Evaluation of Various channels

Using a Method proposed by Healey and Moore

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2011 November 1

- •This evaluation uses the method and values called out in another presentation at this meeting
- •This evaluation has 2 goals:
 - •Illustrate use of the evaluation method and the information it provides
 - Provide useful information toward setting taskforce objectives
- •I intend to run this evaluation, or a refinement of it, if one is agreed upon, on all channels provided to the study group and task force, and make the results available.

Simulation parameters used as recommended in healey_01_0111 "Suggested practices of reporting simulation results":

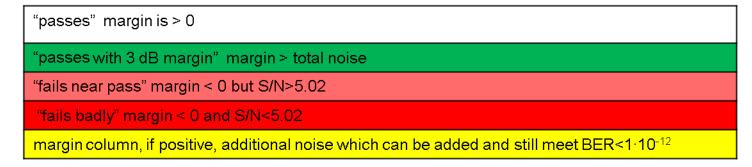
Bit rate	26 Gb/s
Modulation	PAM2
Signaling rate	26 Gbaud
Number of symbols simulated	N/A
Target symbol error ratio	1·10·12
Tx Test pattern	NA
Tx output ∨oltage, peak-to-peak	0.8 V (NEXT is 1.2 V)
Tx Deterministic jitter, peak-to-peak	NA
Tx Deterministic jitter distribution	NA
Tx Random Jitter, RMS	NA
Rx Random noise, RMS	Included in implementation noise
Rx Deterministic jitter, peak-to-peak	NA
Rx Random Jitter, RMS	NA
Rx Low-frequency gain	1.0
Tx, Rx Device package	No loss, indefinite phase
Tx, Rx Single ended resistance	66 Ω (gives magnitude but not phase of device reflection coefficient)
Tx, Rx Single ended capacitance	200 fF (gives magnitude but not phase of device reflection coefficient)

Backplane channel Data

Provided by Pravin Patel of IMB (patel_03_0911.zip)

dibit gain	available Signal	implementation noise	ILD noise	Re-reflection Tx	Re-reflection Rx	Re-refelction Tx-Rx	total channel noise	FEXT 0	FEXT 1	FEXT 2	FEXT 3	FEXT 4	FEXT 5	FEXT 6	FEXT 7	PSXT	total noise	S/N	margin
139.984m	37.292mV	3.592mV	1.637mV	1.818mV	2.011mV	1.405mV	3.464mV	0.738mV	1.156mV	0.177mV	0.678mV	0.292mV	0.823mV	1.032mV	0.156mV	2.056mV	5.397mV	6.91	-1.001mV

Color code



Backplane channel Data

By Mike Dudek of QLogic (dudek_02a_0911.zip)

case	pulse gain dibit gain		ILD noise	Re-	Re-	Re-	total	FEXT 0	FEXT 1	FEXT 2	FEXT 3	FEXT 4	FEXT 5	FEXT 6	FEXT 7	PSXT	total	S/N margii	n
	Nyqui	Signal	implement	reflection	reflection	refelction	channel										noise		
Ologic 1m C	new -29.65 182.608m 129.716m	34 556mV	3.458mV 1.977mV	1 962mV	1.962mV	1 112mV	3 584mV	0.377mV	0.376mV	0.050mV	0.254mV	0.193mV	0.339mV	0.390mV	0.067mV	0.812mV	5.046mV	6.85 -1.143	mV

Color code

"passes" margin is > 0

"passes with 3 dB margin" margin > total noise

"fails near pass" margin < 0 but S/N>5.02

"fails badly" margin < 0 and S/N<5.02

margin column, if positive, additional noise which can be added and still meet BER<1·10-12

Observations:

- •These 2 channels are similar to the channel used in patel_01b_0911.pdf
- •I have added Insertion Loss (in dB) at 13 GHz to the tables. This is the value of the fitted curve, not the actual S-Parameters