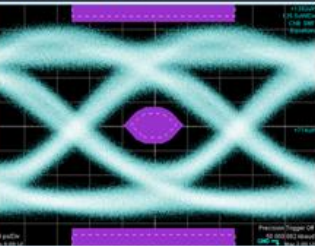
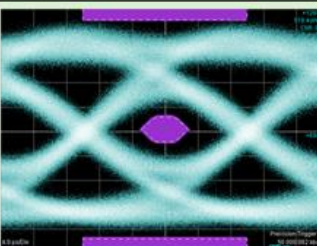
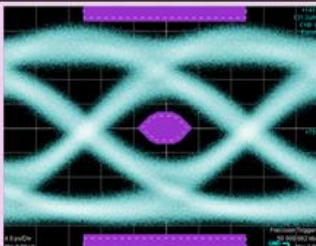
# 1060nm Optimized Fiber – 50Gbs Eyes including Vendor #2

- Previously presented OM1060 fiber with better eye margin than OM2 with 50m fiber
- Another vendor's OM1060 fiber showed better eye margin than OM2 with 50m fiber

Presented at  
Study Group  
Meeting Dec 17,  
2025

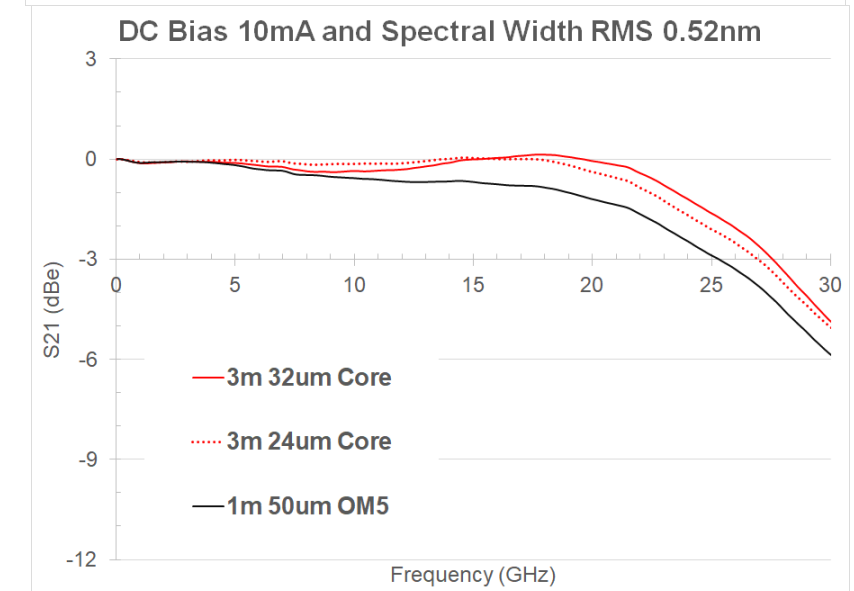
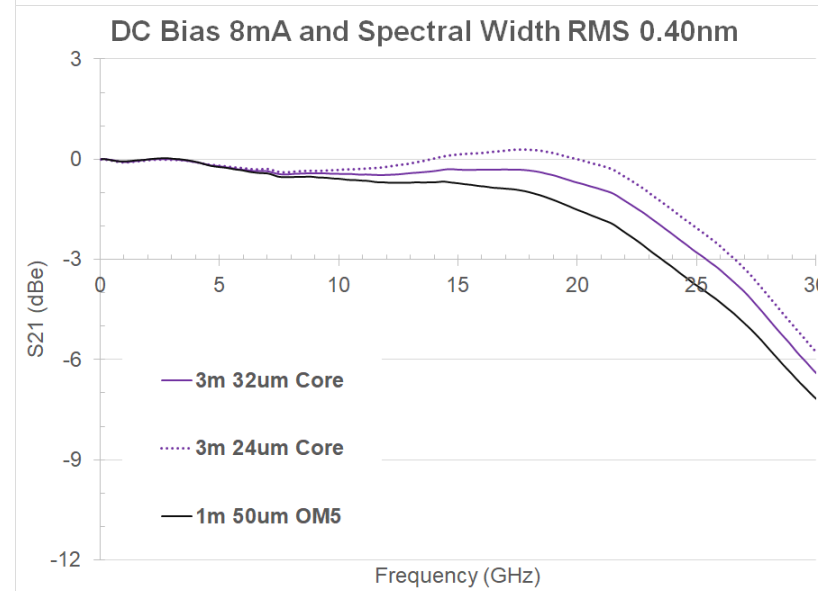
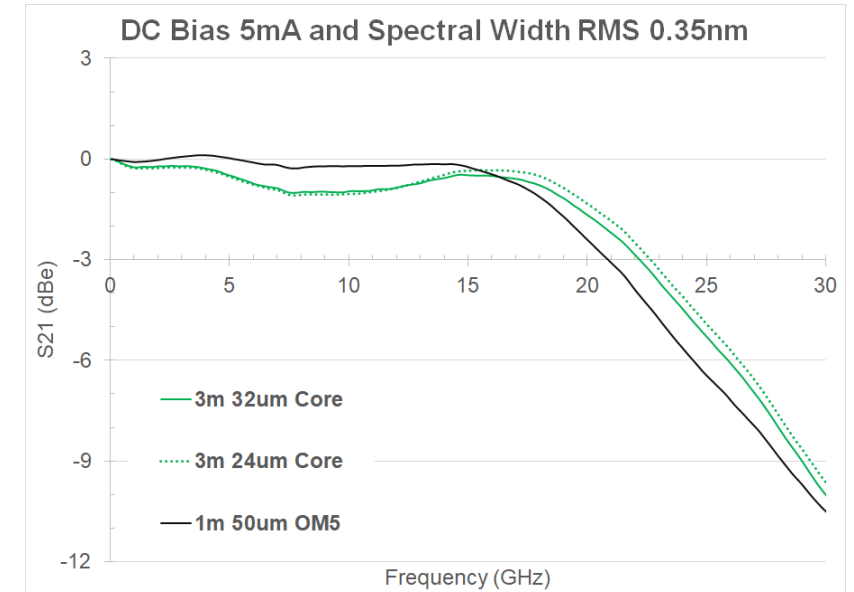
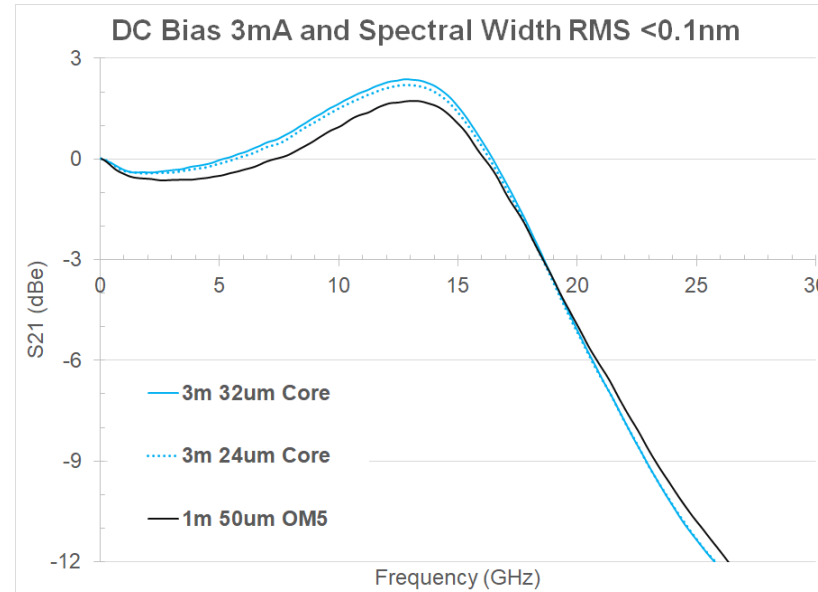
Fiber	1m OM5 (B2B)	10m OM1060	30m OM2	30m OM1060	50m OM2	50m OM1060
Gbs NRZ Eye Digram						
ER (dB)	4.44	4.4	4.17	4.29	3.9	4.12
Eye margin (%)	15.6	14.5	11.6	13.3	6.9	11.1
Tr (ps)	10.9	11.05	11.8	11.57	13.08	12.35
Tf (ps)	11.99	12.15	12.62	12.49	13.57	13.08
Crossing (%)	48.26	48.15	48.51	48.43	48.97	48.65

New Data Fiber  
Vendor #2

Fiber	1m OM5 (B2B)				50m OM2	50m OM1060 Vendor #2
50Gbs NRZ Eye Digram						
ER (dB)	4.48				3.95	4.11
Eye margin (%)	12.5				4.1	8.2
Tr (ps)	10.72				13.09	12.52
Tf (ps)	11.98				13.78	13.23
Crossing (%)	47.84				48.28	48.24

# 1060nm Coupled to Small Core Fiber | VCSEL S21

- Evaluated coupling and VCSEL S21 through three-meter lengths of small core fiber
- Coupling efficiency normalized to 100% of the 50um MMF
  - 32um 85.3%
  - 24um 84.1%
- At low current with smaller spectral bandwidth the S21 curves are similar; at higher currents, the S21 BW is higher
- Next Steps
  - Building new optical coupler designed for smaller core
  - More coupling experiments, ideally including longer length fibers





# Summary

- Presented new data
  - Reduced spectral width VCSEL devices
  - 2<sup>nd</sup> vendor for 1060 nm optimized MMF
  - S21 measurements with 36- and 24-micron core diameter MMF samples