P802.3ck D1.4 Annex 120G transition time and XTALK parameter values (V2)

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Introduction

- In Draft 1.4, the parameters for XTALK calibration for host/module output EH/VEC measurements and host/module input stressed eye calibration are TBD.
- This slide package summarizes the parameter values as proposed by the following comments:
 - TP1a (host output, 120G.3.1): 14, 33, 62, 68, 84, 124
 - TP4 (module output, 120G,3.2): 17, 36, 63, 69, 86, 127
 - TP4a (host input, 120G.3.3): 19, 37, 64, 70, 87, 128
 - TP1 (module input, 120G.3.4): 20, 39, 65, 71, 89, 129
- Before resolving these we need to consider two comments that propose to modify the transition time specification at TP1a and TP4.
 - 83 (TP1a, Table 120G-1)
 - 85 (TP4, Table 120G-3)

Presentations

The following related presentations were viewed the ad hocs prior to the comment resolution meetings:

https://www.ieee802.org/3/ck/public/adhoc/jan20_21/wu_3ck_adhoc_01_012021.pdf

The following related presentations were submitted (so far) for the upcoming comment resolution meetings:

Comments 83 and 85, transition time

C/ 120G SC 120G.3.1

P 231 L 25

Ghiasi Quantum/Inphi

83

Comment Type TR Comment Status X

At TP1a it is no possible to get 7.5 ps, please put something reasonable

SuggestedRemedy

Ghiasi, Ali

A fast ASIC with 7.6 ps output rise time when passes through a mated board with just 5 dB loss produces 12 ps 20-80% rise time. I suggest 12 ps but no less than 10 ps.

Proposed Response Response Status O

Table 120G-1-Host output characteristics at TP1a

Parameter	Reference	Value	Units
Signaling rate, each lane (range)		53.125 ± 50 ppm ^a	GBd
DC common-mode output voltage (max)	120G.5.1	2.8	v
DC common-mode output voltage (min)	120G.5.1	-0.3	v
Single-ended output voltage (max)	120G.5.1	3.3	v
Single-ended output voltage (min)	120G.5.1	-0.4	v
AC common-mode RMS output voltage (max)	120G.5.1	17.5	mV
Differential peak-to-peak output voltage (max) Transmitter disabled Transmitter enabled	120G.5.1	35 870	mV
Eye height, differential (min)	120G.3.1.5	15	mV
Vertical eye closure (max)	120G.3.1.5	9	dB
Common-mode to differential return loss (min)	120G.3.1.1	Equation (120G-1)	dB
Effective return loss, ERL (min)	120G.3.1.2	7.3	dB
Differential termination mismatch (max)	120G.3.1.3	10	96
Transition time (min, 20% to 80%)	120G.3.1.4	7.5	ps

^aFor a PMA in the same package as the PCS sublayer. In other cases, the signaling rate is derived from the signaling rate presented to the PMA input lanes (see Figure 135–3 and Figure 120–3) by the adjacent PMA or FEC sublayers.

C/ 120G SC	2 120G.3.1	P 2	31	L 25		# 85	
Ghiasi, Ali		Ghias	si Quantu	ım/Inphi			
Comment Type	Т	Comment Status	x				
				102.8	10.5		

At TP4 it is no possible to get 7.5 ps, please put something reasonable

SuggestedRemedy

A fast ASIC with 7.6 ps output rise time when passes through a mated board with just 5 dB loss produces 12 ps 20-80% rise time, given that real module may have less than min HCB loss then 10 ps would be reasonable rise time.

Proposed Response Response Status O

Table 120G-3-Module output characteristics (at TP4)

Parameter	Reference	Value	Units	
Signaling rate, each lane (nominal)		53.125ª	GBd	
AC common-mode output voltage (max, RMS)	120G.5.1	17.5	mV	
Differential peak-to-peak output voltage (max)	120G.5.1	900	mV	
Near-end eye height, differential (min)	120G.3.1.5	24	mV	
Near-end vertical eye closure (max)	120G.3.1.5	7.5	dB	
Far-end eye height, differential (min)	120G.3.1.5	24	mV	
Far-end vertical eye closure (max)	120G.3.1.5	7.5	dB	
Common-mode to differential return loss (min)	120G.3.1.2	Equation (120G-1)	dB	
Effective return loss, ERL (min)	120G.3.2.3	TBD	dB	
Differential termination mismatch (max)	120G.3.1.3	10	96	
Transition time (min, 20% to 80%)	120G.3.1.4	7.5	ps	
DC common-mode voltage (min) ^b	120G.5.1	-350	mV	
DC common-mode voltage (max) ^a	120G.5.1	2850	mV	

^aThe signaling rate range is derived from the PMD receiver input.

^b DC common-mode voltage is generated by the host. Specification includes effects of ground offset voltage.

TP1a XTALK comments, part 1



TP1a XTALK comments, part 2

L 17

L 17

84

C/ 120G SC 120G.3.1.5

P 233

68

Healey, Adam

Broadcom Inc.

Comment Type T Comment Status X

The target differential peak-to-peak amplitude and slew time of the crosstalk generator, as observed at TP4, are TBD.

SuggestedRemedy

Since the crosstalk generator is used to represent near-end aggression from the the module transmitter outputs, the largest amplitude and smallest transition time allowed for a module output (as observed at TP4) should be used to represent worst-case aggression. Change:

"The crosstalk generator is calibrated at TP4 (without the use of a reference receiver) with target differential peak-to-peak amplitude of TBD mV and slew time of TBD ps between - TBD V and +TBD V."

To:

"The crosstalk generator is calibrated so that the differential peak-to-peak output voltage and transition time, as measured at TP4, are as close to the limits in Table 120G-3 as practical."

Proposed Response Response Status O

C/ 120G SC 120G.3.1.5 P 233

Ghiasi, Ali

Ghiasi Quantum/Inphi

Comment Type TR Comment Status X

Addressing the TBD in the paragraph

SuggestedRemedy

A fast ASIC with 7.6 ps output rise time when passes through a mated board with just 5 dB loss produces 12 ps 20-80% rise time. I suggest 24 ps for the slew from -400 mV to + 400 mV and with amplitude of 800 mV, the reason amplitude is reduced is due assumption that signal will have pre-emphasis on for this measurement otherwise one could go with 900 mV amplitude I don't believe that is reasonable.

Proposed Response Response Status O

C/ 120G	SC 120G.3.1.5	P 23	33	L 17	# 124
Ran, Adee		Intel			
Comment Typ	De TR	Comment Status	x		

"The crosstalk generator is calibrated at TP4 (without the use of a reference receiver) with target differential peak-to-peak amplitude of TBD mV and slew time of TBD ps between -TBD V and +TBD V"

This is the host output test; the crosstalk generator represents the module output. We specify the PtP amplitude and transition time for modules at TP4 in Table 120G–3. The calibration should use the maximum amplitude and minimum transition time values from that table.

SuggestedRemedy

Change the quoted sentence to:

"The crosstalk generator is calibrated at TP4 (without the use of a reference receiver) with targets equal to the Differential peak-to-peak output voltage (max) and Transition time (min, 20% to 80%) in Table 120G-3".

Proposed Response Response Status O

TP1a parameter proposed values/text

Comment #	TBD #1 (mV)	TBD #2 (ps)	TBD #3 (mV)	TBD #4 (mV)						
14 (M Dudek)	900 7.5 -270 270									
62 (M Wu)	900	12	-2700	2700						
68 (A Healey)	"The crosstalk generator is calibrated so that the differential peak-to-peak output voltage and transition time, as measured at TP4, are as close to the limits in Table 120G-3 as practical." [PPV = 900 mV, TT = 7.5 ps]									
84 (A Ghiasi)	800	24	-400	400						
124 (A Ran)	"The crosstalk generator is calibrated at TP4 (without the use of a reference receiver) with targets equal to the Differential peak-to-peak output voltage (max) and Transition time (min, 20% to 80%) in Table 120G-3". [PPV = 900 mV, TT = 7.5 ps]									
Consensus	900? ? ? ? ?									

All counter-propagating signals are asynchronous to the co-propagating signals using the PRBS13Q (see 120.5.11.2.1) or PRBS31Q (see 120.5.11.2.2) pattern, or a valid 100GBASE-R, 200GBASE-R, or 400GBASE-R signal. For the case where PRBS13Q or PRBS31Q are used with a common clock, there is at least 31 UI delay between the patterns on one lane and any other lane, so that the symbols on each lane are not correlated. The crosstalk generator is calibrated at TP4 (without the use of a reference receiver) with target differential peak-to-peak amplitude of TBD mV and slew time of TBD ps between -TBD V and +TBD V.

TP4 XTALK comments, part 1

C/ 120G SC 120G	3.2.2	P 235	L 34	# 17	C/ 120G	SC	120G.3.2	2.2	P 235	L 33	# 63
Dudek, Mike		Marvell			Wu, Mau-Li	n			MediaTek		
Comment Type TR	Comm	ent Status X			Comment T	ype	т	Comment	t Status X		
The module near-e to the largest and f signal can be slowe	nd output sigr astest signal t er.	hal should be meas hat the host can su	ured with a cros upply. The risetir	stalk signal equivalent ne for the far -end	There a Accordii TP4 sha output v Module	re so ng to all be oltag outpu	me TBDs the analy aligned v e swing a ut, Host ir	for crosstalk sis explored i vith that of Mo at TP1a, which aput, & Modul	calibration spect in wu_3ck_adhoo odule output spect h is 870 mV now e input specs.	s for Host Outpu :_02_010621.pd ;, which is 900 n ; shall be aligned	t test. f, the target swing at IV. Similarly, the I among Host output,
Change "The cross receiver) with targe time of TBD ps." to reference receiver) transition time of 7. for the far-end mea	talk generator t differential p "The crosstal with target dif 5 ps for the ne surment."	r is calibrated at TF eak-to-peak amplit k generator is calik fferential peak-to-p ear end measurem	P1a (without the u ude of TBD mV prated at TP1a (v eak amplitude of ent and target tra	use of a reference and target transition vithout the use of a 870 mV and target ansition time of 15 ps	SuggestedR Propose Module " with 19 ps." Proposed R	e the outpu targe	dy following ut: 120G.3 et differen nse	paragraph to 3.2.2 (Page 2 tial peak-to-p Response	replace the origi 35, L33) eak amplitude of Status O	nal on <mark>e</mark> 870 mV and tar	get transition time of
Proposed Response	Respon	ose Status O			C/ 120G	SC	120G 3	22	P 235	1 33	# 60
					Healey, Ad	am	1200.0		Broadcom In	C	. 103
	222	0.000	6212.007		Comment 7	уре	Т	Commer	nt Status X	- 10 C	
C/ 120G SC 120G Brown, Matt	.3.2.2	P 235 Huawei	L 33	# 36	The tar are TBI	getd D.	ifferential	peak-to-peal	k amplitude and	transition time, a	as observed at TP1a,
Comment Type T	Comm	ent Status X			Suggested	Reme	dy				
The specified value SuggestedRemedy Provide values. Proposed Response	es for the mod Respor	lule output EH/VEC	: crosstalk param	ieters (2x) are TBD.	Since ti transmi output (Change "The cr target o To: "The cr and tran practica	he cri itter o (as ol e: ossta differe ossta nsitio al."	osstalk ge outputs, th bserved a alk genera ential pea alk genera n time, as	enerator is us ne largest am at TP1a) shou ator is calibrat k-to-peak am ator is calibrat s measured a	ed to represent i plitude and smal ild be used to rep ted at TP1a (with plitude of TBD n ted so that the di at TP1a, are a clo	near-end aggres lest transition tir present worst-ca nout the use of a nV and target tra fferential peak-to pse to the limits	sion from the the host ne allowed for a host se aggression. reference receiver) with nsition time of TBD ps." p-peak output voltage in Table 120G-1 as
					Proposed F	Pasno	nse	Posnons	o Status O		

TP4 XTALK comments, part 2

P 235	L 34	# 86
Ghiasi Quan	tum/Inphi	
ent Status X aph		
time, the full swin iss, then I sugges) mV, the reason is on for this meas that is reasonable	g is about 2x. Bu st 20 ps for the sl amplitude is redu urement otherwis	t given that module ew from -350 mV to + ced is due assumption e one could go with
se Status O		
P 235	L 34	# 127
Intel		10
nt Status X ted at TP1a (witho plitude of TBD m	out the use of a re V and target trans	eference receiver) with ition time of TBD ps"
crosstalk general sition time for hos	tor represents the sts at TP1a in Tak	host output. We ble 120G-1. The
	Ghiasi Quan nt Status X aph e time when pass time, the full swin ss, then I sugges imv, the reason on for this meas that is reasonable se Status O P 235 Intel nt Status X ted at TP1a (withough plitude of TBD m) crosstalk generations sition time for hos	Ghiasi Quantum/Inphi <i>nt Status</i> X aph e time when passes through a matu- time, the full swing is about 2x. Bu ss, then I suggest 20 ps for the slu on for this measurement otherwise that is reasonable. <i>P</i> 235 L 34 Intel <i>nt</i> Status X ted at TP1a (without the use of a re- plitude of TBD mV and target trans- crosstalk generator represents the sition time for hosts at TP1a in Tal-

Change the quoted sentence to:

"The crosstalk generator is calibrated at TP1a (without the use of a reference receiver) with targets equal to the Differential peak-to-peak output voltage (max) and Transition time (min, 20% to 80%) in Table 120G-1".

Proposed Response Response Status O

TP4 parameter proposed values/text

Comment #	TBD #1, PP voltage (mV)	TBD #2 (ps), transition time (ps)
17 (M Dudek)	870	7.5 NE, 15 FE (new text required)
63 (M Wu)	870	19
69 (A Healey)	reference Table 120G-1 (870 in D1.4) next text required	reference Table 120G-1 (7.5 in D1.4) new text required
86 (A Ghiasi)	"20 ps for the slew from -350 mV to +350	mV and with amplitude of 700 mV"
127 (A Ran)	reference Table 120G-1 (870 in D1.4)	reference Table 120G-1 (7.5 in D1.4)
Consensus	?	?

All counter-propagating signals are asynchronous to the co-propagating signals using the PRBS13Q (see 120.5.11.2.1) or PRBS31Q (120.5.11.2.2) pattern, or a valid 100GBASE-R, 200GBASE-R, or 400GBASE-R signal. For the case where PRBS13Q or PRBS31Q are used with a common clock, there is at least 31 UI delay between the patterns on one lane and any other lane, so that the symbols on each lane are not correlated. The crosstalk generator is calibrated at TP1a (without the use of a reference receiver) with target differential peak-to-peak amplitude of TBD mV and target transition time of TBD ps.

TP4a XTALK comments, part 1

CI 120G SC 120G.3.3.2.1 P238 L 54 # 19	C/ 120G SC 120G.3.3.2.1 P 238 L 54 # 70
Dudek, Mike Marvell	Healey, Adam Broadcom Inc.
Comment Type TR Comment Status X	Comment Type T Comment Status X
The crosstalk used in the calibration of the host stressed signal should match theor used for the test for the module output	osstalk The target differential peak-to-peak amplitude and transition time, as observed at TP1a, are TBD.
Currented Demote	SuggestedRemedy
Change "The counter propagating crosstalk signals during calibration of the stresse are asynchronous with target amplitude of TBD mV peak-to-peak differential and 20 80% target transition time of TBD ps." to "The counter propagating crosstalk signals calibration of the stressed signal are asynchronous with target differential peak-to-p amplitude of 870 mV and target transition time of 7.5 ps for the near end calibration target transition time of 15 ps for the far-end calibration"	d signal input signal calibration, the amplitude and transition times should be set to agree with the values measured at the output of the host under test (TP1a). change: beak and and change: The counter propagating crosstalk signals during calibration of the stressed signal are asynchronous with target amplitude of TBD mV peak-to-peak differential and 20% to 80% target transition time of TBD ps as measured at TP1a (without the use of a reference receiver).
Proposed Response Response Status O	To: "The counter propagating crosstalk signals are asynchronous during calibration of the stressed signal. The crosstalk generator is calibrated so that the differential peak-to-peak output voltage and transition time, as measured at TP1a, are as close as practical to the values measured at the output of the host under test (at TP1a) without the use of a reference receiver."

Proposed Response

Response Status O

TP4a XTALK comments, part 2

			28						
CI 120G SC 120G.3.3.2.1	P 238	L 54	# 64	<u> </u>					
Wu, Mau-Lin	MediaTek			C/ 120G	SC 120G.3	.3.2.1	P 238	L 54	# 128
Comment Type T Co	nment Status X			Ran, Adee			Intel		13
There are some TBDs for cro According to the analysis exp TP4 shall be aligned with that output voltage swing at TP1a Module output, Host input, &	sstalk calibration spec lored in wu_3ck_adho of Module output sper , which is 870 mV now Module input specs.	s for Host Outpu c_02_010621.pd c, which is 900 n r, shall be aligned	t test. If, the target swing at NV. Similarly, the d among Host output,	Comment (addre "The c asynct	Type TR ssing TBD) ounter propaga	Comment S ating crosstalk sig	tatus X gnals during o	alibration of the	stressed signal are
SuggestedRemedy				target	transition time	of TBD ps"	i bo inte per	in to peak differe	
Propose the following paragra Host input: 120G.3.3.2.1 (Pag " with target amplitude of 87 transition time of 19 ps as me Proposed Response Response	ph to replace the origi (238, L54)) O mV peak-to-peak di asured at TP1a" ponse Status O	inal one fferential and 20'	% to 80% target	This is host's maxim then it host o	the host stress own transmitte um amplitude may benefit fro utput specificat	sed input test; th r. For calibration and minimum tra om less crosstalk tions, it is accept	e actual coun purposes we nsition time. during the ac able.	ter-propagating s can assume tha If the host does r ctual test - but as	ignals are from the t the host uses the iot reach the limits, long as it meets the
7 120G SC 120G.3.3.2.1 Brown, Matt	P 238 Huawei	L 54	# 37	We sp calibra that ta	ecify the PtP a tion should use ble.	m <mark>plitude and trans the maximum a</mark>	nsition time fo implitude and	or hosts at TP1a i minimum <mark>t</mark> ransit	n Table 120G–1. Th ion time values fron
Comment Type T Co	nment Status X		(2.)	Suggested	Remedy				
SuggestedRemedy	ost stressed input cros	sstaik parameter	s (2x) are TBD.	Chang	e the quoted s	entence to:			
Provide values. Proposed Response Res	ponse Status O			"The c signal equal t to 80%	ounter-propaga and are calibra to the Different b) in Table 120	ating crosstalk sig ated at TP1a (with ial peak-to-peak G-1".	gnals are asy nout the use o output voltage	nchronous with r of a reference rec e (max) and Tran	espect to the input wiver) with targets sition time (min, 20
7 120G SC 120G.3.3.2.1	P 238	L 54	# 87	Proposed I	Response	Response S	tatus O		
ihiasi, Ali	Ghiasi Quant	um/Inphi							
Comment Type TR Co	mment Status X								
Addressing the TBD in the pa	ragraph								
uggestedRemedy									
A fast ASIC with 7.6 ps output loss produces 12 ps 20-80% ps but would be difficult to ge the signal will have pre-emph suggest to go with 800 mV	t rise time when passe rise time. I suggest 12 nerate such fast rise ti asis enabled getting m	es through a mat 2 ps rise time and me through mate hore than 800 m\	ed board with just 5 dB d possibly as fast as 10 ed board. Given that / could be difficult. 1						
Proposed Response Res	ponse Status O								

TP4a parameter proposed values/text

Comment #	TBD #1 (mV)	TBD #2 (mV)				
19 (M Dudek)	870	NE=7.5, FE=15				
64 (M Wu)	870	19				
70 (A Healey)	as close as practical to values i	measured at TP1a of host under test				
87 (A Ghiasi)	800	12 or 10				
128 (A Ran)	per Table 120G-1, new text required [D1.4: VPP=870, TT=7.5]					
Consensus	?	?				

The counter propagating crosstalk signals during calibration of the stressed signal are asynchronous with target amplitude of TBD mV peak-to-peak differential and 20% to 80% target transition time of TBD ps as

measured at TP1a (without the use of a reference receiver). The crosstalk signal transition time is calibrated with PRBS13Q. The pattern may be changed to a valid 100GBASE-R, 200GBASE-R, or 400GBASE-R signal for amplitude calibration and the stressed input test. For the case where the PRBS13Q pattern is used with a common clock, there is at least 31 UI delay between the PRBS13Q patterns on one lane and any other lane, so that the symbols on each lane are not correlated. Any one of these patterns is sufficient as a crosstalk aggressor with all lanes active during the stressed input test.

TP1 XTALK comments, part 1

C/ 120G SC 120G.3.	4.1.1	P 242	L2	# 20	C/ 120G	SC	120G.3.4.	1.1	P 242	L2	# 65
Dudek, Mike		Marvell		83 - 2	Wu, Mau-L	in			MediaTek		
Comment Type TR	Comment	Status X			Comment	Туре	Т	Commer	t Status X		
The crosstalk used in crosstalk used for the SuggestedRemedy	the calibration test for the hos	of the module st output	stressed signal	should match the	There a Accord TP4 sh output	are son ling to t nall be a voltage	ne TBDs f the analys aligned wit swing at	or crosstalk is explored h that of M TP1a, whic	a calibration spect in wu_3ck_adho odule output spe h is 870 m∨ now	s for Host Outpu c_02_010621.pc c, which is 900 r r, shall be aligne	ut test. df, the target swing at mV. Similarly, the d among Host output.
Change to "a target ar between -270mV and	+270mV of 7.5	ImV differential	peak-to-peak a	nd target slew time	Module	outpu	t, Host inp	ut, & Modu	le input specs.	,	
Proposed Response	Response	Status O			Suggested	Remed	ly				
C/ 120G SC 120G.3.	4.1.1	P 242	L2	# 39	Propos Module " with 2.7 V a	e the field the field the input: In target and +2.1	ollowing p 120G.3.4 amplitude 7 V of 12	aragraph to 1.1 (Page) of 900 mV os as meas	replace the orig 242, L2) / peak-to-peak di ured at TP4"	inal one fferential <mark>and ta</mark>	rget slew time betweer
Brown, Matt	Commont	Huawei		50	Proposed F	Respon	se	Response	e Status O		
The specified values f	or the module	stressed input	crosstalk param	eters (4x) are TBD.							
SuggestedRemedy Provide values.											
Proposed Posponso	Pasnansa	Status 0									

TP1 XTALK comments, part 2

C/ 120G SC 120G.3.4.1.1

т

P 242 Broadcom Inc. L2

71

Healey, Adam Comment Type

Comment Status X

The target differential peak-to-peak amplitude and slew time of the crosstalk generator, as observed at TP4, are TBD.

SuggestedRemedy

Since the crosstalk generator is used as a proxy for the module transmitter(s) during stressed input signal calibration, the amplitude and transition times should be set to agree with the values measured at the output of the module under test (TP4). Change:

"The counter propagating crosstalk signals during calibration of the stressed signal are asynchronous with target amplitude of TBD mV peak-to-peak differential and target slew time between -TBD mV and TBD mV of TBD ps as measured at TP4 (without the use of a reference equalizer)."

To:

"The counter propagating crosstalk signals are asynchronous during calibration of the stressed signal. The crosstalk generator is calibrated so that the differential peak-to-peak output voltage and transition time, as measured at TP4, are as close as practical to the values measured at the output of the module under test (at TP4) without the use of a reference receiver."

Proposed Response Response Status O

C/ 120G SC 120G.3.4.1.1

P 242

L3

89

Ghiasi, Ali

Ghiasi Quantum/Inphi

Comment Type TR Comment Status X

Addressing the TBD in the paragraph

SuggestedRemedy

A fast ASIC with 7.6 ps output rise time when passes through a mated board with just 5 dB loss produces 12 ps 20-80% rise time, the full swing is about 2x. But given that module PCB may have lower than HCB loss, then 1 suggest 20 ps for the slew from -350 mV to + 350 mV and with amplitude of 700 mV, the reason amplitude is reduced is due assumption that signal will have pre-emphasis on for this measurement otherwise one could go with 900 mV amplitude I don't believe that is reasonable.

Proposed Response Response Status O

C/ 120G	SC 120G.3.4	4.1.1 P 242	L2	# 129
Ran, Adee		Intel		
Comment Typ	e TR	Comment Status X		

(addressing TBD)

"The counter propagating crosstalk signals during calibration of the stressed signal are asynchronous with target amplitude of TBD mV peak-to-peak differential and target slew time between –TBD mV and TBD mV of TBD ps as measured at TP4"

This is the module stressed input test; the actual counter-propagating signals are from the module's own transmitter. For calibration purposes we can assume that the module uses the maximum amplitude and minimum transition time. If the module does not reach the limits, then it may benefit from less crosstalk during the actual test - but as long as it meets the module output specifications, it is acceptable.

We specify the PtP amplitude and transition time for modules at TP4 in Table 120G–3. The calibration should use the maximum amplitude and minimum transition time values from that table.

SuggestedRemedy

Change the quoted sentence to:

"The counter-propagating crosstalk signals are asynchronous with respect to the input signal and are calibrated at TP4 (without the use of a reference receiver) with targets equal to the Differential peak-to-peak output voltage (max) and Transition time (min, 20% to 80%) in Table 120G-3".

Proposed Response Response Status O

TP1 parameter proposed values/text

Comment #	TBD #1 (mV)	TBD #2 (mV)	TBD #3 (mV)	TBD #4 (ps)		
20 (M Dudek)	900	-270	270	7.5		
65 (M Wu)	900	-2700	2700	12		
71 (A Healey)	"The counter propagating crosstalk signals are asynchronous during calibration of the stressed signal. The crosstalk generator is calibrated so that the differential peak-to-peak output voltage and transition time, as measured at TP4, are as close as practical to the values measured at the output of the module under test (at TP4) without the use of a reference receiver." [PPV = 900 mV, TT = 7.5 ps]					
89 (A Ghiasi)	700	-350	350	20		
129 (A Ran)	"The counter-propagating crosstalk signals are asynchronous with respect to the input signal and are calibrated at TP4 (without the use of a reference receiver) with targets equal to the Differential peak-to-peak output voltage (max) and Transition time (min, 20% to 80%) in Table 120G-3". [PPV = 900 mV, TT = 7.5 ps]					
Consensus	?	?	?	?		

The counter propagating crosstalk signals during calibration of the stressed signal are asynchronous with target amplitude of TBD mV peak-to-peak differential and target slew time between -TBD mV and TBD mV of TBD ps as measured at TP4 (without the use of a reference equalizer). The crosstalk signal transition time is calibrated with a PRBS13Q pattern (see 120.5.11.2.1). The pattern may be changed to a valid 100GBASE-R, 200GBASE-R, or 400GBASE-R signal for amplitude calibration and the stressed input test. For the case where the PRBS13Q pattern is used with a common clock, there is at least 31 UI delay between the PRBS13Q patterns on one lane and any other lane, so that the symbols on each lane are not correlated. Any one of these patterns is sufficient as a crosstalk aggressor with all lanes being active during the stressed input test.

Summary

We need to make a number of decisions...

- Whether host output and module output transition times need to change or whether they stay at D1.4 values (7.5 ps).
- ✤ For some test ports whether to use slew rate or transition time.
- ✤ For some test ports whether to use specified or measured values.
- For each test port the XTALK parameter values, specified locally versus reference to a table.