Baseline Proposal for 50 Gb/s BIDI

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Supporters

Introduction

- This presentation contains a baseline proposal to meet the objective of 50G BIDI using the same KP4 FEC with 802.3 cn

Background Discussion

- Jan.2018: Investigation of the technical feasibility for 200G/400G beyond 10km optical PHYs using high-power TOSA and APD-ROSA showed a -18dBm B-to-B receiver sensitivity at 2.4E-4 operating BER with 0.5dB dispersion penalty at worst case, according to this presentation, the OMA margin is 3.2dB for 200G 40km transmission. http://www.ieee802.org/3/B10K/public/18_01/yamamoto_b10k_01a_0118.pdf

- Mar. 2018: Technical Feasibility to Support 200GbE 40km Objective, presented receiver sensitivities of -17.1dBm at SECQ = 1.7dB and -16.6dBm at SECQ = 2.0dB; http://www.ieee802.org/3/B10K/public/18_03/yu_b10k_01c_0318.pdf

Background Discussion

- Sep. 2018: Single and Quad channel APD receiver performance at 25Gbaud, provided a sensitivity of -19dBm at 26.6Gbaud PAM4, with the Transmitter SECQ ranging from 1.4 to 1.7dB and extinction ratio from 6.4 to 6.9dB.

  http://www.ieee802.org/3/B10K/public/18_09/huang_b10k_01a_0918.pdf

- Sep. 2018: 200G EML Fiber Propagation Result, showed a measured B-to-B sensitivity around -17dBm with a suggestion that > 2dBm for Transmitter “minimum launch power (OMAouter) minus TDECQ” is possible.

  http://www.ieee802.org/3/B10K/public/18_09/jackson_b10k_01_0918.pdf

Transmitter Characteristics 50GBASE BIDI

Description	Proposal		Unit
	10km	40km	
Signaling rate	26.5625	26.5625	GBd
Wavelengths (range)	Up: 1264.5 to 1277.5 Down: 1324.5 to 1337.5	Up: 1292.21 to 1296.59 Down:1306.29 to 1310.19	nm
Side-mode suppression ration (SMSR), (min)	30	30	dB
Average launch power (max)	4.2	6.63	dBm
Average launch power (min)	-4.5	0.4	dBm
OMA_{outer} (max)	4	7.4	dBm
OMA_{outer} (min)	-1.5	3.4	dBm
Launch power in OMA_{outer} – TDECQ (min)	-2.9	2	dBm
TDECQ (max)	3.2	3.2	dB
TDECQ – $10\log_{10}(C_{eq})$ (max)	3.2	3.2	dB
Average launch power of Off transmitter, each lane (max)	-16	-15	dBm
Extinction ratio (ER) (min)	3.5	6	dB
Transmitter transition time (max)	34	34	ps
RIN OMA (max)	-132	TBD	dB
Optical return loss tolerance (max)	15.6	TBD	dB
Transmitter reflectance (max)	–26	–26	dB

Receiver Characteristics 50GBASE BIDI

Description	Proposal		Unit
	10km	40km	
Signaling rate	26.5625	26.5625	GBd
Wavelengths (range)	Up: 1324.5 to 1337.5 Down: 1264.5 to 1227.5	Up: 1306.29 to 1310.19 Down: 1292.21 to 1296.59	nm
Damage threshold	5.2	-2.37	dBm
Average receive power (max)	4.2	-3.37	dBm
Average receive power (min)	−10.8	−17.6	dBm
Receive power (OMA_{outer}) (max)	4	-2.6	dBm
Receiver reflectance (max)	−26	−26	dB
Receiver sensitivity (OMA_{outer}) (max)	max(−8.4, SECQ − 9.8)	max(−15.1, SECQ − 16.5)	dBm
Stressed receiver sensitivity (OMA_{outer}) (max)	-6.6	−13.3	dBm
Conditions of stressed receiver sensitivity test			
Stressed eye closure for PAM4 (SECQ)	3.2	3.2	dB
SECQ – $10\log_{10}(C_{eq})$ (max)	3.2	3.2	dB

Illustrative Link Power Budget 50GBASE BIDI

Description	Proposal		Unit
	10km	40km	
Power budget (for maximum TDECQ)	10.1	21.7	dB
Operating distance	10	40	km
Channel insertion loss	6.3	18	dB
Maximum discrete reflectance	TBD	TBD	dB
Allocation for penalties (for maximum TDECQ)	3.8	3.7	dB
Additional insertion loss allowed	0	0	dB

Recommendations

- Adopt the proposed baseline specification for 50GBASE 10km and 40km BIDI.


thank you
danke
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gracias
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спасибо
dank je
mochchakkeram
dziękuję
bedankt
go raibh maith agat
obrigado
sukriya
kop khun krap
arigatō
takk
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