Channel and Link Specifications for IEEE P802.3ba electrical links

Mark Marlett
Shiva Kotagiri
Xilinx Corporation

IEEE P802.3ba 40Gb/s and 100Gb/s Ethernet Task Force

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Outline

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Channel consists of 3 parts

There are three channels competing for the budget.

- Channel 1: Host Tx (TP0) to PMD (TP1a) (Host Tx + Fr4 +connector + module Rx)
- Channel 2: Module Tx (T41) + Channel +Module Rx (TP4)
- Channel 3: PMD (TP4) to Host Rx (TP5) (Module Tx + connector + Fr4 + Host Rx)

There are two (somewhat independent) electrical point to point links. Channels 1 and 3 are the electrical channels that (can) differ in the equalizing power of the Tx and Rx.

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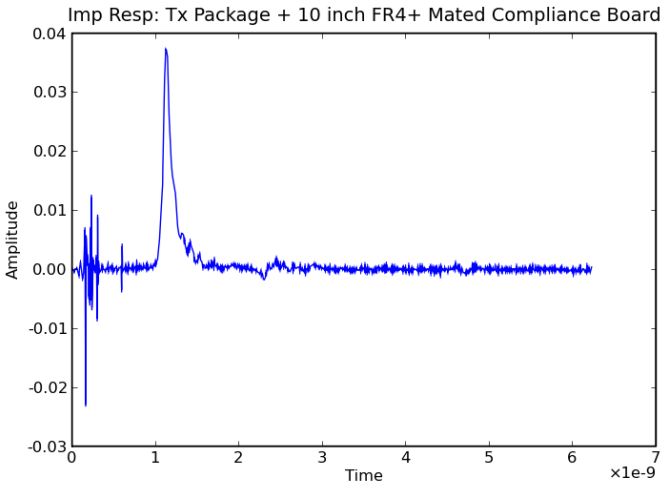
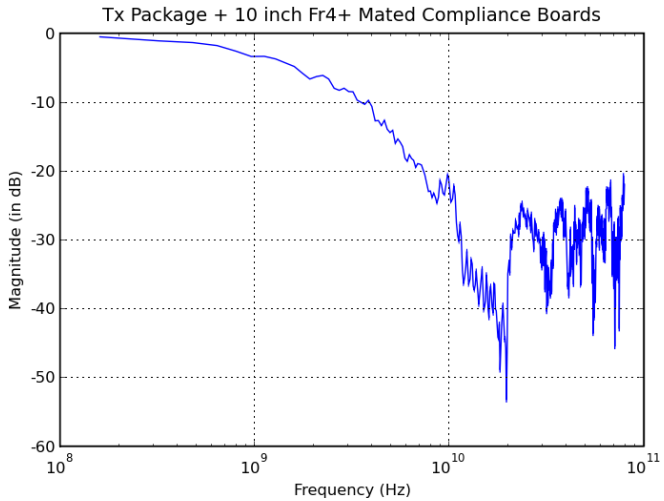
Electrical Channel Target





The Channel has:

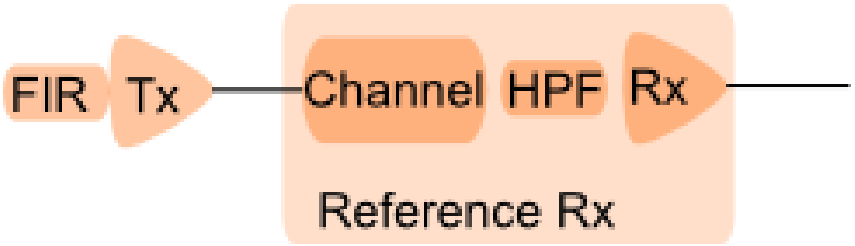
Host Package about 1dB loss at Nyquist in package,

Host Board 12 inches FR4– 10" on board +2" in HCB,

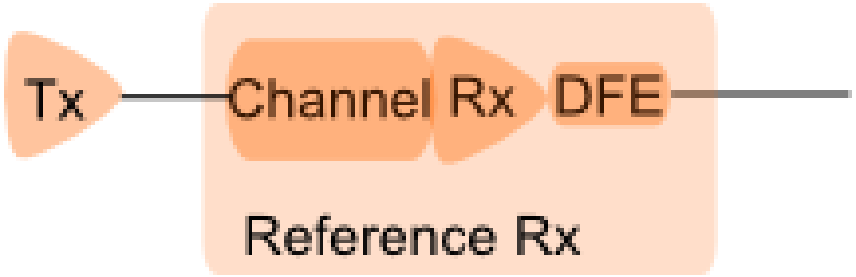
Connector HCB + MCB

. . . around 15dB loss end to end at Nyquist.

Host to Module vs Module to Host



Host Tx: 3-Tap FIR&Low Rj
Module Rx: simple linear boost



Module Tx: with no FIR
Host Rx: with 3T DFE

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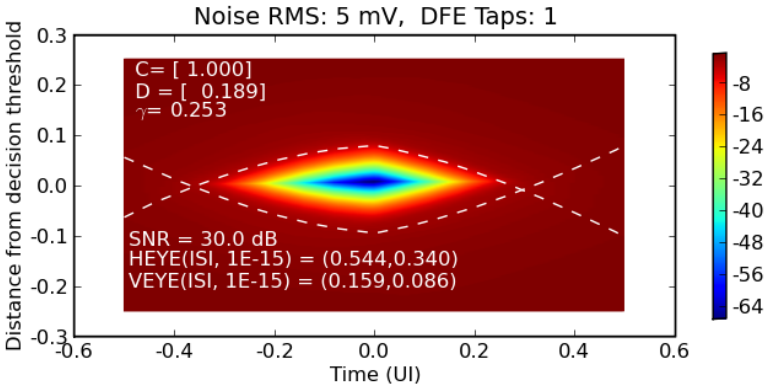
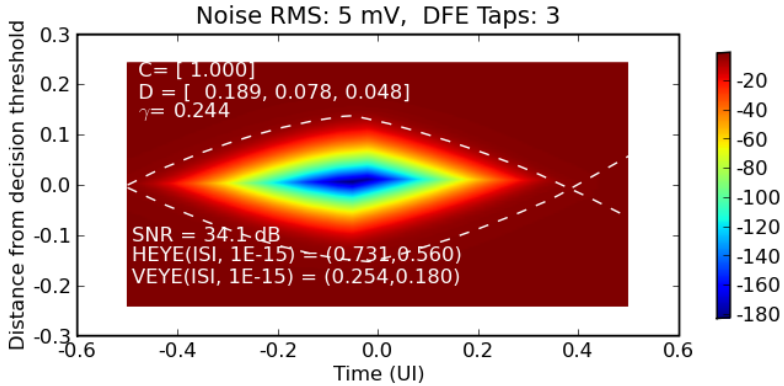
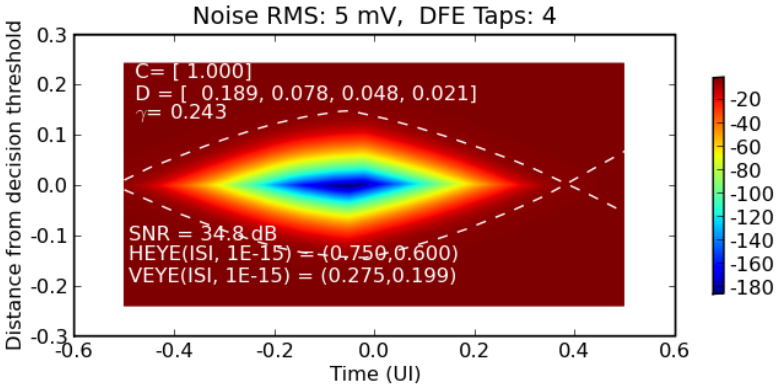
Statistical EYES over DFE taps @5mV noise

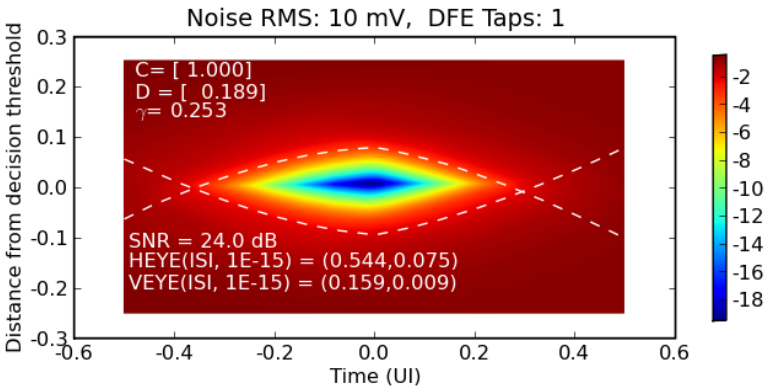


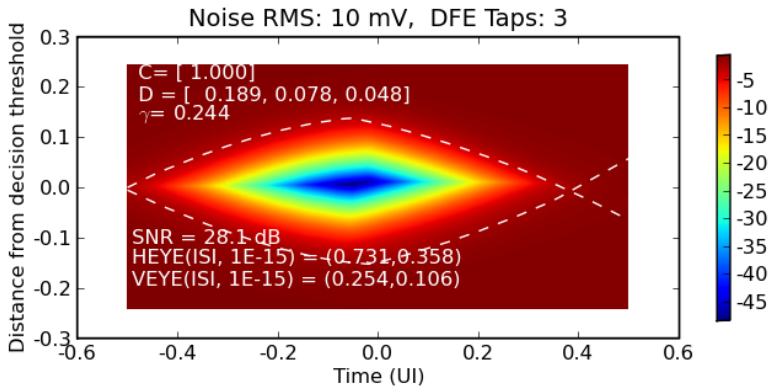


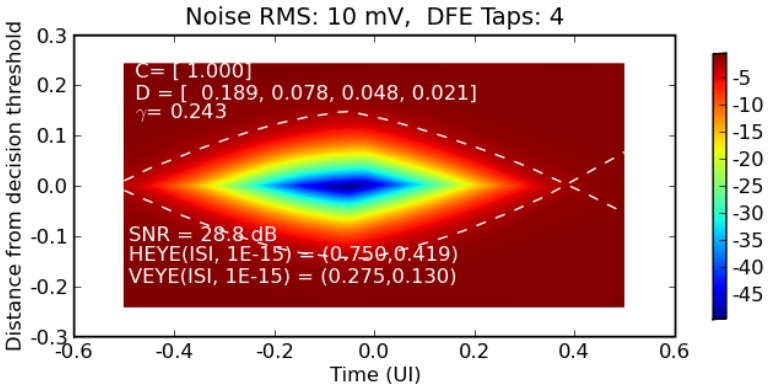


- A normalized 1V launch has 86 to 200mV vertical Eye, and
- 340 to 580 mUI horizontal Eye with 5mV rms noise.

Statististical EYES over DFE taps @10mV noise

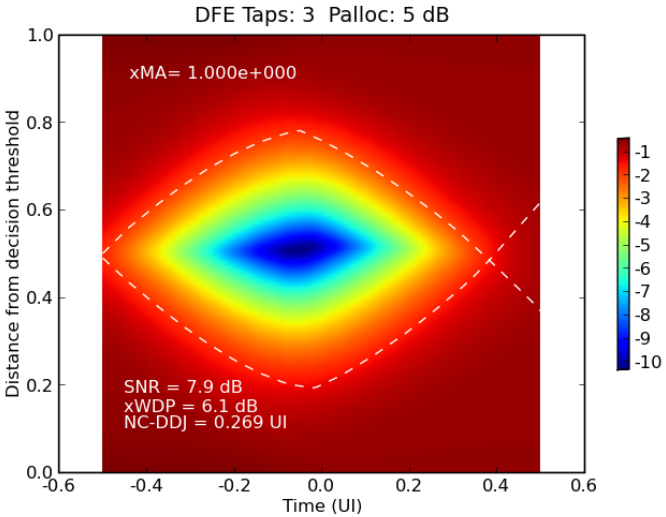


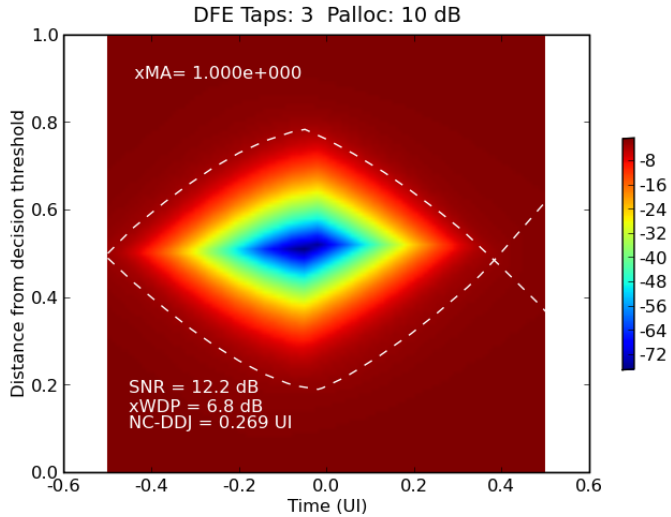




- A normalized 1V launch has 9 to 130mV vertical Eye, and
- 75 to 419 mUI horizontal Eye for 10mV rms Noise.

WDP EYES for different Palloc





- A normalized 1V launch has 6.1 to 6.8dB WDP penalty, and
- 269 mUI non-compensable deterministic jitter.

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Host to Module Specifications

Tx Parameters			
Test		Units	Value
Vpp	Max	mV	
VMA	Max	mV	
	Min	mV	
UJ	mUI		
Palloc	dBe		
TWDP	dBe		
NC-DDJ	mUI		

Rx Parameters		
Test	Units	Value
VMA	mV	
BUJ	mUI	
RJ	mUI	
RI	dBe	
WDP	dBe	
NC-DDJ	mUI	

- Tx options: 3 Tap FIR
- Rx options: Single Zero Boost

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Module to Host Specifications

Tx Parameters			
Test		Units	Value
Vpp	Max	mV	
VMA	Max	mV	
	Min	mV	
UJ	mUI		
Palloc	dBe		
TWDP	dBe		
NC-DDJ	mUI		

Rx Parameters		
Test	Units	Value
VMA	mV	
BUJ	mUI	
RJ	mUI	
RI	dBe	
WDP	dBe	
NC-DDJ	mUI	

- Tx options: Sufficient VMA, low Jitter RJ
- Rx options: 3-tap DFE

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Conclusion

Board	12 inches FR4 +connectors feasible
Host to Module	Needs Tx FIR +sufficient module EQ
Module to Host	Needs sufficient on Module VMA and Host EQ

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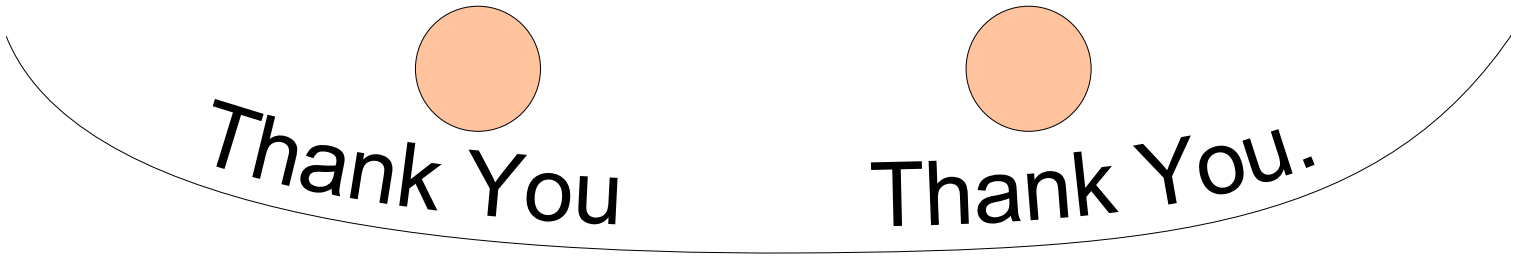
Thank You



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