Measurements of DMD-Challenged Fibers at 3.125Gb/s

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Measurement Procedure

- **In the measurements reported here, we used three different connectorized modules running at 3.125Gb/s data rate, provided by (anonymous) module manufacturers:**
  - Module 1, 850nm, manufacturer A
  - Module 2, 1310nm, manufacturer B
  - Module 3, 1310nm, manufacturer C

- **Three different DMD-challenged fibers per table of next viewgraph were used**

- **The procedure used is as described in *"Measurement of Non-Stationarity of 10Gb/s Multimode Fiber Links"*, by O.Agazzi and T.Lenosky, except that interleaved sampling (instead of real time sampling) at 25GHz sampling rate (8 samples per bit) was used**

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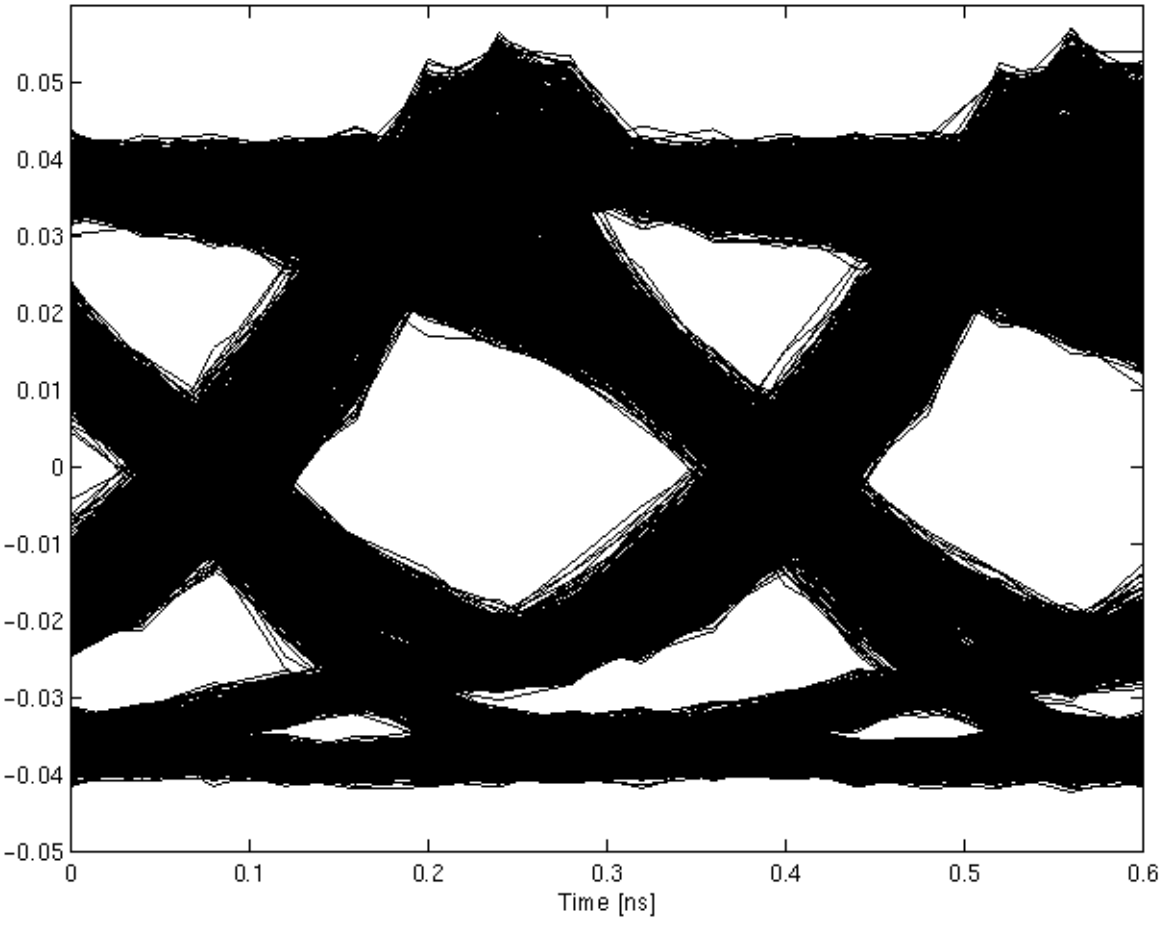
Table of Measured Fibers

FIBER	CORE DIAMETER[μm]	LENGTH[m]	SOURCE
F0	62.5	270	Fujikura
DEC-01-A	62.5	150	TIA/Compaq
DEC-01-B	62.5	150	TIA/Compaq

Eye Pattern for Non-Equalized System
Fiber 1, Module 1 (850nm)



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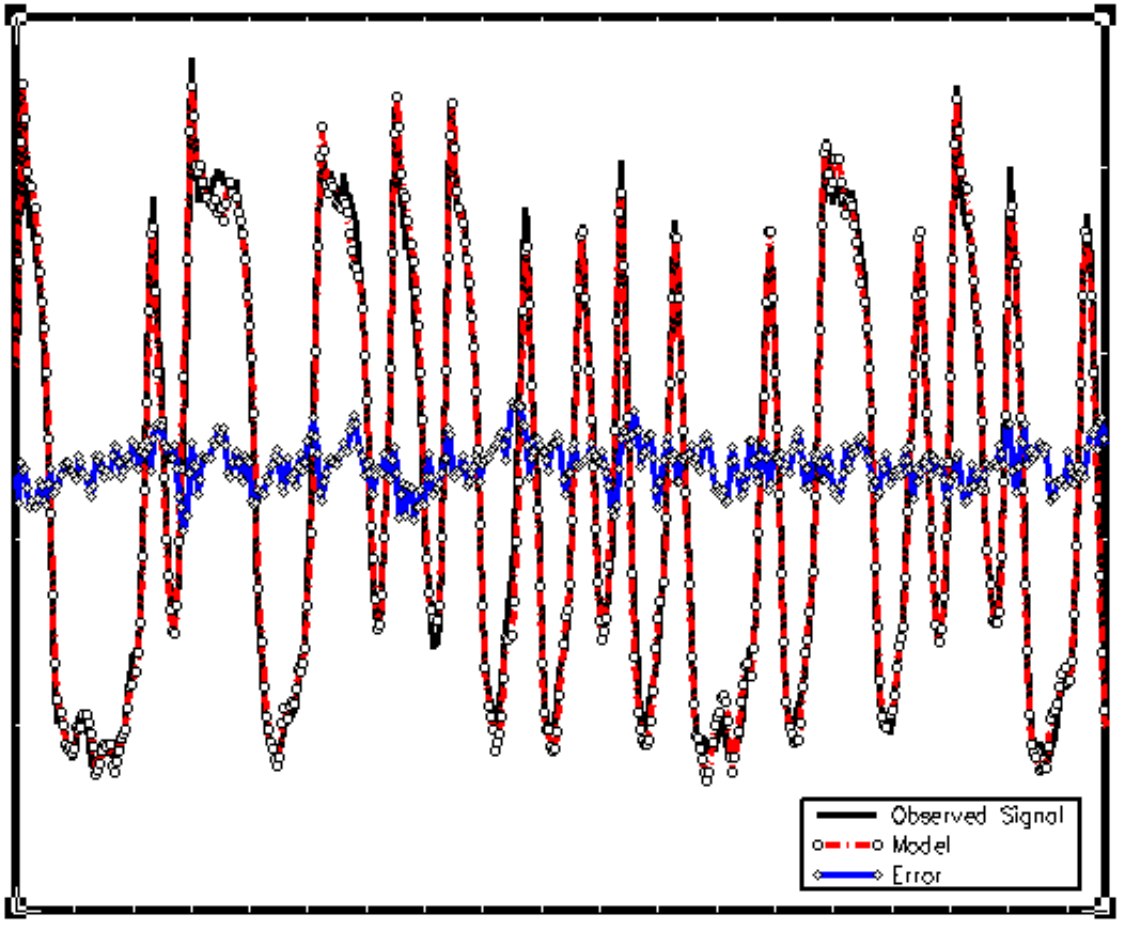
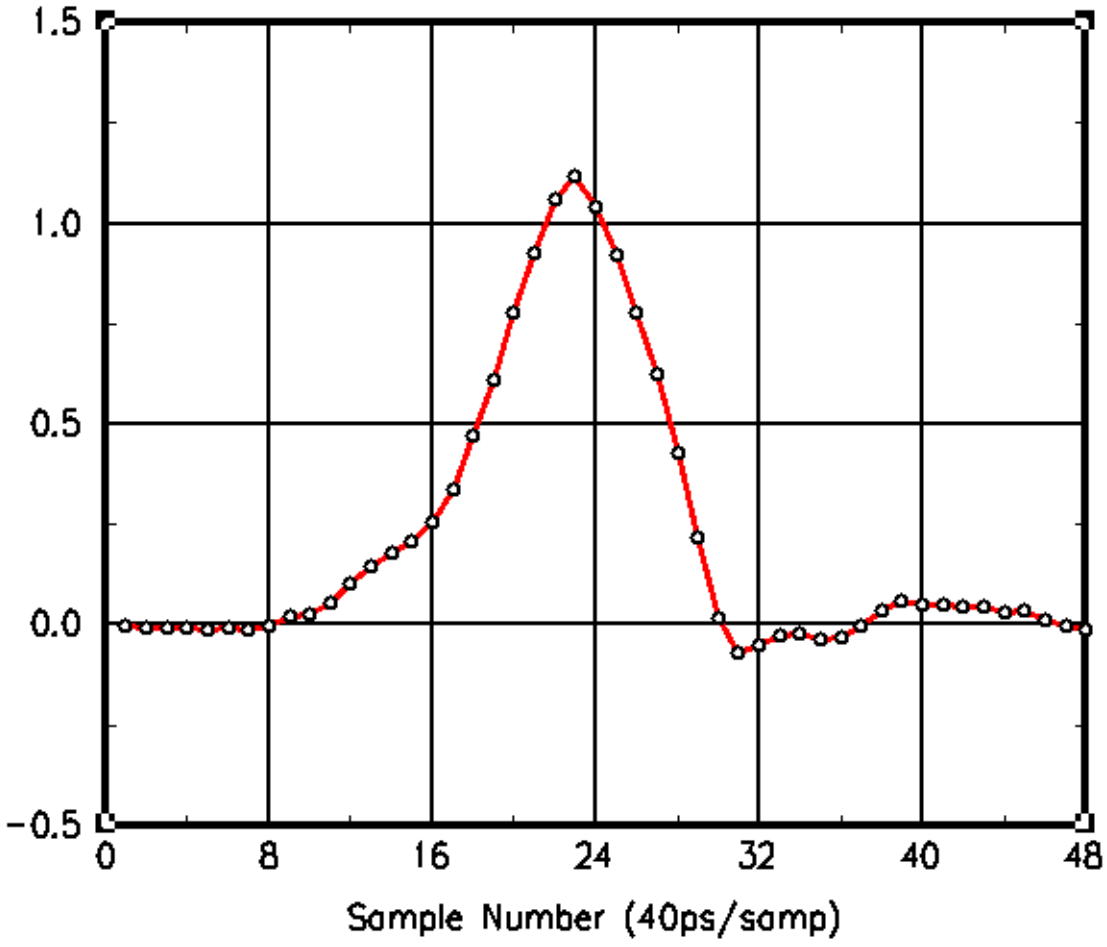
Measured Signal vs. Model and Error
Fiber 1, Module 1 (850nm)



Impulse Response
Fiber 1, Module 1 (850nm)



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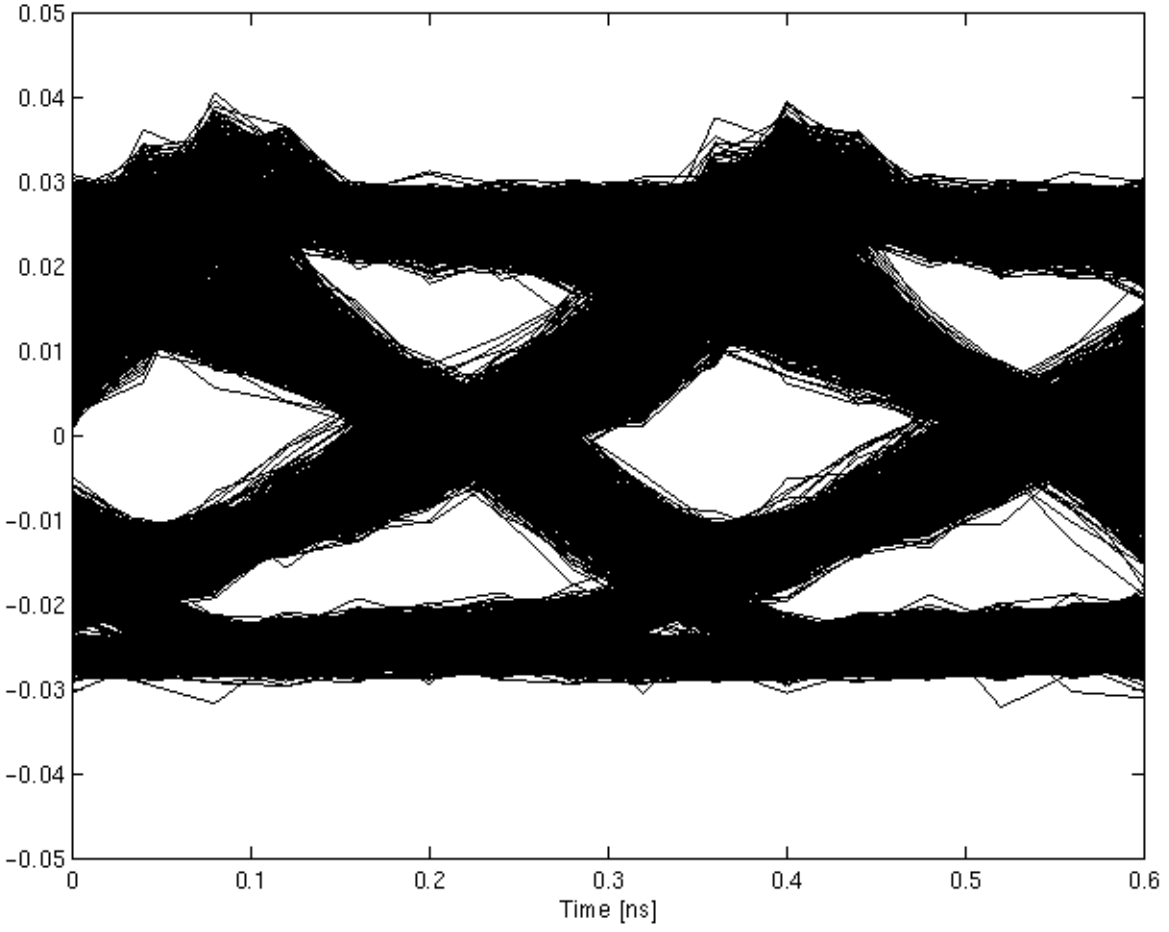
Eye Pattern for Non-Equalized System
Fiber 2, Module 1 (850nm)



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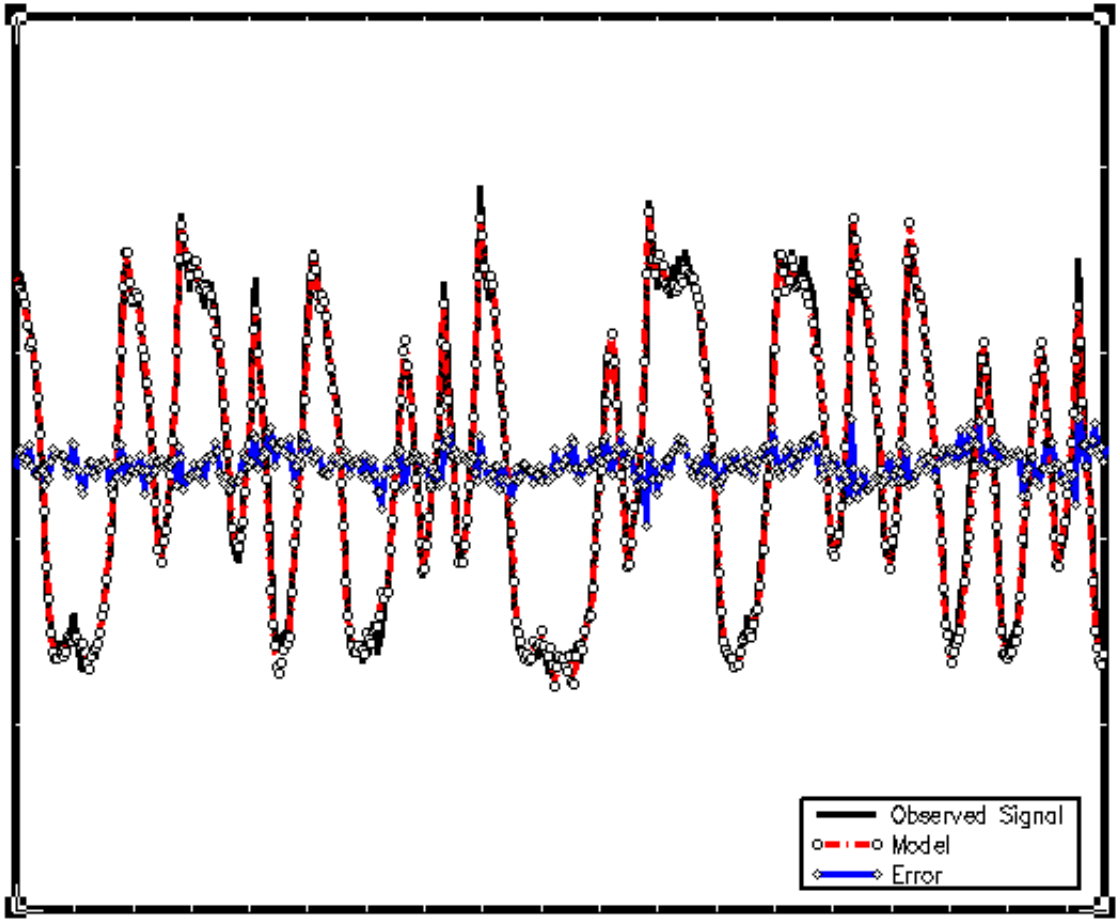
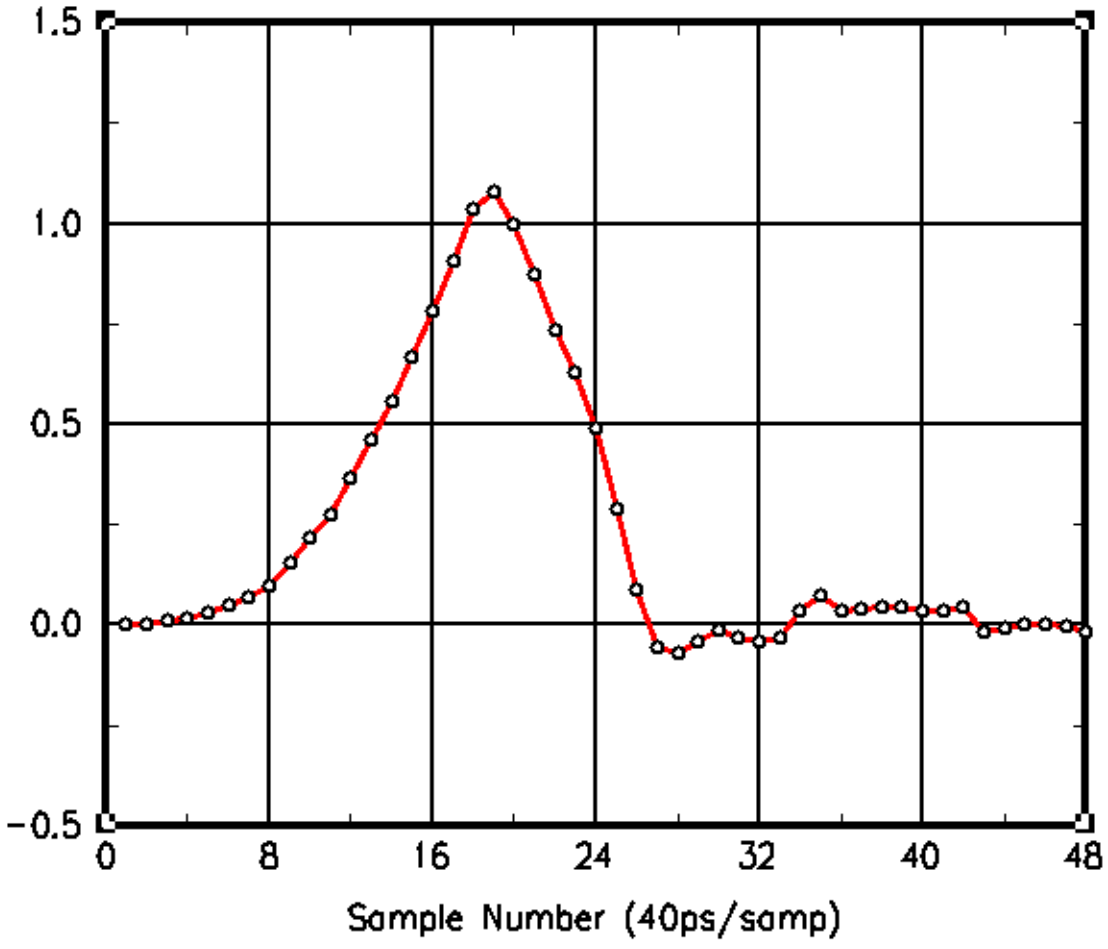
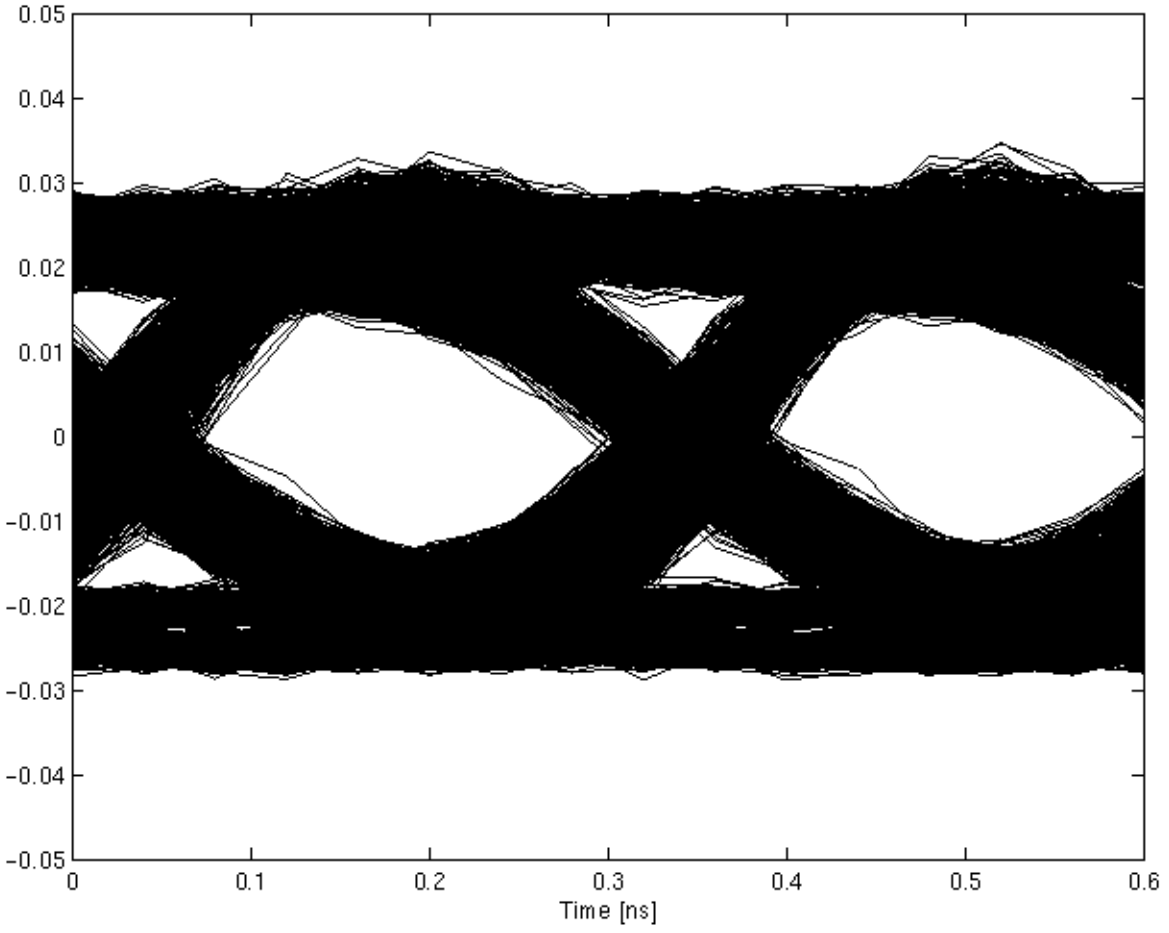
Measured Signal vs. Model and Error
Fiber 2, Module 1 (850nm)



Impulse Response
Fiber 2, Module 1 (850nm)



Eye Pattern for Non-Equalized System
Fiber 3, Module 1 (850nm)



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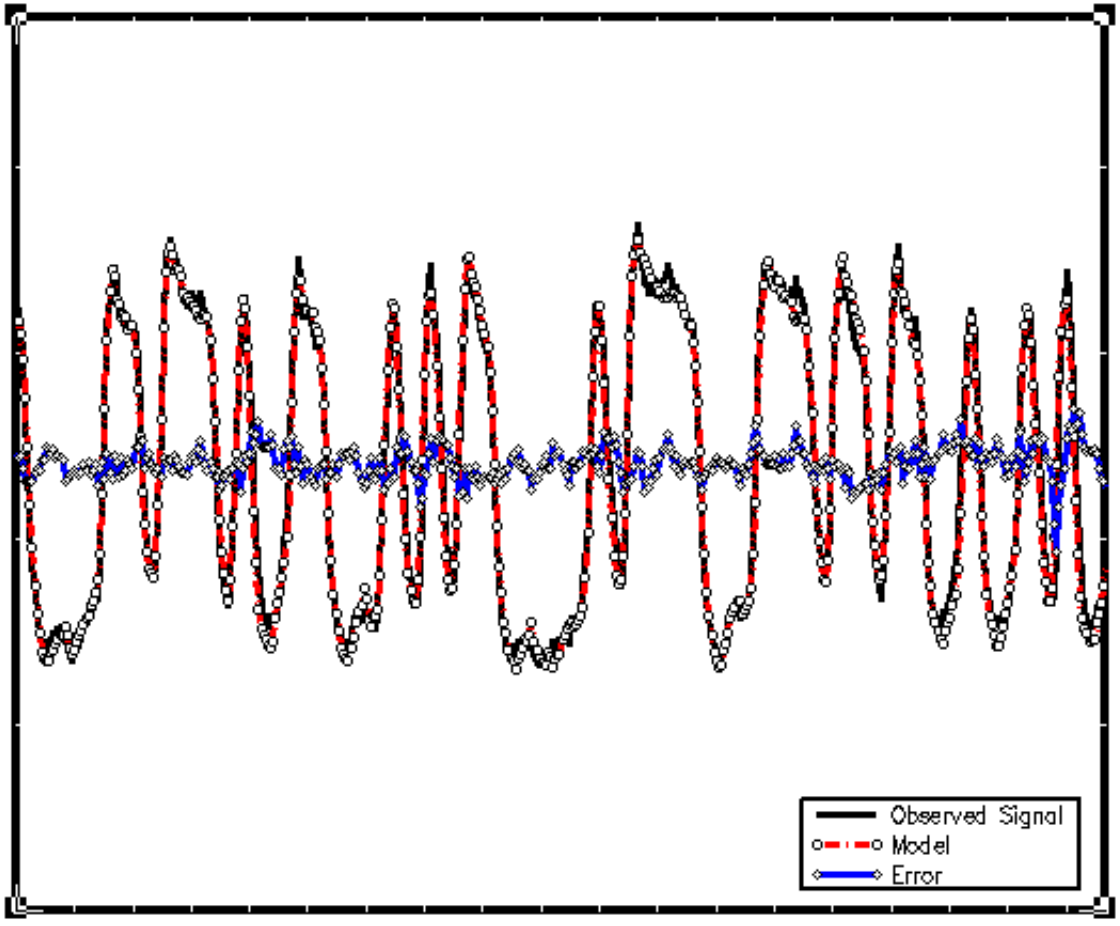
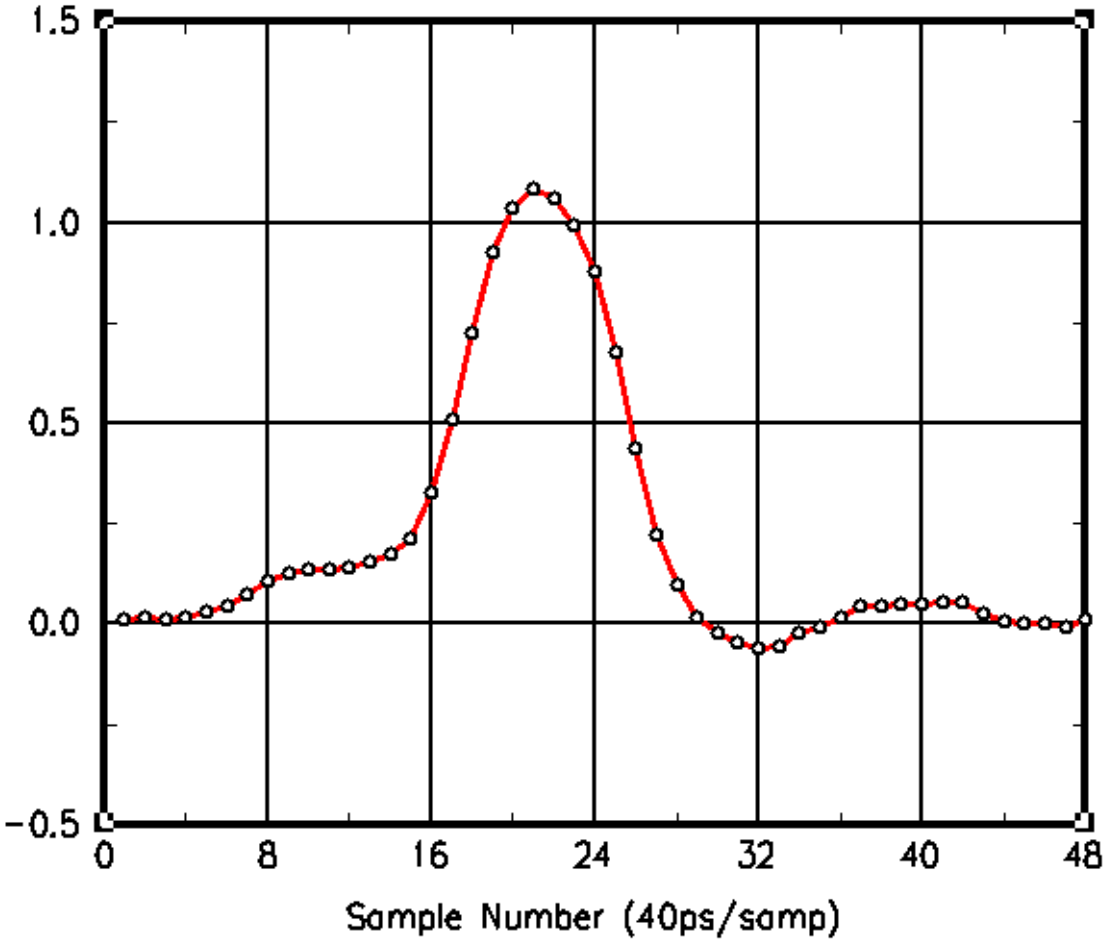
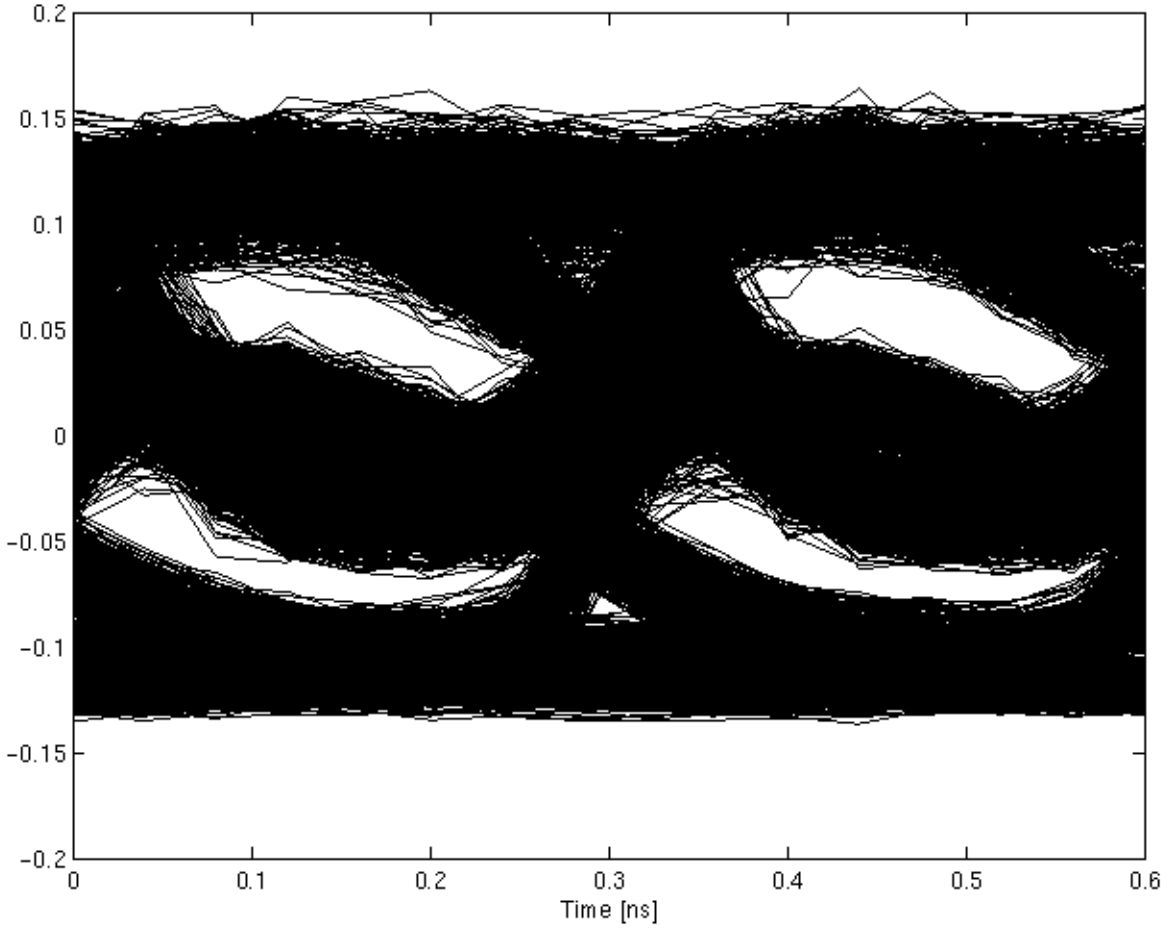
Measured Signal vs. Model and Error
Fiber 3, Module 1 (850nm)



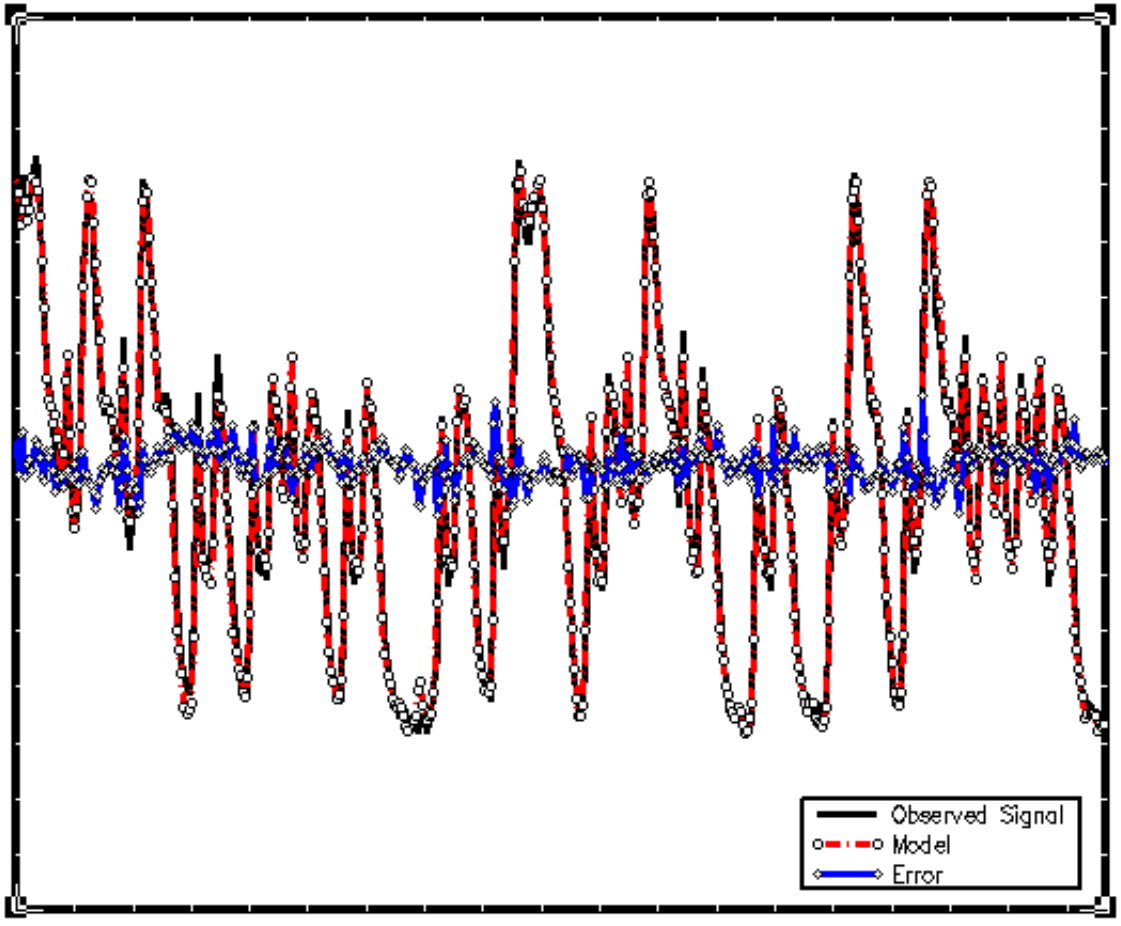
Impulse Response
Fiber 3, Module 1 (850nm)



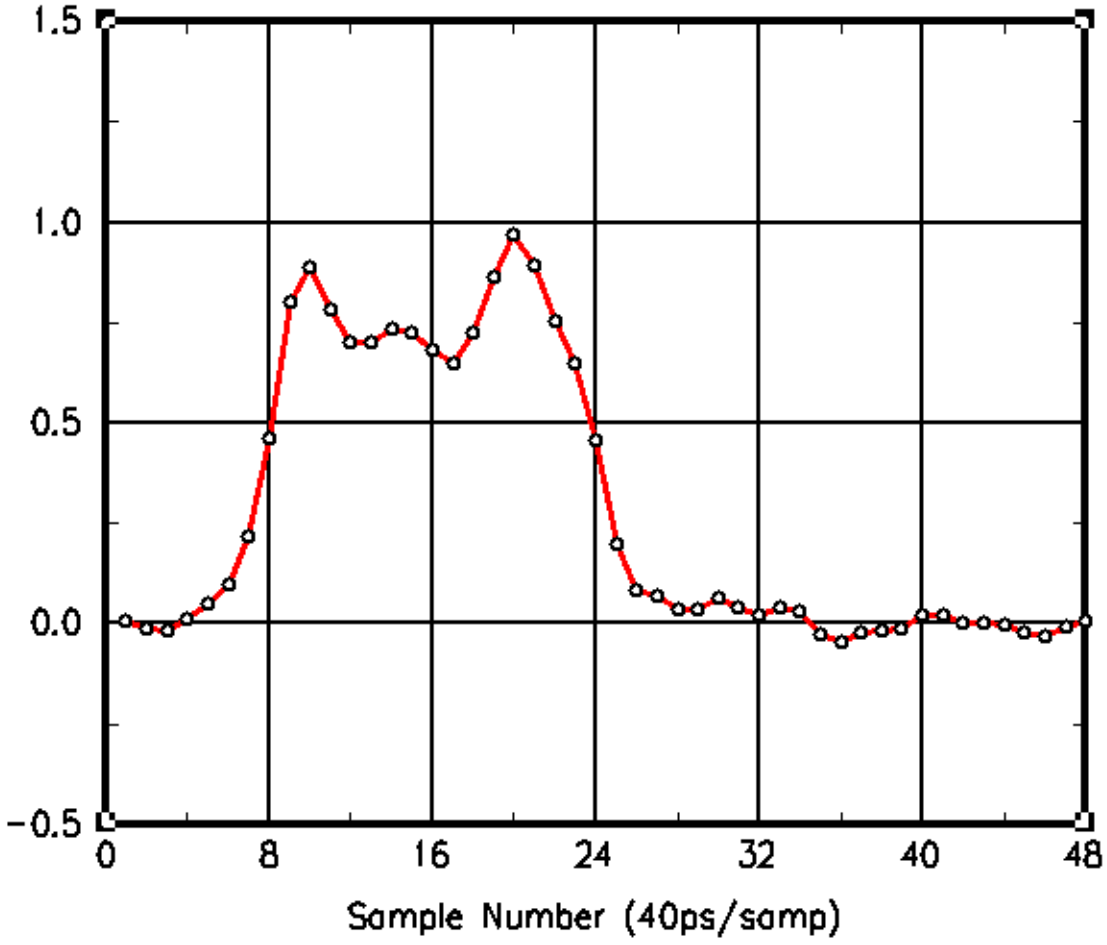
Eye Pattern for Non-Equalized System
Fiber 1, Module 2 (1310nm)



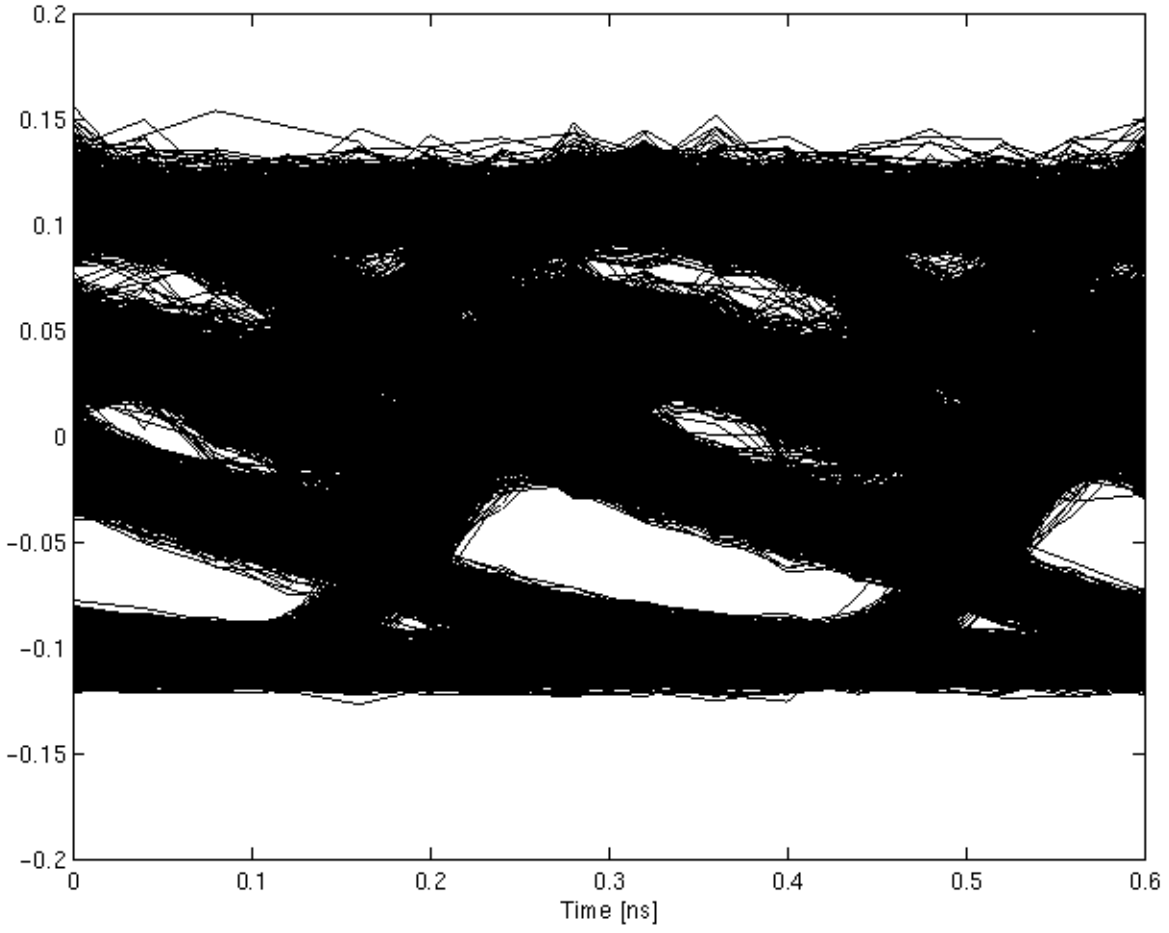
Measured Signal vs. Model and Error
Fiber 1, Module 2 (1310nm)



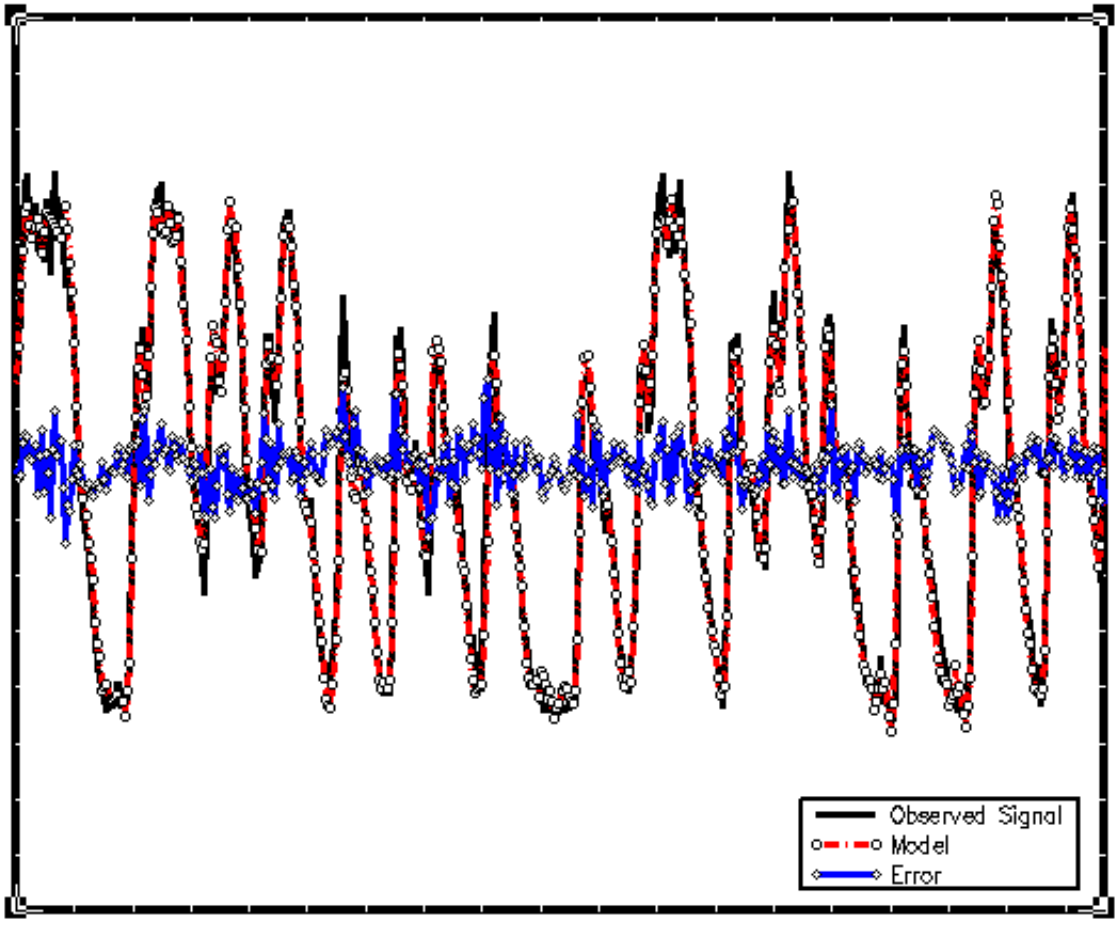
Impulse Response
Fiber 1, Module 2 (1310nm)



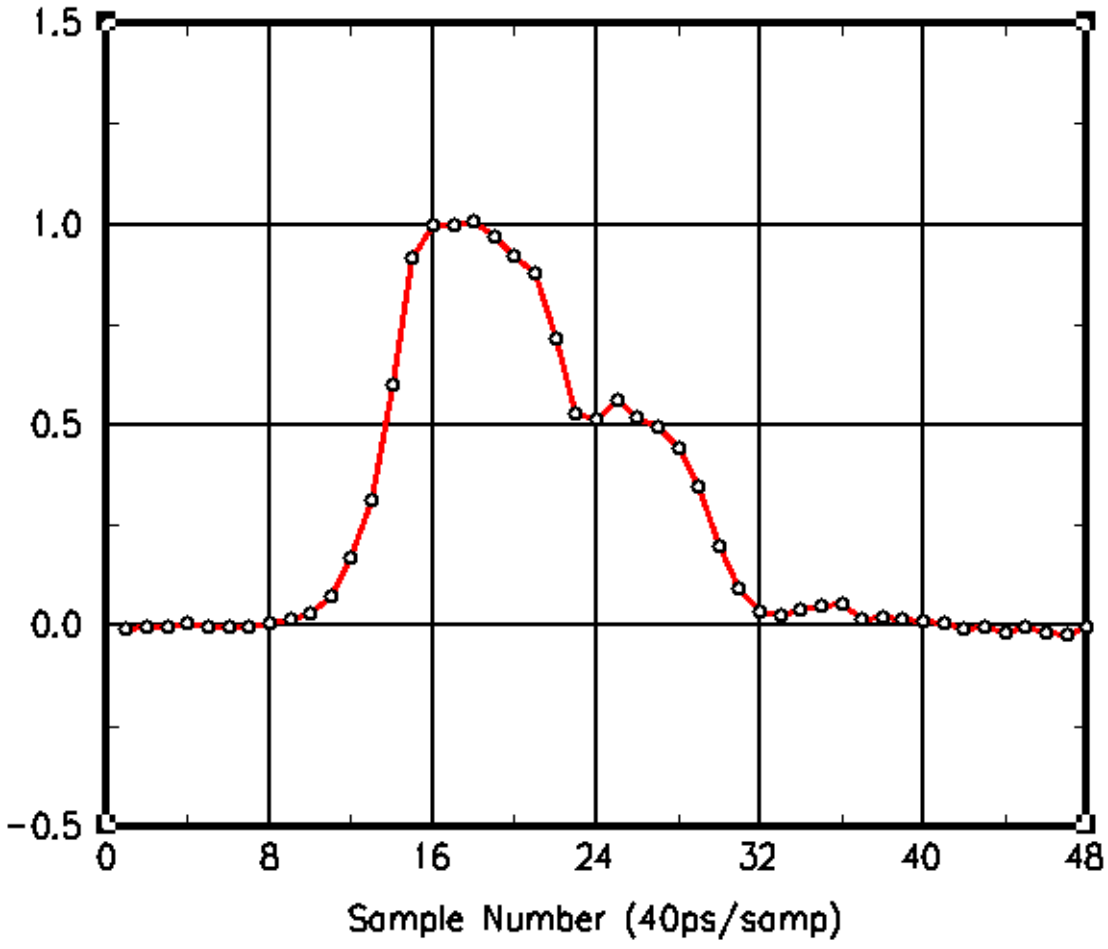
Eye Pattern for Non-Equalized System
Fiber 2, Module 2 (1310nm)



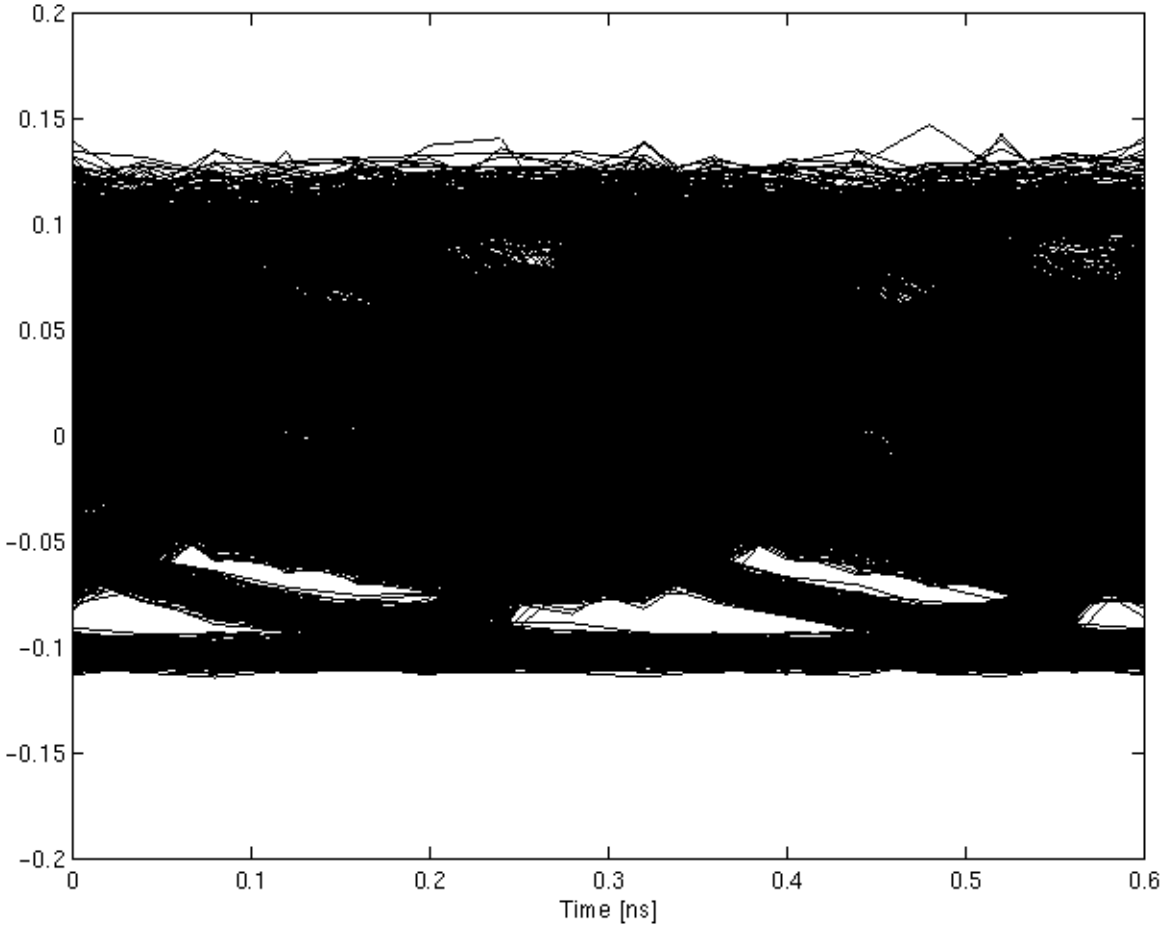
Measured Signal vs. Model and Error
Fiber 2, Module 2 (1310nm)



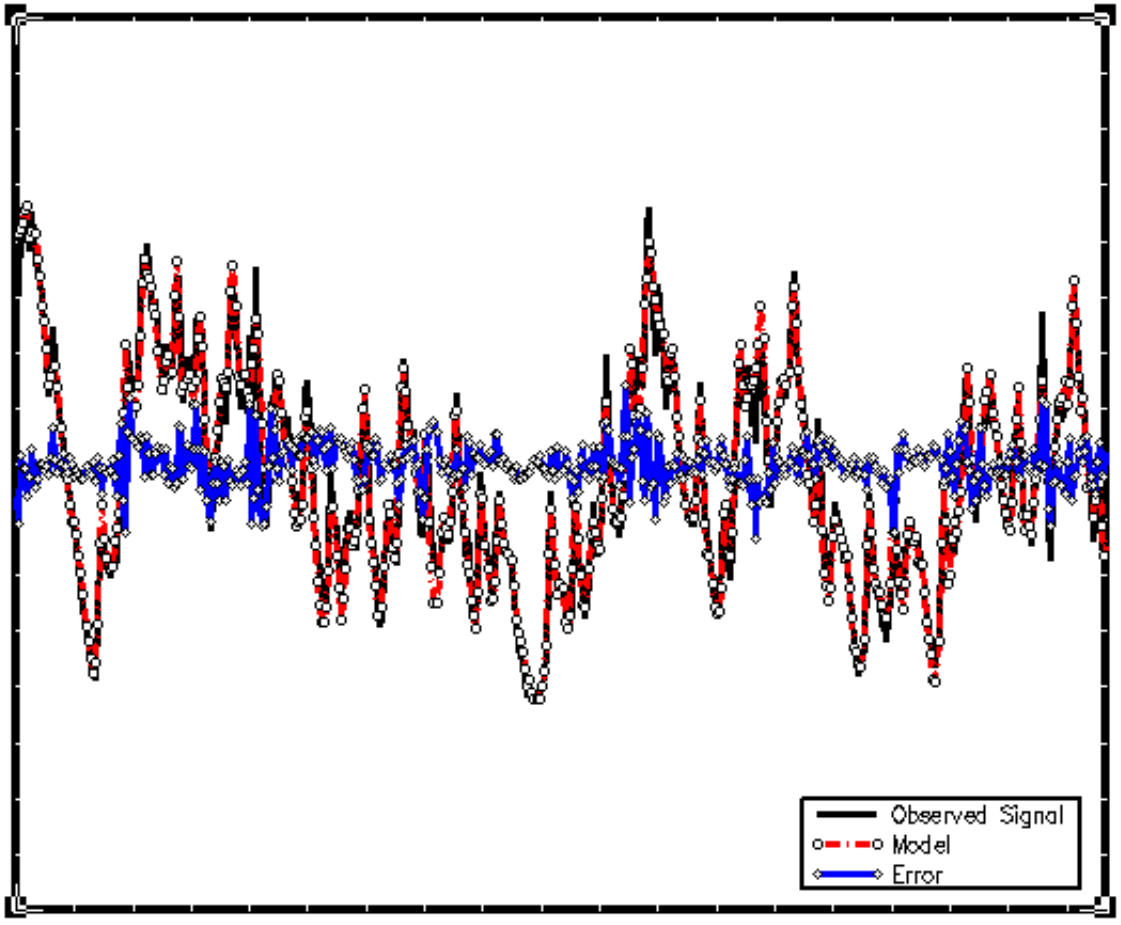
Impulse Response
Fiber 2, Module 2 (1310nm)



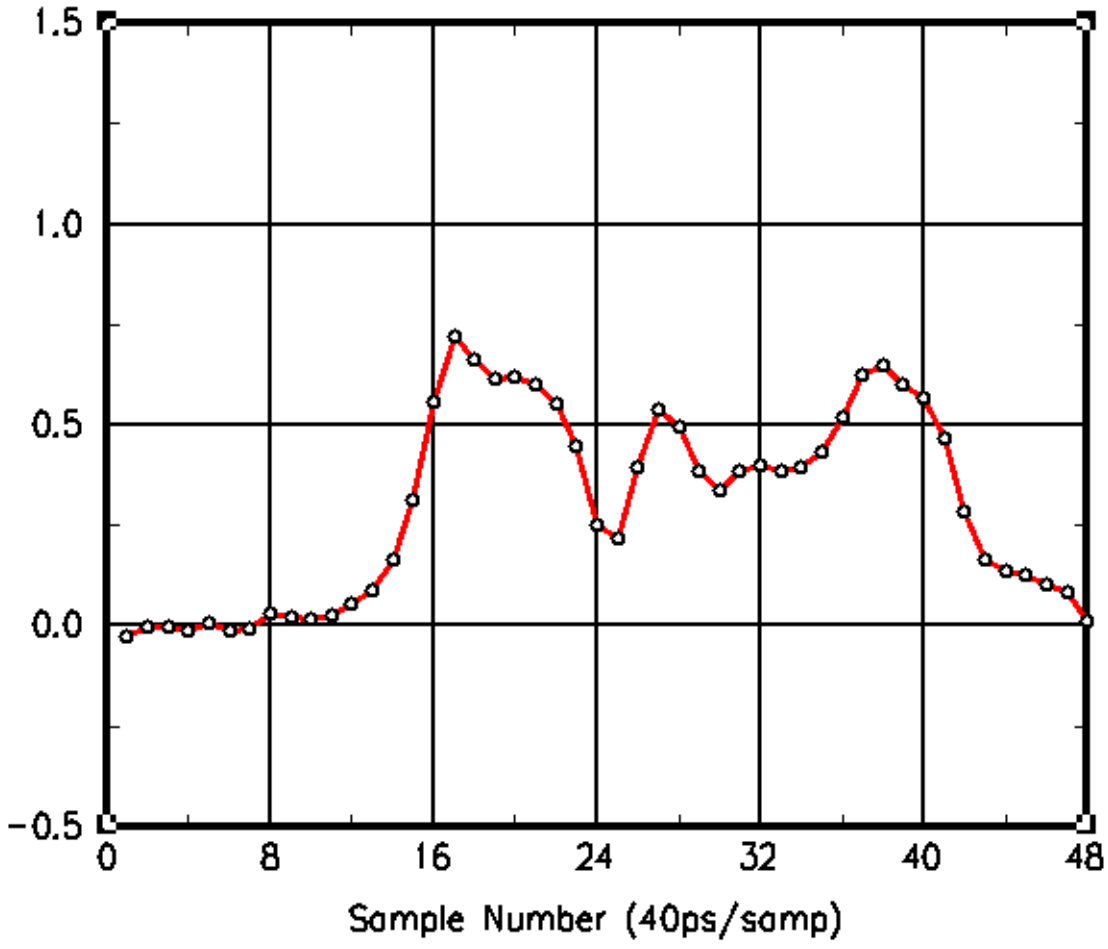
Eye Pattern for Non-Equalized System
Fiber 3, Module 2 (1310nm)



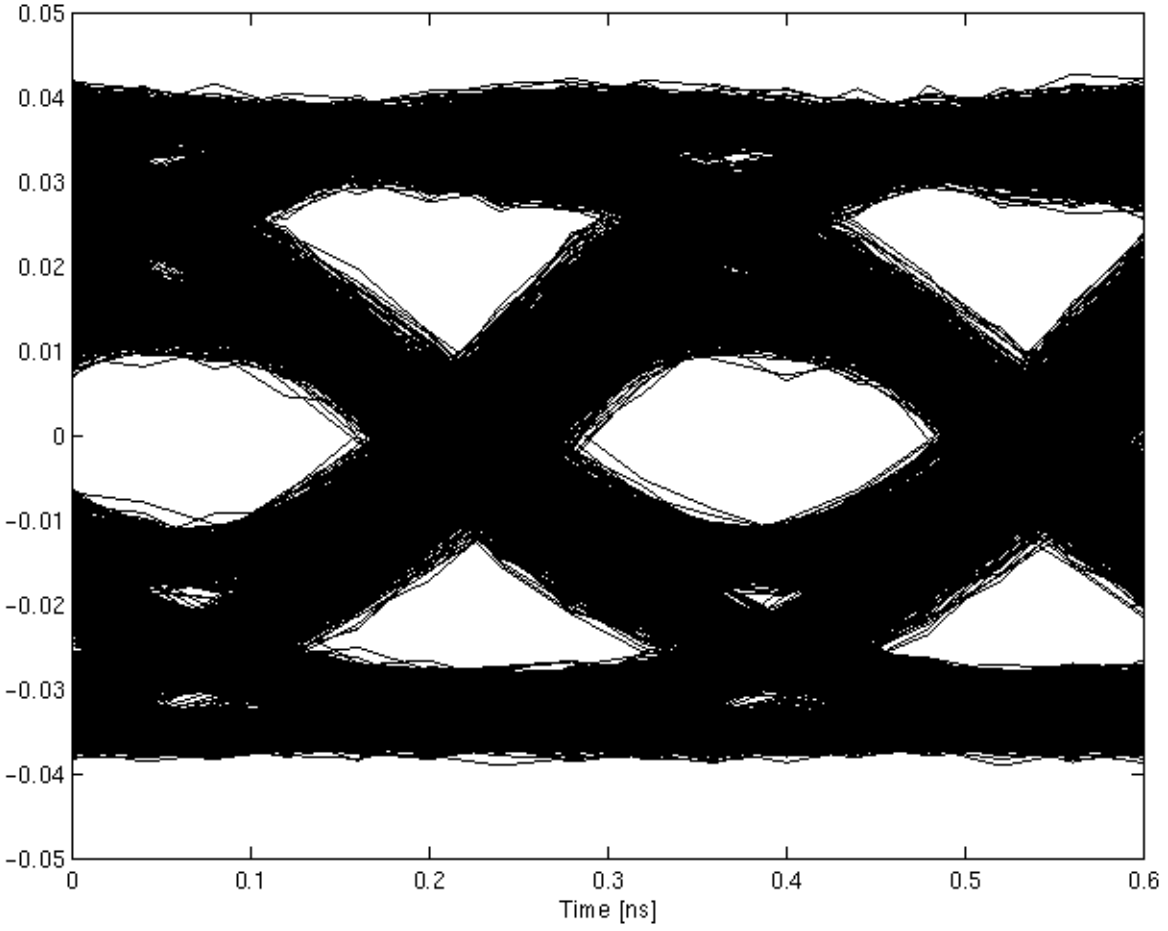
Measured Signal vs. Model and Error
Fiber 3, Module 2 (1310nm)



Impulse Response
Fiber 3, Module 2 (1310nm)



Eye Pattern for Non-Equalized System
Fiber 1, Module 3 (1310nm)



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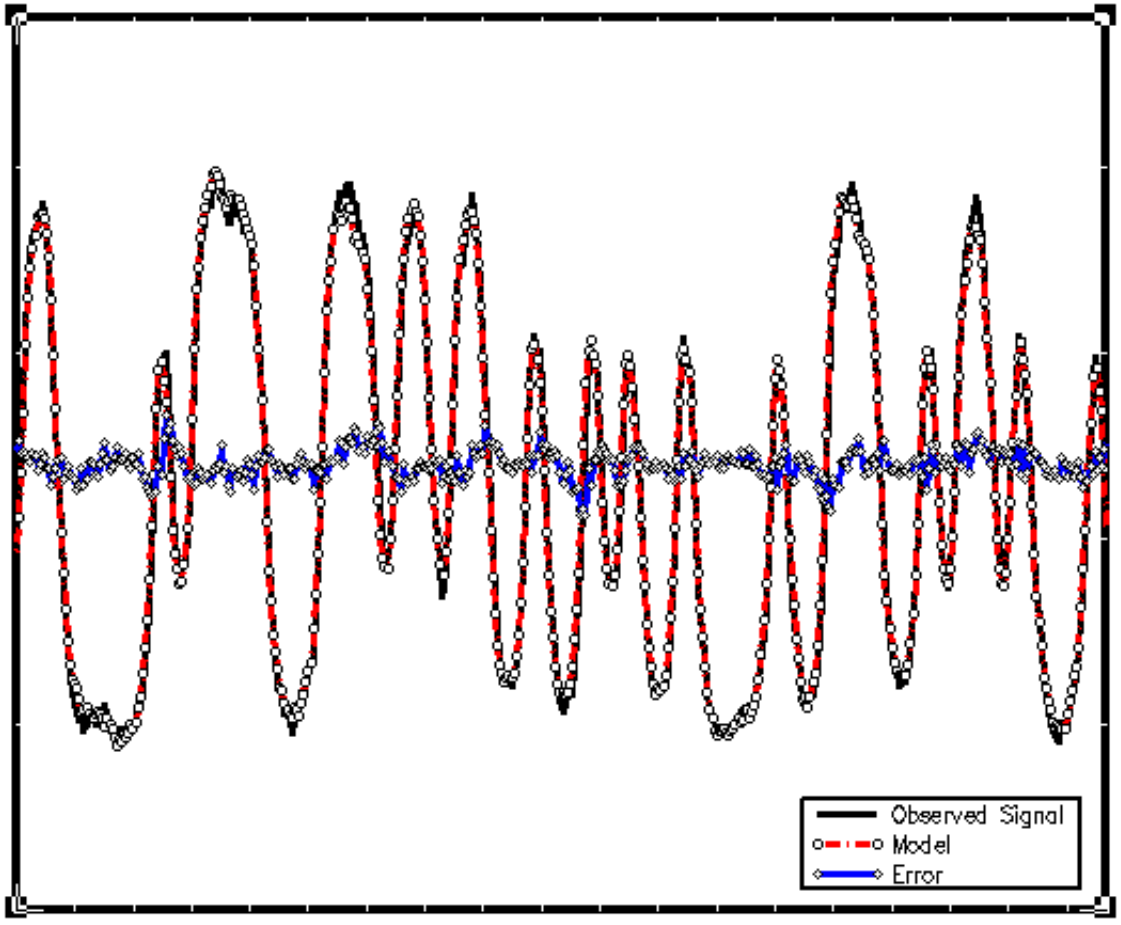
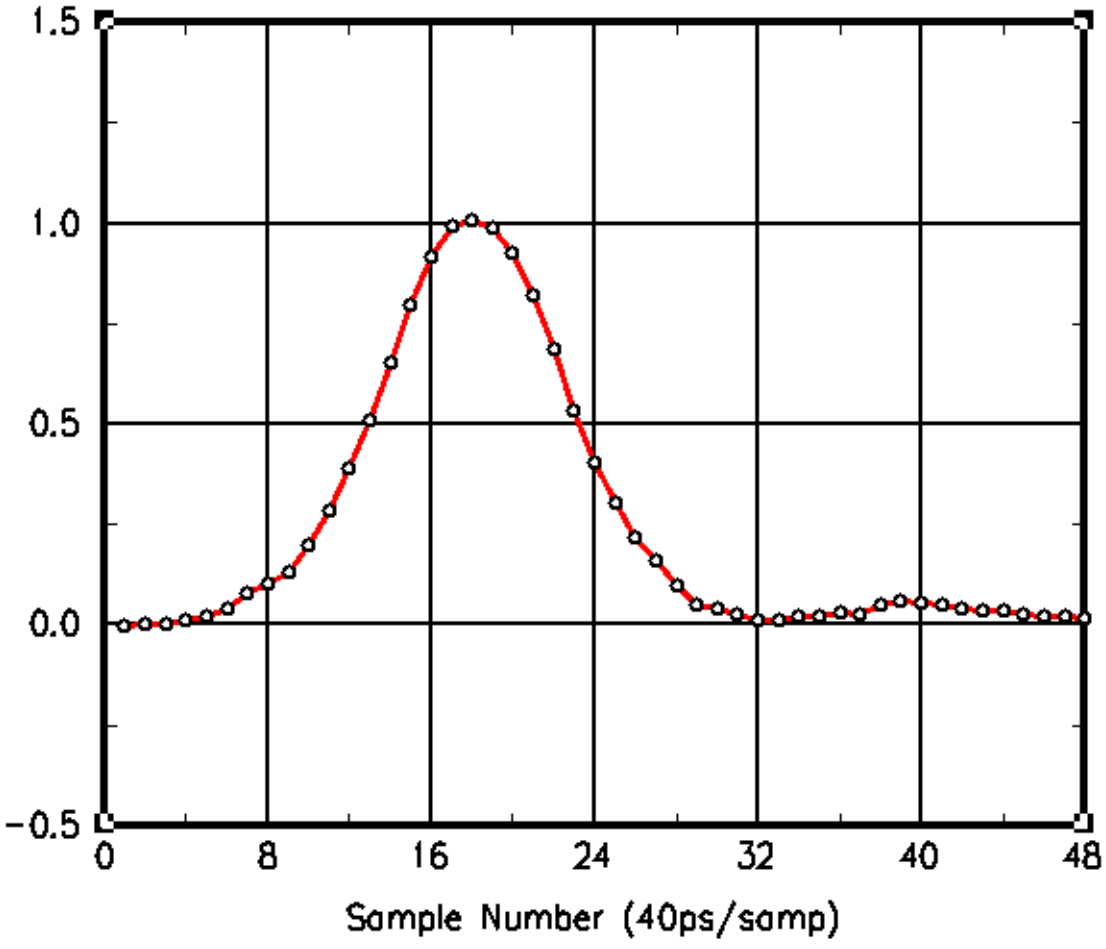
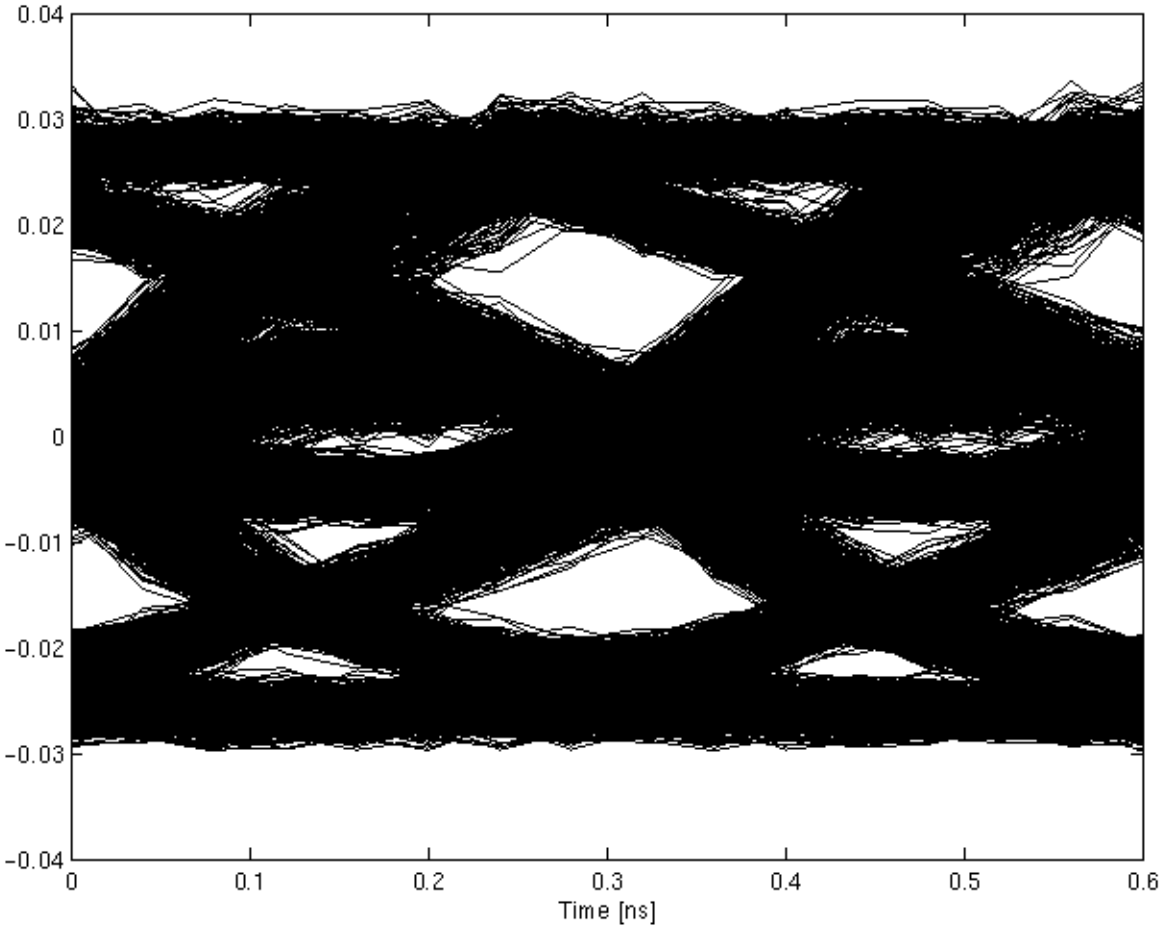
Measured Signal vs. Model and Error
Fiber 1, Module 3 (1310nm)



Impulse Response
Fiber 1, Module 3 (1310nm)



Eye Pattern for Non-Equalized System
Fiber 2, Module 3 (1310nm)



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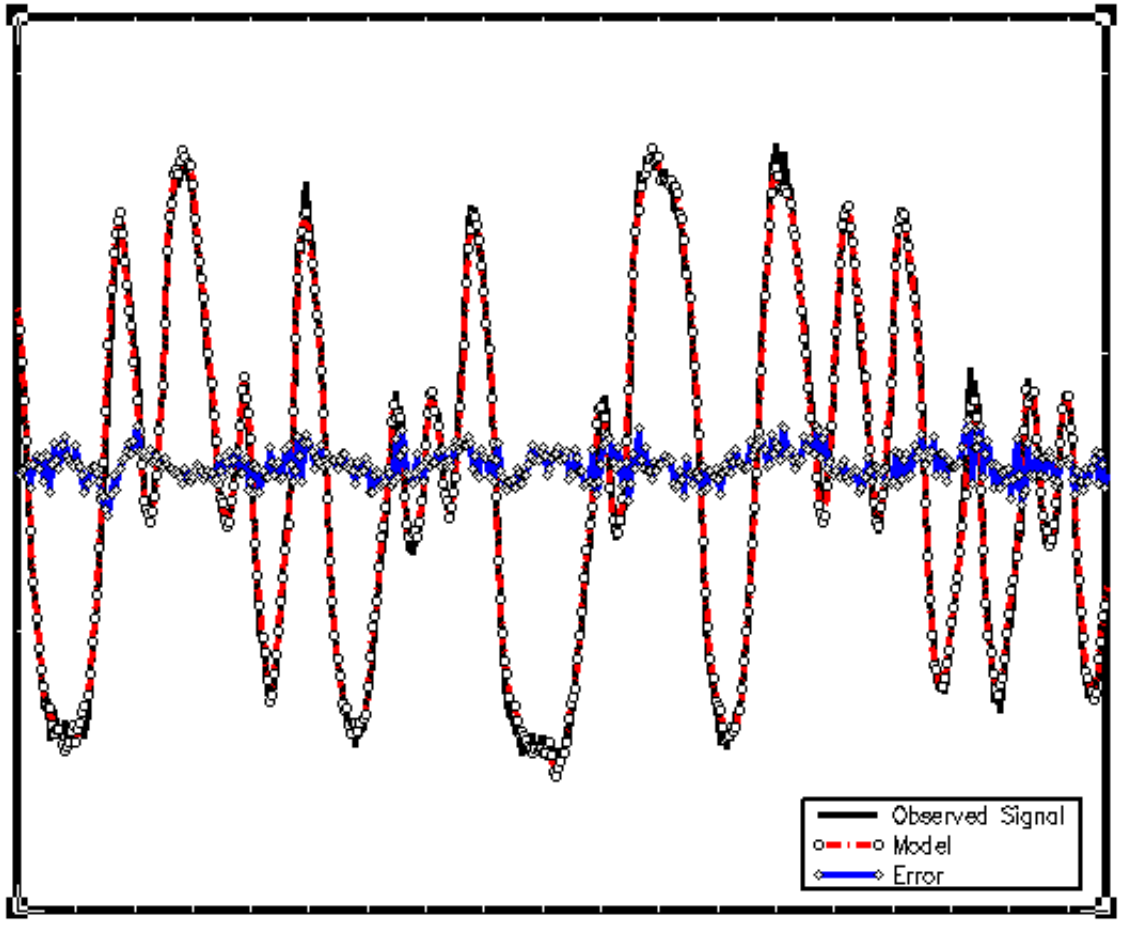
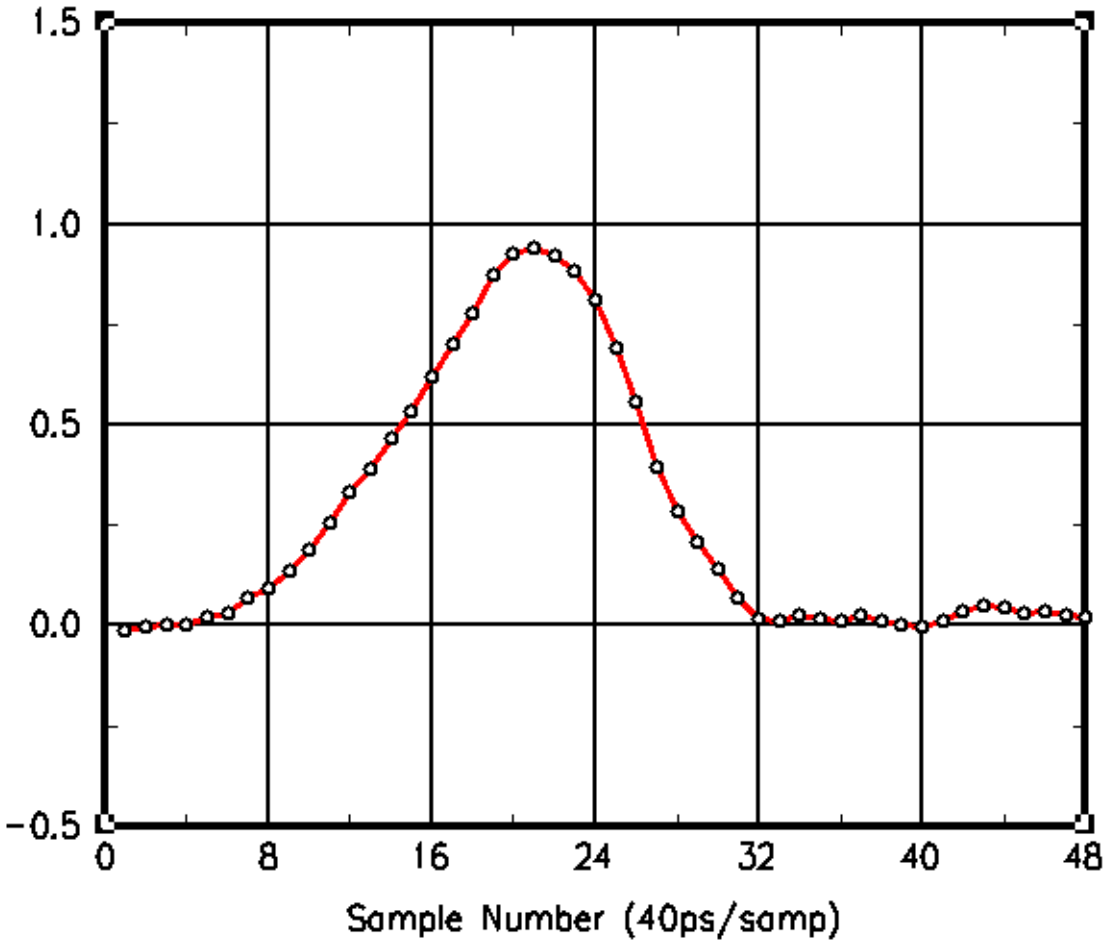
Measured Signal vs. Model and Error
Fiber 2, Module 3 (1310nm)



Impulse Response
Fiber 2, Module 3 (1310nm)



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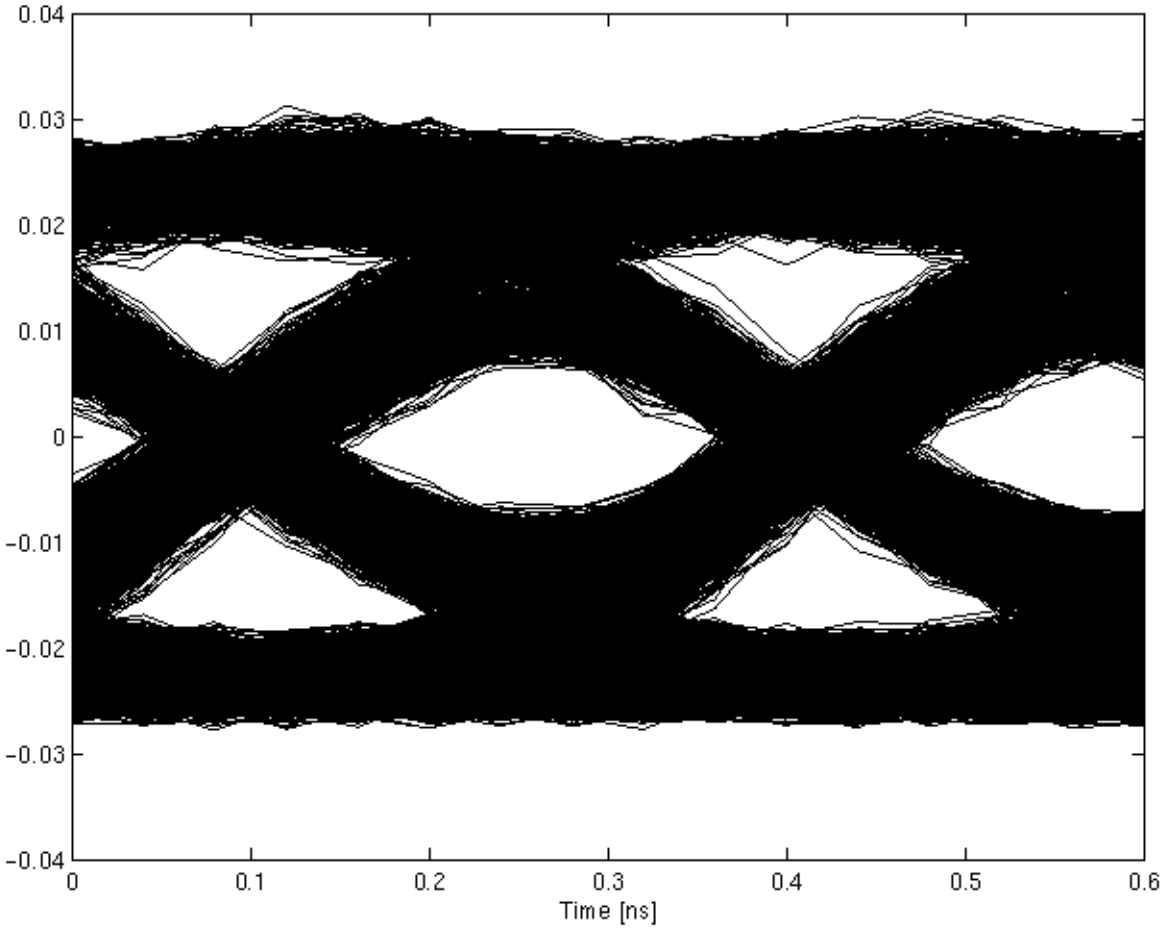
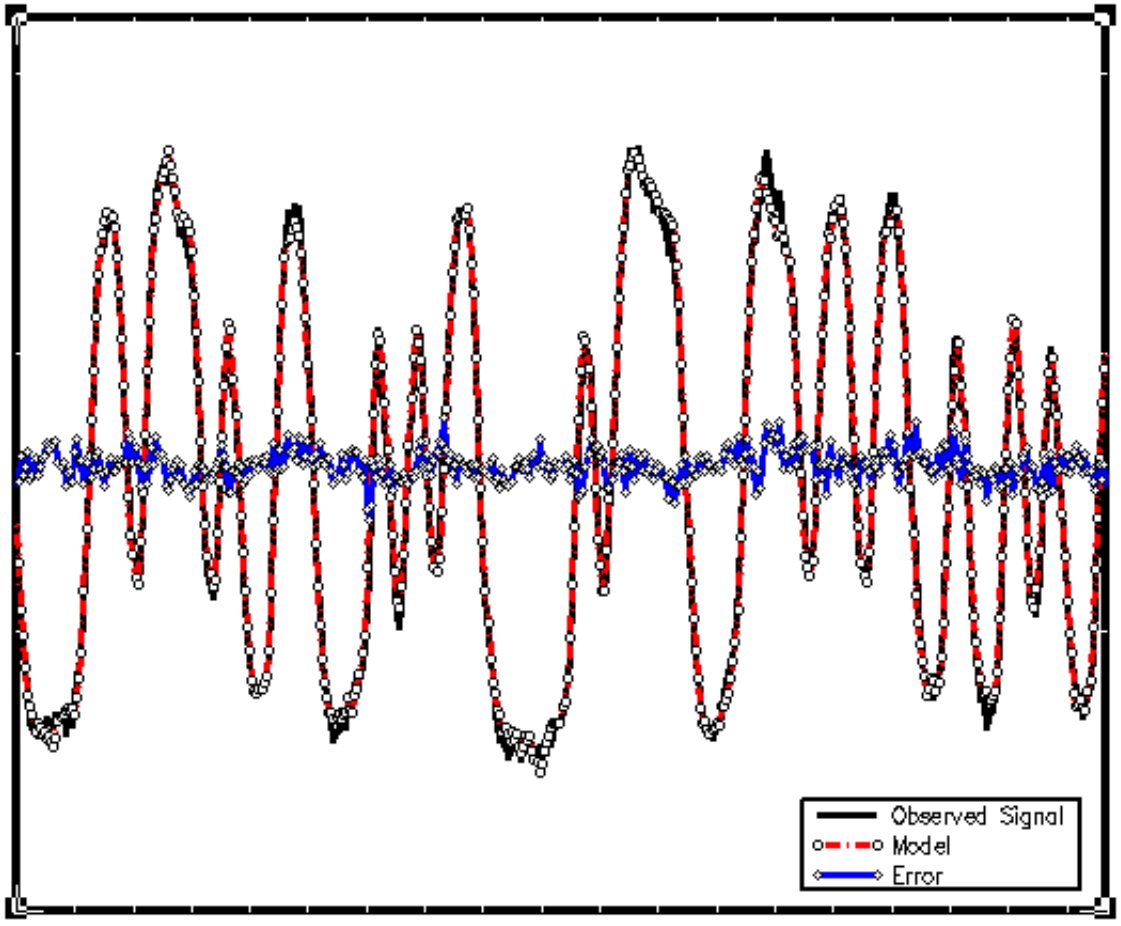
Fiber 3, Module 3 (1310nm)



Measured Signal vs. Model and Error
Fiber 3, Module 3 (1310nm)



Impulse Response
Fiber 3, Module 3 (1310nm)

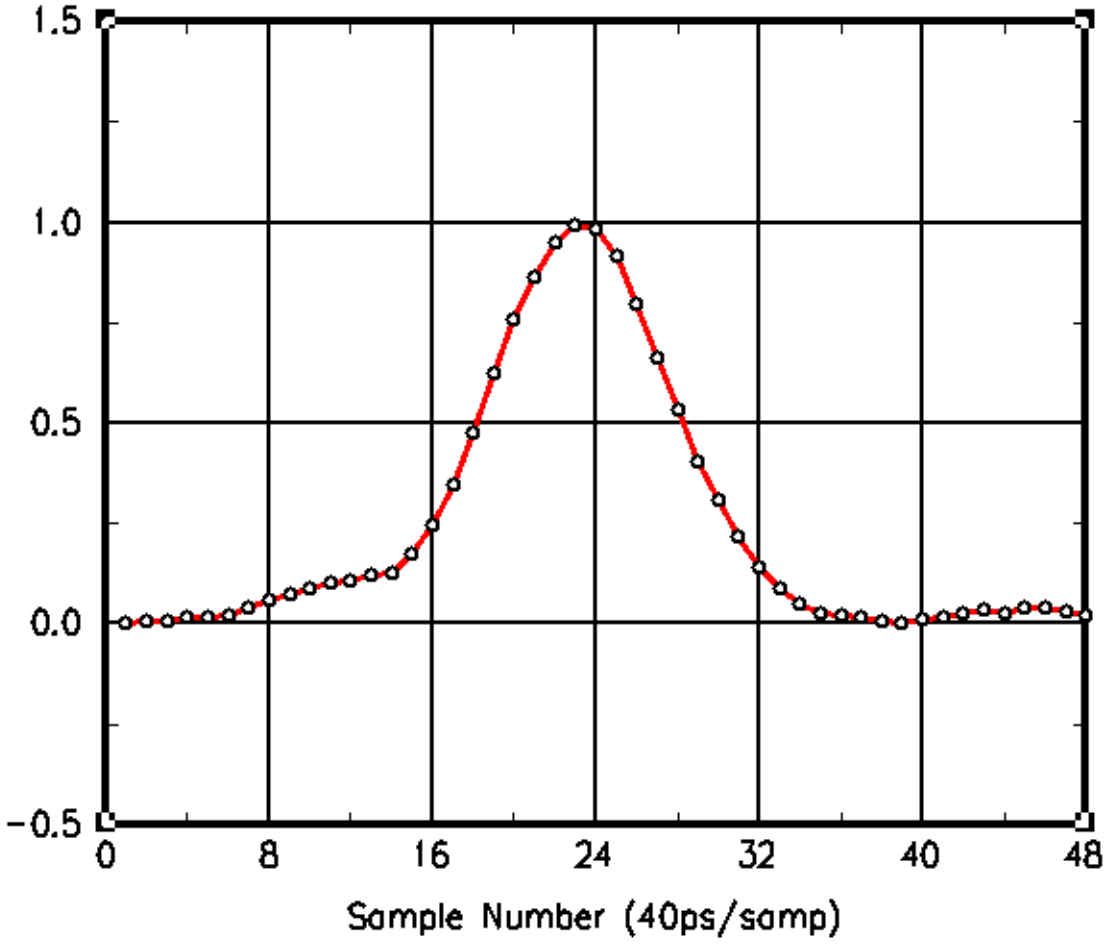


Table of SNR for all Fibers and Modules

MODULE	FIBER	SNR [dB]
1 (850nm)	1 (F0)	20.20
1	2 (DEC-01-A)	19.37
1	3 (DEC-01-B)	19.91
2 (1310nm)	1	18.41
2	2	17.88
2	3	16.07
3 (1310nm)	1	23.97
3	2	21.81
3	3	22.47

NOTE: Definition of SNR is as in *"Measurement of Non-Stationarity of 10Gb/s Multimode Fiber Links"* by O.Agazzi and T.Lenosky

Conclusions

- **Although the interleaved sampling technique used in these measurements does not allow to distinguish non-stationarity from random noise, and therefore it may lead to pessimistic conclusions in this regard, the measurement results show that the dispersion in the measured signals is well described by the linear adaptive model**

- **Nothing observed so far (in the measurements reported here and those reported in previous presentations) provides evidence for any effect that would make equalization not feasible**

Acknowledgements

- **We would like to thank Mike Hackert of Corning and David Hyer of Compaq for providing the DMD challenged fibers used in these measurements**