C/ 119 SC 119.2.4.4 P 100 L # 1 McDermott, Thomas Fujitsu	C/ 119 SC 119.2.4.4 P 98 L 6 # 3 Butter, Adrian GLOBALFOUNDRIES GLOBALFOUNDRIES # 3 1
Comment Type T Comment Status X The AM's are inserted so they appear once every 163840 257b blocks according to paragraph 119.2.4.4. The interpretation of the text is that there are (163840-8 = 163832) data blocks in between each AM (itself 8 blocks). Figure 119-6 drawing is clear, but the figure text seems to say that there are 163840 257b data blocks in between the AM insertions. SuggestedRemedy Change "163 840 257-bit blocks between AM insertions" to "AM appears once every 163 840 257-blocks" to match the text in 119.2.4.4.	Comment Type TR Comment Status X The alignment marker encodings in Table 119-1 contain many "TBDs". Further analysis of this alignment marker structure (with 64-bit common part and 56-bit unique part) reveals undesirable clock content which is reduced using a shorter alignment marker (with 48-bit common part and 48-bit unique part). To reduce the complexity of alignment marker processing logic for the shorter marker, as well as increase format compability of the shorter marker with that defined in 802.3bj, padding based on PRBS9 sequences is both interleaved with and appended to the marker. Refer to http://www.ieee802.org/3/bs/public/adhoc/logic/feb9_16/gustlin_01_0216_logic.pdf for details.
Proposed Response Response Status W [Editor's note: Comment type set to T and subclause changed from 2.4.4 to 119.2.4.4]	SuggestedRemedy Modify the text, Figure 119-4 and Table 119-1 contained in 119.2.4.4 as specified in butter_3bs_01_0316 (with editorial license). Proposed Response Response Status O
Cl 119 SC 119.2.4.5 P 100 L 32 # 2 Butter, Adrian GLOBALFOUNDRIES Comment Type T Comment Status X There is no clear connection between variables tx_scrambled_am and tx_scrambled_am_j. Also, defining tx_scrambled_am as 257 bits does not align with the width implied in 119.2.4.4, page 97, line 25. SuggestedRemedy Modify 119.2.4.5 to define tx_scrambled_am as 10,280 bits (equal to 2 FEC codeword message blocks) via adopting the text contained in butter_3bs_01_0316 (with editorial license). Proposed Response Response Status O	Cl 120E SC 120E.3.4.1.1 P 261 L 51 # 4 Szczepanek, Andre Inphi Comment Type ER Comment Status X The "target transition time", value has been in magenta text for a ballot cycle. Changes were made to other transition time values during D1.1 comment resolution in black. There is no reason for this value to remain in magenta. Change the text color of this value to black. SuggestedRemedy In the text "target transition time of 12 ps" change the text color of "12" from Magenta to Black Proposed Response Response Status O

C/ 120E	SC 120E.3.3.	3.1 P 2	258	L 47	# 5	C/ 120D	SC 120D.4	P	43	L 18	# 7	
Szczepanek,	Andre	Inphi				Szczepanel	k, Andre	Inphi				
Comment Typ The CRU ballot cyc yet. If consen- colour of This char SuggestedRe In 120E.3 In 120E.3 In 120E.4 Proposed Res	pe ER J corner freque cle (it was blac asus is not achi the value shou nge should be emedy 3.3.3.1 (Page 2 3.4.1.1 (Page 2 4.2 (Page 26 asponse	Comment Status ency, value of "10MH k D1.0). Consensus ieved to change the lld be changed back applied to all referer 258, Line 47) change 260, Line 53) change 52, Line 42) change	X Iz" has been ir has not been value during I to Black. nees to 10 MH e colour of "10 colour of "10M O	n magenta text s achieved on cha D1.2 comment re Iz CRU bandwidt MHz" from Mage MHz" from Mager	ince the D1.0 anging the value esolution then the th in 120E. enta to Black. enta to Black. nta to Black.	Comment 7 In Table The "Si values request D1.1 cc remain Change Suggested In Table Change Change Proposed F	ype ER e 120D-7: ngle-ended devident ngle-ended devident ngle-ended devident have been in matrix ngle-ended ting a change. Comment resolution nmagenta. the text color of the text color of the text color of the text color of the text color. Remedy the 120D-7: Single-ended the "Single-ended devident text color of the text color. Single-ended devident text color.	Comment Status ice capacitance" (Co agenta text for a ball hanges that have be on were made in bla of these values to bla device capacitance" board capacitance" Response Status	X), and "Sing of cycle wit en made to ck. There is ck. (Cd) value (Cd) value O	gle-ended be hout any cor o other value no reason f text color fr text color fro	oard capacitance" (Cb) mments or contributions es in this table during for these values to rom Magenta to Black. om Magenta to Black.	
C/ 120D Szczepanek,	SC 120D.1 Andre	P 2 Inphi	236	L 17	# [6]	C/ 120D Szczepanel	SC 120D.4 k, Andre	P 2	43	L 41	# [8]	
Comment Type ER Comment Status X The cited electrical interface length has been magenta 25cm for a ballot cycle without any comments or contributions requesting a change. Change 25 cm (Magenta) to 25 cm (Black). SuggestedRemedy SuggestedRemedy Change 25 cm (Magenta) to 25 cm (Black). Proposed Response Response Status O					cycle without any	Comment Type ER Comment Status X In Table 120D-7: The "Continuous time filter , DC gain 2", "Continuous time filter, zero frequencies" and "Continuous time filter, pole frequencies" values have been in magenta text for a ballot cycle without any comments or contributions requesting a change. Changes that have been made to other values in this table during D1.1 comment resolution were made in black. There is no reason for these values to remain in magenta.						
						Suggestedf In Table Change to Black Change Magent Change Black. Change Magent Change Magent	Remedy e 120D-7: e "Continuous tir k. e "Continuous tir ta to Black. e "Continuous tir ta to Black. e "Continuous tir ta to Black. e "Continuous tir ta to Black. Response	ne filter , DC gain 2, ne filter , DC gain 2, ne filter , DC gain 2, ne filter, zero freque ne filter, pole freque	Minimum v Maximum Step size" ncies" (Fz1 ncies" (Fp1	value" value value" value value text c , Fz2) value , Fp2) value	e text color from Magenta e text color from color from Magenta to es text color from es text color from	
						ļ	Change Magent Change Magent Proposed F	Change "Continuous tin Magenta to Black. Change "Continuous tin Magenta to Black. Proposed Response	Change "Continuous time filter, zero frequei Magenta to Black. Change "Continuous time filter, pole frequei Magenta to Black. Proposed Response Response Status	Change "Continuous time filter, zero frequencies" (Fz1 Magenta to Black. Change "Continuous time filter, pole frequencies" (Fp1 Magenta to Black. Proposed Response Response Status O	 Diack. Change "Continuous time filter, zero frequencies" (Fz1, Fz2) value Magenta to Black. Change "Continuous time filter, pole frequencies" (Fp1, Fp2) value Magenta to Black. Proposed Response Response Status O 	

C/ 120D SC 120D.4 Szczepanek, Andre	P 244 Inphi	L 5	# 9	C/ 120D SC 120D Szczepanek, Andre	.4 <i>P</i> 244 Inphi	L 12	# [11		
Comment Type ER In Table 120D-7: The "Level seperation of cycle. Changes that has resolution were made in Change the text color of	Comment Status X mismatch ratio", (R_lm) value ve been made to other value n black. There is no reason fo of this value to black.	e has been in ma s in this table do or this value to r	agenta text for a ballot uring D1.1 comment emain in magenta.	Comment Type ER In Table 120D-7: The "Normalized D for a ballot cycle. C comment resolution magenta. Change the text co	Comment Status X FE coefficient magnitude limit, hanges that have been made n were made in black. There is lor of this value to black.	for n=1", value ha to other values in t no reason for this	s been in magenta text his table during D1.1 value to remain in		
In Table 120D-7: Change "Level seperat	ion mismatch ratio" (R_lm) va	alue text color fr	om Magenta to Black.	SuggestedRemedy In Table 120D-7:					
Proposed Response	Response Status O			Change "Normalize Magenta to Black	ed DFE coefficient magnitude l	imit, for n=1" value	e text color from		
				Proposed Response	Response Status O				
C/ 120D SC 120D.4	P 244	L 10	# 10						
Szczepanek, Andre	Inphi			C/ 120D SC 120D	.4 P 244	L 17	# 12		
Comment Type ER	Comment Status X			Szczepanek, Andre	Inphi				
The "Decision feedback ballot cycle. Changes the comment resolution we magenta. Change the text color c	k equalizer (DFE) length", va hat have been made to other re made in black. There is no of this value to black.	lue has been in values in this ta preason for this	magenta text for a able during D1.1 value to remain in	Comment Type ER Comment Status X In Table 120D-7: The "One-sided noise spectral density", value has been in magenta text for a ballot cycle. Changes that have been made to other values in this table during D1.1 comment resolution were made in black. There is no reason for this value to remain in magenta.					
SuggestedRemedy				Change the text co	lor of this value to black.				
In Table 120D-7:				SuggestedRemedy					
Change "Decision feed	back equalizer (DFE) length"	value text colo	r from Magenta to Black.	In Table 120D-7: Change "One-sided noise spectral density" value text color from Maganta to Black					
Proposed Response	Response Status O			Proposed Response Response Status O					

Cl 120E SC 120E.3.1.6 P 253 L 5 # 13 Szczepanek, Andre Inphi Inphi	C/ 120E SC 120E.3.3.3 P 258 L 39 # 15 Szczepanek, Andre Inphi					
Comment Type ER Comment Status X The "target transition time", value has been in magenta text for a ballot cycle. Changes were made to other transition time values during D1.1 comment resolution in black. There is no reason for this value to remain in magenta. Change the text color of this value to black.	Comment Type ER Comment Status X In Tables 120E-5 & 120E-8: The "Applied pk-pk sinusoidal jitter" value should be black not magenta in color. Although there is support for defining additional frequencies no consensus presnation has been adopted. Unitil this happens this value should be made black.					
SuggestedRemedy In the text "target transition time of 12 ps" change the text color of "12" from Magenta to Black Proposed Response Response Status O	SuggestedRemedy In Tables 120E-5: Change the "Applied pk-pk sinusoidal jitter" value from magenta to black in color. In Tables 120E-8: Change the "Applied pk-pk sinusoidal jitter" value from magenta to black in color.					
Cl 120E SC 120E.3.2 P 255 L 47 # 14 Szczepanek, Andre Inphi	Proposed Response Response Status O					
Comment Type ER Comment Status X In Table 120E-3: The "ESMW (Eye Symmetry mask width)", value has been in magenta text for a ballot cycle. The equivalent host module value was changed to black in D1.1 comment resolution. There is no reason for this value to remain in magenta. Change the text color of this value to black	C/ 120E SC 120E.3.3.3.1 P 259 L 24 # 16 Szczepanek, Andre Inphi Comment Type ER Comment Status X The "target transition time", value has been in magenta text for a ballot cycle. Changes were made to other transition time values during D1.1 comment resolution in black. There is no reason for this value to remain in magenta					
SuggestedRemedy In Table 120E-3: Change "ESMW (Eye Symmetry mask width)" value text color from Magenta to Black Proposed Response Response Status	Change the text color of this value to black. SuggestedRemedy In the text "target transition time of 12 ps" change the text color of "12" from Magenta to Black					
	Proposed Response Response Status O					

C/ 120E	SC 120E.3.3.3	.1 /	[⊃] 259	L 2	# 17	C/ 120E	SC 1	20E.3.4.1.	1 P 261	L 30	# 19
Szczepanek	k, Andre	Inp	hi			Szczepanek	, Andre	Э	Inphi		
Comment T "stresse should I The sar 120F 3	ype T ed pattern data ra be baud rate give ne issue is prese 4.1.1	Comment Stat te (2.65625 GBc n this is PAM4 ent in the Module	us X)." clause			Comment T The TBI "The tar input tes Use a v Electric:	ype D in this get pat st is TB alue of al ad bo	TR s sentence ttern gener 3D ps. 9.5ps for t	Comment Status X needs to be defined. ator 20% to 80% trans	sition time in the agreement on tl	e module stressed his value at the Feb 22nd
SuggestedF Change "stresse to "stresse in 120E Proposed R	Remedy ed pattern data ra ed pattern baud ra .3.3.3.1 and 120 Response	te (2.65625 GBc ate (2.65625 GBc E.3.4.1.1 Response Stati)." d)."			SuggestedF Change "The tar input tes to "The tar input tes	Remedy get pat st is TE get pat st is 9.5	ttern gener BD ps." ttern gener 5 ps."	ator 20% to 80% trans ator 20% to 80% trans	sition time in the	e module stressed
-						Proposed R	espons	se	Response Status 0		
Cl 120E Szczepanek	SC 120E.3.3.2 , Andre	l Inp	^D 257 Jhi	L 47	# 18						
Comment T The TB of the tr specific	ype T D in the sentence ansmit equalizati ation in tables 12	Comment State "Even-odd jitter on setting." is an 0E-6, and 120E-	us X shall be less th unecessary du 9	nan or equal to TE uplication of the e	BD UI regardless ven-odd jitter						
SuggestedF Change "Even-c equaliza to "The Ev setting."	Remedy bodd jitter shall be ation setting." ven-odd jitter spe	less than or equa	al to TBD UI req met regardles	gardless of the tra	insmit equalization						
Proposed R	Response	Response Statu	is O								

C/ 120F	SC 120F 3 3	3.1	P 259	17	# 20	C/ 119	SC	119.244	P 97	/ 43	# 21	
Szczepane	ek. Andre	Un In	i 200	- 1	# 20	Koehler, Di	aniel		MorethanIP			
Comment		Comment Sta	atus X			Comment	Type	т	Comment Status X			
Chang of Stre transm Chang	ge the specification essed receiver test nitter jitter charact ge both Host and	on of pattern gene st calibration to u terization. Module stressed	erator jitter o se the profil	characteristics us e used in Annex rocedures.	ed in the setup phase 120D (C2C)	A deta descrit Suggested	iled ma bing the Remed	arker mappi e mapping f dy	ing function is missing. The function.	e following text sug	gests a way of	
SuggestedRemedy Remove Tables 120E–6, & 120E–9 In 120E.3.3.3.1, change "Random jitter and bounded uncorrelated jitter are added such that the output of the pattern generator approximates a jitter profile given in Table 120E–6" to "Random jitter and bounded uncorrelated jitter are added such that the output of the pattern generator approximates the CDAUI-8 C2C Output jitter profile given in Table 120D–1" In 120E.3.4.1.1, change						With a PRBS9 generator creating a pad data field of pad<519:0> where bit 0 is the first bit created by the free running PRBS generator. With common marker cm<47:0> and unique marker for lane i being um_i<47:0> construct a matrix of 16 rows and 120 bit columns as follows: With i=015 (1) am_txpayloads <i, 23:0=""> = cm<23:0>; am_txpayloads<i, 55:32=""> = cm<47:24>; am_txpayloads<i, 55:32=""> = cm<47:24>;</i,></i,></i,>						
"Rand pattern to "Rand pattern 120D-	lom jitter and bou n generator appro lom jitter and bou n generator appro –1"	nded uncorrelate oximates a jitter p nded uncorrelate oximates the CD/	d jitter are a profile given d jitter are a AUI-8 C2C	dded such that t in Table 120E–9 dded such that t Output jitter profi	he output of the " he output of the le given in Table	am_t am_t am_t Given derived	xpayloa xpayloa xpayloa i=015 d from	ads <i, 87:64<br="">ads<i, 95:88<br="">ads<i, 119:9<br="">and k=01 am_txpaylo</i,></i,></i,>	4> = um_i<23:0>; 3> = pad<(256+8i+7) : (256 96> = um_i<47:24>; 1 and y=i+16k, am_txmapp pads per the following expres	6+8i)>; ped_tmp may then ession.	be	
Proposed	Response	Response Sta	tus O			am_t	xmapp	ed_tmp<(10	0y+9):10y> = am_txpayload	ds <i,(10k+9):10k>;</i,(10k+9):10k>	(2)	
			To ensure all markers appear linear on each output lane, the inverse of the lane symbol distribution must be applied (see 119.2.4.7). That is, every 2nd group of 16 symbols the odd/even symbols are swapped. This is achieved as follows:									
						Given	w=01	1 and y=0	7 and x=16w+2y;	(3)		
						for even w: (copy two symbols) am_txmapped<10x+9 : 10x> = am_txmapped_tmp<10x+9 : 10x>; am_txmapped<10(x+1)+9 : 10(x+1)> = am_txmapped_tmp<10(x+1)+9 : 10(x+1)>;						
						for oc am_ am_	ld w: (s txmap txmap	swap two sy ped<10x+9 ped<10(x+1	/mbols) : 10x> = am_txmapped_tn 1)+9 : 10(x+1)> = am_txma	np<10(x+1)+9 : 10 pped_tmp<10x+9	(x+1)>; : 10x>;	
						Finally 136bit	to fill u pad as	up 8x257-bit s:	t this am_txmapped<1919:	0> is followed by		

am_txmapped<2055:1920> = pad<519:384>;

The result of the alignment marker mapping function is a deterministic mapping between alignment marker payloads and PCS lanes ensuring all bits are transmitted in the exact same order as placed into above	C/ 119 SC 119.2.6.2.2 P 107 L 24 # 23 Gustlin, Mark Xilinx						
am_txpayloads matrix rows. It compensates the permutation caused by the 10-bit symbol lane distribution and interleave of following functions.	Comment Type T Comment Status X The variable amp_valid currently has two TBDs on how the bits in the AMs are compared. In addition the definition needs to be cleaned up a little given the new format of the AMs.						
Note: This mapping fills prbs bits 07 in lane 0 bit positions 2431continuing with prbs bits 815 in lane 1 bit positions 2431 up toprbs bits 120127 in lane 15 bit positions 2431.It continues with prbs bits 128135 in lane 0 bit positions 5663 toprbs bits 248255 in lane 15 bit positions 5663.It continues with prbs bits 256263 in lane 0 bit positions 8895 toprbs bits 376383 in lane 15 bit positions 256263.Proposed ResponseResponse StatusO	Porposed solution and reasoning was presented in gustlin_02_0216_logic. SuggestedRemedy Change the definition of amp_valid to: Boolean variable that is set to true if the received 120-bit block is a valid alignment marker pay-load. The alignment marker payload, mapped to a PCS lane according to the process described in 119.2.4.4, consists of 96 known bits. The 48 bits of the common marker portion are compared on a nibble-wise basis (12 comparisons). If 9 or more nibbles in the candidate block match the corresponding known nibbles in the common portion of the alignment marker payload, the candidate block is considered a valid alignment marker payload.						
Cl 116 SC 116.4 P73 L 10 # 22 Gustlin, Mark Xilinx Comment Type T Comment Status X Currently the delay constraits for the MAC and PCS sublayers are TBD. Proposed delay constraints were presented in the logic ad hoc (gustlin_01_0216_logic. SuggestedRemedy Change the TBDs to 98304, 192, 245.76 for the MAC sublayer delays. Change the TBDs to 320000, 625, 800 for the PCS sublayer delays. Change the TBDs to 320000, 625, 800 for the PCS sublayer delays. Proposed Response Response Status O	Change the definition of pcs_lane to: A variable that holds the PCS lane number (0 to 15) received on lane x of the PMA service interface when amps_lock <x>=true. The PCS lane number is determined by the alignment marker payloads based on the mapping defined in 119.2.4.4. The 48 bits that are in the positions of the unique marker bits in the received alignment marker payload are compared to the expected values for a given payload position and PCS lane on a nibble-wise basis (12 comparisons). If 9 or more nibbles in the candidate block match the corresponding known nibbles for any payload position on a given PCS lane, then the PCS lane number is assigned accordingly.</x>						
	C/ 116 SC 116.5 P 76 L 8 # 24 Gustlin, Mark Xilinx Comment Type T Comment Status X						

The current skew constraints are magenta meaning they are tenative. Some data on our current PMD skew requirements were presented in the logic ad hoc (gustlin_03_0216_logic). The current magenta numbers are sufficient, and are not a burden in either FPGAs or ASIC/ASSPP.

SuggestedRemedy

Turn all skew point numbers blac (maximum and skew variation).

Proposed Response Response Status **O**

C/ 00 SC 0 Lusted, Kent	P 1 Intel	<i>L</i> 1	# 25	C/ 00 SC 0 Nowell, Mark	P Cisco	L	# 26			
Comment Type TR The proposed PAR me 200G rate to the proje versions of the various XS. Using the roman nume nomenclature, ie. CCA Furthermore, at the Be http://www.ieee802.org	Comment Status X odification from the 200GSM ct. If the PAR modification is s interfaces within the P802.3 eral convention "CC" for 200 AUI or CCMII or CCXS. erlin 2015 Plenary meeting, t g/3/bs/public/15_03/lusted_3 make a change to the draft'	F Study Group to accepted, then 3bs draft, include is antiquidated a he presentation bbs_01_0315.pdf	o P802.3bs will add a there be 200 Gb/s e an AUI, an MII and an and cumbersome in the f shows that an online	Comment Type ER Comment Status X The use of roman numerals to identify the MAC rates associated with various interfaces worked well when the roman numerals were simple and the number of such identified interfaces were few. P802.3by reverted to the more clear nomenclature approach of just stating the MAC rate with Arabic numbering to simplify the clarity when communicating. Not all participants have Euro-centric backgrounds where Roman numerals are better understood. With new MAC rates being developed, this will continue to be an issue.						
SuggestedRemedy Change all instances of Change all instances of Change all instances of	poll had consensus to make a change to the draft's nomenclature. SuggestedRemedy Change all instances of "CDAUI-n" to "400GAUI-n". Change all instances of "CDMII" to "400GMII" Change all instances of "CDXS" to "400GXS"				CDAUI-n would become 400GAUI-n CDMII would become 400GMII CDXS would become 400GXS					
To be accompanied w Proposed Response	ith a presentation. <i>Response Status</i> O			A supporting present SuggestedRemedy Make global change Make Global change Make global change Proposed Response	ation will be provided of CDAUI-n to 400GAUI-n of CDMII to 400GMII of CDXS to 400GXS <i>Response Status</i> 0					

C/ 120D SC 120D.3.	1.1 P 238	L 51	# 27	C/ 116 SC 116	6.4	P73	L 12	# 30	
					-				
To better support a Si should to be removed	NDR of 31 dB, scope quantization.	on errors and	pattern truncation errors	The CDMII Exter PHY, as noted in	: nder res n Note [sides above the PCS, therefore	e it can not b	e included as part of a	
SuggestedRemedy				SuggestedRemedy					
The transmitter output 94.3.12.5.2 with the ex- fits are performed. On other with a Dp value and is assigned the pa of 14 and sigma_e2 fo decribed in 92.8.3.7 a computed as in eq. 92 sigma_e2*^2.	t equalization is characterized u xceptions that the PRBS13Q ter- ie is performed with a Dp value of 2 and an Np Value 4000. Sig arameters names of sigma_e1 f or the computation with the Np v- re determined in the computation 2.9 using sigma_e computed as	sing the linear st pattern (see of 2 and an Ng gma_e is deter or the compute alue of 4000. \ on using an Np s the square ro	fit method described in 120.5.10.2.3) and two o value of 13 and the mined in both cases tition with the Np value /final and Pmax as o value of 13. SNDR is not of the sigma_e1^2 -	Change Note D f If a PHY includes to If an implementa extender include Proposed Response	from s the Cl tion inc s two C	DMII extender, then this includ ludes the CDMII extender, the DXS sublayers. <i>Response Status</i> 0	es two CDXS delay assoc	S sublayers. iated with the CDMII	
Proposed Response	Response Status 0								
				C/ 00 SC 0		Р	L	# 31	
		1.0	# 00	D'Ambrosia, John		Independent			
C/ FM SC	P Z	L 9	# 28	Comment Type E	R	Comment Status X			
Comment Type E CDXS should be adde	Comment Status X			Given recent discussions regarding CAUI-4 interfaces, it is becoming obvious that terminology or the lack of it can cause significant confusion in subsequent conversations. The CDAUI-16 and CDAUI-8 interfaces are specified, where FEC is necessary to meet the target BER.					
SuggestedRemedy									
Add CDXS to Keyword	as			SuggestedRemedy					
Proposed Response	Response Status 0			includes the two following steps - 1. Add the following definition to 1.4 - FEC protected interface - An optional electrical interface, whose electrical characteristics and target symbol error ratio have been					
C/ 1 SC 1.4	P	L	# 29	determined assu	inning u	le presence or forward erfor co			
				2. Define all option	onal ele	ectrical interfaces to be FEC pr	otected inter	faces. It is left to the	
FEC Lanes are used i 30.5.1.1.18 - i am not	in two places in Draft 1.2, on pa sure from this text what a FEC	ge 32 under 3 lane is.	0.5.1.1.17 and	editors to determine the appropriate location in 802.3bs for such a definition. <i>Proposed Response</i> Response Status O					
SuggestedRemedy add definition of "FEC	Lane"								
Proposed Response	Response Status 0								

Cl 116 SC 116.3.2 D'Ambrosia, John	2 P 70 Independent	L 12	# 32	Cl 120D Dawe, Piers	SC 120D.3.2	.2 <i>P</i> 242 Mellanox	L 14	# 34		
Comment Type T Editor's note asks if	Comment Status X a prefix is needed for the CDXS			Comment 7 This jitt	<i>ype</i> TR er tolerance tes	Comment Status X t appears to have a jitter co	rner frequency of	fb/8496 or 3.126471		
SuggestedRemedy Recommend that a p	prefix be added for CDXS			MHz. I extra de unlike a	his appears to esign effort beca anything else in	be inherited from Clause 94 ause it's close to the power 10, 25, 100 or 400G Ethern	, and such a low i supply switching f et (not counting C	frequency will cost frequencies. Also it's Clause 94), so will make		
Proposed Response	Response Status O				ns if using 120L	as an AUI.				
				Change	the corner free	mency to 5 or 10 MHz for n	W			
C/ 118 SC 118.1 D'Ambrosia, John	P 86 Independent	L 42	# 33	Proposed R	Response	Response Status O				
Comment Type TR	Comment Status X									
CDXS subclause ye	t to be completed.			C/ 120D	SC 120D.4	P 243	L 17	# 35		
SuggestedRemedy				Dawe, Piers	5	Mellanox				
1. Diagram 118-1 sh 2. Add basic outline	ould highlight the CDMII extender as follows	sublayer, and r	not just the CDXX.	<i>Comment T</i> 280 nF	<i>ype</i> E 110 nF	Comment Status X				
118.2 Summary of M	lajor Concepts			Suggested	Remedy					
118.4 Functional Blo	ock Diagram of CGMII Extender S	ublayer		2.8 x 10	0^-4 nF 1.1 x	10^-4 nF				
118.5 CDXS - functional block diag reference CDMII, no	ram - use Figure 119-2 (bottom o t PMA).	f diagram should	d be changed to	Proposed F	Response	Response Status 0				
118.6 Implementatio	n of CDAUI-16			C/ 120E	SC 120E.1	P 248	L 52	# 36		
118.7 Implementatio	n of CDAUI-8			Dawe, Piers	6	Mellanox				
Commenter intends	to submit proposed text.			Comment T	ype TR	Comment Status X				
Proposed Response Response Status O				A sentence has been added that isn't in 83E and should not be here: "The low-frequency 3 dB cutoff of the AC-coupling within the module shall be less than 50 kHz." For the transmit side, this spec is unnecessary because there is a module stressed input test with a long pattern. For the receive side (module output), the spec is not viable because no way of testing it is given (only one side of the AC coupling is accessible, unlike a passive copper link). 50 kHz is what 40GBASE-CR4 uses, at 10.3125 GBd, 24.44 dB, no FEC. This is 26.5625 GBd, 10.2 dB, with FEC but PAM4, so it could work fine with a higher low-frequency 3 dB cutoff anyway.						
				Suggested	Remedy					
				Delete	the sentence.					
				Proposed F	Response	Response Status 0				

Cl 120E SC 120E.3.1.2 Dawe, Piers	2 P 252 Mellanox	L 22	# 37	Cl 120E SC 120E.3.3.3 Dawe, Piers	P 258 Mellanox	L 39	# 40
Comment Type T "Unless otherwise noted PRBS13Q test pattern":	Comment Status X d, differential and common-m : what do you mean by "signa	node signal levels al levels"? Level	s are measured with a s 0, 1, 2 and 3?	Comment Type T Con The reference to the jitter mas be replaced by a set of 5 or 6	mment Status X sk in Table 88-13 with test cases.	its multitude of in	nplied test cases can
SuggestedRemedy Change "signal levels" t Proposed Response	to "signals". Response Status O			SuggestedRemedy 0.1 2 5 10 20 50 MHz 5 0.25 0.1 0.05 0.05 0.05 UI or 0.1 3.333 10 30 100 MHz 5 0.15 0.05 0.05 0.05 UI.			
Cl 120E SC 120E.3.1.0 Dawe, Piers	6.1 <i>P</i> 253 Mellanox	L 39	# 38	Also in Table 120E-8. Proposed Response Res	ponse Status O		
Comment Type E Gratuitous clutter SuggestedRemedy	Comment Status X	ago Grad/s to GH	z four timos	C/ 120E SC 120E.3.3.1 Dawe, Piers	P 259 Mellanox	L 10	# [41
Proposed Response	Response Status O		z, iour times.	Comment Type E Con The settings in this table aren first stage in calibration. It wo	<i>mment Status</i> X 't the ones used in the ould help to change the	e test, they are ter e title to somethin	mporary settings for a ng that reflects this.
C/ 120E SC 120E.3.2 Dawe, Piers	P 255 Mellanox	L 47	# 39	SuggestedRemedy Change "Pattern generator jitt Also Table 120E-9.	ter characteristics" to	"Pattern generato	or initial jitter settings".
Comment Type TR ESMW value is wrong: stressed input parameter	Comment Status X should match eye width here ers.	and ESMW in T	able 120E-5, host	Proposed Response Res	ponse Status O		
SuggestedRemedy Change 0.25 to 0.4							
Proposed Response	Response Status 0						

C/ 120E SC 120E.3.3.3.1 P 259 L 13 # 42 Dawe, Piers Mellanox	C/ 120E SC 120E.4.2 P 262 L 53 # 44 Dawe, Piers Mellanox				
Comment Type T Comment Status X	Comment Type TR Comment Status X				
The point of Table 120E-6, pattern generator jitter characteristics, is to get the uncorrelated high probability jitter right before tweaking the Gaussian jitter (RJ) in a later step to get to	Make the eye timing extraction more like 10GBASE-R, CEI-56G-VSR-PAM4 and real CDRs.				
the target eye width. So setting RJ and TJ at this stage is missing the point: they are going	SuggestedRemedy				
to change anyway. There is no need for jitter parsing rigmarole and back-extrapolation errors: we can set J2 and J4 targets that can be directly measured. The jitter at this stage should be significantly more than for a C2C CDAUI IC, because C2M is supposed to be easier.	Calculate the time center of the middle eye width (TCmid) as the mid-point in time between MIDCDFR and MIDCDFL with a value of 1e-3. (rather than 1e-6)				
SuggestedRemedy	Proposed Response Response Status O				
J2 Jitter 0.1 UI J4 Jitter 0.2 UI Max even-odd iitter (pk-pk) = 0.035 LII (same as 83E)	CI 120E SC 120E 4 2 P 263 I 15 # 45				
Same for Table 120E-9.	Dawe, Piers Mellanox				
Proposed Response Response Status O	Comment Type E Comment Status X UPPCDFR and UPPCDFL				
I 120E SC 120E.4.2 P 262 L 51 # 43 awe, Piers Mellanox	SuggestedRemedy UPPCDF1 and UPPCDF0. Similarly at line 18.				
<i>comment Type</i> TR <i>Comment Status</i> X Measure the middle eye height and width just like the other two.	Proposed Response Response Status O				
uggestedRemedy	C/ 120E SC 120E 4.2 P 265 / 1 # 46				
In step 3, rename MIDCDFL and MIDCDFR to MID0CDFL and MID0CDFR. Delete	Dawe, Piers Mellanox				
MIDCDFL with a value of 1e-6." In step 5, add: Calculate the voltage center (VCmid) of the middle eye as the mid-point in voltage between MIDCDF1 and MIDCDF0 with a value of 1e 6.	Comment Type E Comment Status X VClow.C.				
Insert new step 8: Use the differential equalized signal from step 2) to construct new CDFs of the signal for	SuggestedRemedy VClow.				
both the left edge (MIDCDFL) and right edge (MIDCDFR) of the middle eye at VCmid, as a distance from the center of the eye. Calculate the middle eye width (Hmid) as the difference in time between MIDCDFR and MIDCDFL with a value of 1e-6. In steps 8 and 9 (now 9 and 10), refer to step 8 rather than 3.	Proposed Response Response Status O				
Proposed Response Response Status O					

C/ 120E SC 120E.4.2 Dawe, Piers	P 265 Mellanox	L 2	# 47	C/ 120 SC 120.5.10.2.1 P 138 L 30 # 50 Dawe, Piers Mellanox
Comment Type T C	comment Status X			Comment Type TR Comment Status X
While it seems unlikely that middle one fail, if it did it wo by the simplification of remo	the upper and lower eye uld be a bad signal, and wing an exception.	es could pass the I the cost of loggi	ESMW mask and the ing the result is offset	When 120D's jitter definitions have changed from this JP03A pattern to PRBS13Q SuggestedRemedy
SuggestedRemedy				Check that the optical clauses haven't adopted it, delete this subclause and recover the MDIO bits
Change "of the upper eye at at VCmid, of the upper eye at	t VCupp, and of the lowe at VCupp, and of the low	er eye at VClow" ver eye at VClow	to "of the middle eye ".	Proposed Response Response Status O
Proposed Response Re	esponse Status O			
	Pass	1.2	# 40	C/ 120 SC 120.5.10.2.2 P 138 L 49 # 51 Dawe, Piers Mellanox
Dawe, Piers	Mellanox	L Z	# 40	Comment Type TR Comment Status X
Comment Type E C	comment Status X			When 120D's definition of even-odd jitter has changed from this JP03B pattern to
Can we make this clearer, a	s logic one and logic ze	ro could be misir	nterpreted in PAM4:	PRBS13Q
"Eye amplitude is defined as zero in the central 5% of the	s the mean value of logic e eye"?	c one minus the	mean value of logic	Check that the optical clauses haven't adopted it, delete this subclause and recover the
SuggestedRemedy				MDIO bits.
?				Proposed Response Status O
Proposed Response Re	esponse Status O			
CL 116 SC 116 E	D 76	/ 20	# 40	C/ 120 SC 120.5.10.2.5 P 141 L 14 # 52 Dawe, Piers Mellanox Mellanox <t< td=""></t<>
Dawe, Piers	Mellanox	L 29	# 49	Comment Type TR Comment Status X
Comment Type TR C	comment Status X			When 120D's definition of level separation mismatch ratio (linearity) has changed from thi transmitter linearity test pattern to PRBS13Q
Long ago, the AUI skew var	iation was rounded up fi	rom 1 to 1.5 UI a	t 10G to 2 UI at 10G,	SuggestedRemedy
5 and 11 are not convenient padding.	t binary numbers or bus	widths, we should	ld take out some of the	Check that the optical clauses haven't adopted it, delete this subclause and recover bit 1.1501.11.
SuggestedRemedy				Proposed Response Response Status O
For SP1, change 0.2 ns, 5 L One could change SP2 from side. Make changes in the other of	JI to 0.15 ns, 4 UI, with on 0.4, 11 to 0.3, 8 and m clauses to keep them in	consequent chan ake similar chan step.	iges to the other rows. ges on the receive	

Proposed Response Response Status **0**

	<u> </u>	D / = 0		" ==				
C/ 122 Dawe Piers	SC 122.7.1	P 178 Mellanox	L 31	# 53	C/ 120D SC 120D.: Dawe Piers	3.1.1 P 239 Mellanox	L 18	# 55
Comment Typ The reaso a fraction the eye o SONET/II although the algori if a lot of equalisati	the reported extension of the light level of the light level pening depend EC method is a the reported ex the reported ex thm to PAM4. F equalisation is ion, as effects s	Comment Status X g extinction ratio is to ensure el in that eye, or of the higher is strongly on how closed the appropriate. One can apply th tinction ratio is not what peop For both these one needs to a allowed. I believe we want to such as MPI or modal noise of	that the eye op st light level of t eye is (e.g. how hat algorithm fo ple are used to. sync to an eye, o measure the s occur before eq	bening is not too small he whole signal. As w fast), the traditional r NRZ to a PAM4 eye, One can generalise which may be difficult signal before ualisation.	Comment Type TR 94.3.12.5.1's method pattern and can give SuggestedRemedy Extract the levels fro Proposed Response	Comment Status X d of measuring linearity uses a e unrepresentative results. om PRBS13Q as discussed. <i>Response Status</i> O	completely unrep	presentative test
SuggestedRe If a lot of the mean	emedy equalisation is	allowed, limit either:	half of the signa	l (unsynchronised	Cl 120D SC 120D.3 Dawe, Piers	3.1 P 239 Mellanox	L 27	# 56
extinction the ratio of If only a n problem a of the sign should be	n ratio), or: of the average s noderate amou and three eyes nal over the low e reduced.	signal to the RMS of the sign int of equalisation is allowed are visible, use the usual IEC wer half of the signal, in the c	al. so that recoveri C method: the n entral 20% of th	ng the timing is not a nean of the upper half ne UI. Consider if 20%	Comment Type TR This contains "Clock an accessible clock, unrepresentative par extremely low jitter c	Comment Status X a random jitter" and "Clock dete the method of 94.3.12.6.1 use ttern, a jitter filter that is too mu corner frequency, and too much	rministic jitter". E s a real-time scop ch tailored to a p extrapolation.	But there probably isn't be, an articular design, an
Observed	through the us	sual 19.34 GHz BT4 filter.			SuggestedRemedy			
Proposed Res	sponse	Response Status O			Specify J2 Jitter and measuring uncorrela for all three sub-eyes	J4 Jitter (or J5), which are dire ated jitter, QPRBS31 if including s or just the middle one?	ectly measurable, g correlated jitter.	using QPRBS13 if Do we measure jitter
C/ 122 Dawe, Piers	SC 122.1	P 184 Mellanox	L 28	# 54	Proposed Response	Response Status O		
Comment Typ Table loo	be E ks odd because	Comment Status X e note c takes so many lines.			C/ 120D SC 120D.3 Dawe, Piers	3.1 P 239 Mellanox	L 27	# 57
SuggestedRe Either ma is the time the two pr in the bas Proposed Res	emedy ake the table wide difference at a rincipal states of se standard, to sponse	der and/or move the first sen reception between the fractio of polarization of an optical si 1.4 Definitions.	tence "Differen ns of a pulse th gnal", which alr	tial Group Delay (DGD) nat were transmitted in eady occurs four times	Comment Type TR 94.3.12.6.2 uses an the same time and w SuggestedRemedy Using two repeats of	Comment Status X extremely unrepresentative tes vith the same pattern as other t f PRBS13Q, define EOJ as the	t pattern, but we hings.	can measure EOJ at average of even and
,					odd edge timings, as middle one?	s in 92.8.3.8.1. Do we measure	e EOJ for all three	e sub-eyes or just the

Proposed Response Response Status **0**

C/ 120D	SC 120D.3.2.2	P 242	L 14	# 58	C/ 121	SC 121.9.7	P 163	L 7	# 61		
Dawe, Piers	3	Mellanox			Kolesar, P	aul	CommScope	•			
Comment 7 Specify coarse which p points p candida Suggested	Type T ring jitter tolerance grid of test points previous specs im proposed would b ate test points. Remedy	Comment Status X e at just two frequencies leave can fill them unless there are plied isn't the case because th e much cheaper to test than a	s holes in the strong peaks ey use spot continuous l	e spec. But quite a s in the jitter spectrum, frequencies. The 5 or 6 ine with a multitude of	Comment Type T Comment Status X The TBD for hazard level should be repled with 1M per contribution johnson_3bs_01a_0216_mmf.pdf to the MMF ad-hoc on 11 Feb 2016. SuggestedRemedy Replace "TBD" with "1M". Proposed Response Response Status O						
Sugges f/100 f/ f/100 f/ mask: (Therefo 5 0.15 (st 5 or 6 points: 5 f/2 f 2f 5f, or 3 f 3f 10f, where f 0.05 UI above the ore, 5 0.25 0.1 0.0 0.05 0.05 0.05 UI.	is the jitter corner frequency, jitter corner requency, rising a 5 0.05 0.05, or	vith SJ amou s the inverse	ints from the usual a of frequency below.	Cl 122 Kolesar, P Comment	SC 122.11.3 aul <i>Type</i> T	.2 P 185 CommScope Comment Status X	L 22	# 62		
Proposed F	Response	Response Status 0	L 36	# 59	Perfor Perfor capab benefi	mance level D for mance level 3 for ility of the angle t to requiring bet	or insertion loss seems appro r return loss (i.e. 35 dB minir polished MPO which can del ter than level 3 if the transmi o ramains at 26 dB	ppriate as a mini num) presently (liver 55 dB minir tter reflectance (mum requirement. understates the num. But there is little remains at 20 dB and		
Kolesar, Pa	iul	CommScope			line red Suggester	Remedy	e remains at 20 GD.				
Comment 1 The TB referen Suggestedl	Type E D for the location ce to the subclaus Remedy	Comment Status X of the optical lane assigneme se containtnig that information	nt should be , namely 122	replaced with a .11.3.1.	Consid are im Proposed	der raising the re proved from the <i>Response</i>	eturn loss level to 2 (45 dB m ir present levels. <i>Response Status</i> O	inimum) if the Ta	and Rx specifications		
Replac Proposed F	e TBD with 122.1 Response	1.3.1. Response Status O									
- Toposeu T	Coporise										
C/ 121 Kolesar, Pa	SC 121.9.2 nul	P 162 CommScope	L 9	# 60							
Comment 7 The TB johnsor	<i>Type</i> T D for hazard leve n_3bs_01a_0216_	Comment Status X I should be replced with 1M pe _mmf.pdf to the MMF ad-hoc of	er contributio en 11 Feb 20	n 16.							
Suggestedl Replac	R <i>emedy</i> e "TBD" with "1M'	'.									
Proposed F	Response	Response Status O									

C/ 123 SC 123.7.3	P 202	L 16	# 63	C/ 119	SC 119.1.4	P 89	L 50	# 65
Kolesar, Paul	CommScope			Ran, Adee	;	Intel		

Comment Type T Comment Status X

With the increased sensitivity to MPI of PAM4 signalling compared to NRZ signaling, simply specifying the maximum discrete reflectance may no longer be sufficient to contain MPI penalties to tolerable levels. Additional constraints on the number of such reflectances in a channel may also be required. This may be partially covered by the channel optical return loss specifiation in Table 123-13, however measurement of this parameter in the field is unlikely to detect the worst-case reflectance experienced by the narrow line width transmission systems defined in clause 123.

SuggestedRemedy

Specify the maximum number of worst-case reflectances permitted in a channel. In addition, provide guidance on the trade-off between worst-case discrete reflectance and the number of such reflections permitted. For example, at a minimum specify this relationship for 26 dB reflectances and 35 dB reflectances, as both of these values have historical precedent in the installed base.

Proposed Response Response Status **O**

C/ 119	SC 119.1.2	P 8	9	L 26	# 64
Ran, Adee		Intel			
Comment Superf	<i>Type</i> E luous comma afte	Comment Status er "transcoding" - on	X ly two items		
Suggested Delete	Remedy the comma				
Proposed I	Response	Response Status	0		

Ran, Adee		Intel	
Comment Type	т	Comment Status X	
Do we need to	use	transfers/s here? The precedence for using this term is mostly in cases	

Do we need to use transfers/s here? The precedence for using this term is mostly in cases of bus transactions (clauses 49, 50, and 74). But here the text includes "on each of the 16 PCS lanes" which turns this "transaction rate" into bit rate on a serial logical interface. Only clause 82 uses this text while referring to each lane separately (this seems inadequate too).

Without looking at previous PCS clauses, "transfers" is confusing, since these seem to be plain bits that are transferred on each of the PCS lanes... unless this describes parallel transfers on the multi-bit service interface. But most of the text in this clause refers to lanes as independent bit streams, so it seems preferable not to introduce transfers at all.

Also, editorially, "each of the ... " should be followed by "lanes" - if this is kept.

SuggestedRemedy

Preferably: change "Gtransfers/s" to "Gb/s" and change "lane" to "lanes".

Alternatively, keep "Gtransfers/s" but delete "on each of 16 PCS lane".

Proposed Response Response Status **O**

C/ 119	SC 119.2.1	P 92	L 6	# 66
Ran, Adee		Intel		

Comment Type T Comment Status X

PCS is composed of transmit and receive processes. But later it is described in terms of receive and transmit channels. "Channel" is an overloaded term and this seems like an unusual usage - "transmit channel" and "receive channel" are not defined anywhere.

SuggestedRemedy

Rephrase this subclause to avoid "transmit channel" and "receive channel" and instead use "transmit process" and "receive process" as appropriate.

Proposed Response Response Status **O**

C/ 119 SC 119.2.1 P 92 L 44	# 67	C/ 119 Ran Adee	SC 119.2.4.4	P 97	L 15	# 69
Comment Type E Comment Status X This sentence could be reworded to be shorter and more readable. SuggestedRemedy Change "The PCS shall provide transmit test-pattern mode for the scrambled 119.2.4.9), and shall provide receive test-pattern mode for the scram to "The PCS shall provide transmit test-pattern mode and receive test-p	idle pattern (see bled idle pattern" pattern mode for the	Comment T "The pa requirer This sul SuggestedF Change Conside Proposed R	Type T ad shall not be ch ment? Should if I bclause describe Remedy to "the pad con er deleting this so Response	Comment Status X necked on receive" - no PIC be verified? How? es insertion so receive oper tents may be ignored on re entence or moving it to 119 Response Status O	CS - and why is th ration is out of pla ceive". 0.2.5.5, as it descr	at a normative ce here. ribes receiver operation.
Proposed Response Response Status O		C/ 119 Ran. Adee	SC 119.2.4.4	P 97 Intel	L 25	# 70
Cl 119 SC 119.2.4.2 P 95 L 5 Ran, Adee Intel Comment Type T Comment Status X The transcoding process seems similar and possibly identical to the clause 91. If there are differences, we could help the reader by point an introductory paragraph or a NOTE). If it is identical, perhaps the creplaced by a reference to 91.5.2.5. Similarly for the back-transcoding process in 119.2.5.7.	# 68 one specified in ng them out (e.g. in ontent can be	Comment T "163 84 convent SuggestedF Change Proposed R	ype E 0 257-bit blocks tion of separating Remedy a to "163840 257 Response	Comment Status X ' is confusing. It seems just g thousands in this case. -bit blocks" here and elsew <i>Response Status</i> O	tifiable to make an	n exception to the
SuggestedRemedy per comment. Proposed Response Response Status O						

Cl 119 Ran, Adee	SC 119.2.4.6	P 100 Intel	L 48	# 71	<i>C</i> / 119 Ran, Adee	SC 119.	2.5.3	P 104 Intel	L 37	# 74	
Comment T	ype E	Comment Status X			Comment T	уре Т		Comment Status X			
This sul a param	bclause seems t neter. But in this	o borrow from 91.5.2.7 which subclause there is only one c	defines two diff ode. t can be s	erent codes with t as ated clearly.	I could not find a justification for changing 1e-6 to 1e-16. Note that this is the probability per event of a codeword with more than t errors - which is a rare event (this is not per bit or per symbol).						
In additi equivale and poin	ion, most of the sents. It would be not out difference	text and equations are similar helpful for the reader to have s where they exist.	or identical to t references ins	heir 91.5.2.7 ead of identical text	Also, there is an expectation here: probability _is_ expected to be below the value.						
SuggestedF	Remedy				Also, th	is sentenc	e can be	shorter and clearer.			
Define t	=15 and/or char	nge occurrences of t in the tex	, equations an	d figures to the value	Suggested	Remedy					
15 (e.g.	in Figures 119-	7 and 119–8).			Change "The pr	e Shahility th	ot the de	andor foile to indicate o or	adoword with t	1 orroro on uncorrocted	
Conside necessa	er replacing text ary for the codev	and equations with references vord interleaving.	to 91.5.2.7 wit	h additions as	is not e errors,	xpected to and so on"	exceed	10^-16. This limit is also e	xpected to app	ly for t+2 errors, t+3	
Proposed R	esponse	Response Status O			to "The pr errors a	obability th s uncorrec	at the de ted is ex	ecoder fails to indicate a co spected to be lower than 10	odeword with m 0^-16".	nore than 15 symbol	
C/ 119	SC 119.2.4.6	P 102	L 8	# 72	Unless	there is a j	ustificati	on, change 10^-16 above	to 10^-6.		
Ran, Adee		Intel			Proposed F	esponse	F	Response Status O			
Comment T	ype E	Comment Status X									
There is	s only one code	here so column heading can b	e just g_i.		01.440	00.440			1.04		
	ively this table (can be replaced with a referen	ce to the RS(5	14514) columns in	C/ 119 Bon Adoo	SC 119.	2.5.5	P 105	L 24	# 75	
table 91	-1.	can be replaced with a referen			Ran, Adee	_					
SuggestedF	Remedy				Comment I	ype E		Comment Status X			
Change	heading or dele	te this table and refer to 91-1	instead.		Badiy in	onneu sen	lence.				
Proposed R	esponse	Response Status 0			Suggestedi	Remedy					
					"Every am_rx<	: 3192nd co 2055:0>"	dewords	the first 2056 bits of rx_sc	crambled_am b	locks is the vector	
Cl 119 Ran, Adee	SC 119.2.5.2	P 104 Intel	L 37	# 73	to "Every am_rx<	3192nd co 2055:0>"	deword,	the first 2056 bits of rx_sc	rambled_am bl	ocks are the vector	
Comment T The de-	ype T interleaving here	Comment Status X e is a required functionality, no	t an ability ("Ca	an" means "is able to").	Proposed F	esponse	F	Response Status O			
Also, m	issing period										
SuggestedF	Remedy										
Change	e "can be" to "is".	Add terminating period.									
Proposed R	esponse	Response Status O									

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn SORT ORDER: Comment ID

C/ 119	SC 119.2.6.2.3	B P 109	L 22	# 76	C/ 119	SC 119.2.6.3	P 110	L 53	# 78			
Ran, Adee		Intel			Ran, Adee		Intel					
Comment T	ype T	Comment Status X			Comment	Туре Т	Comment Status X					
In the de (informa supporte more co	efinition of R_TY ative?) after the li ed for a PCS with omplex than it sho	PE, "For EEE capability" isn't st of values reveals that retur n the EEE capability. The text ould be.	very clear. Only ning the LI classi describing this c	reading the NOTE fication is only lassification case is	"May r prohibi not dei	ot" which appea tive or optional) ining an option.	rs in this paragraph twice is a . Usage of "may" here does r	ambiguous in En not strictly follow	glish (can be either the style manual - it is			
					802.3bq has switched to using "are not guaranteed" in a similar case.							
Also ap	plies to T_TYPE.				Suggested	Remedy						
SuggestedR	Remedy				Chang	e "may not" to "a	are not guaranteed to" in both	cases.				
In the de "LI; For 10, a blo to	efinition of R_TY EEE capability, t ock type field of (PE, change he LI type is supported where 0x1E and eight control charac	e the vector conta ters of 0x06 (/Ll/)	ins a sync header of ."	Proposed I	Response	Response Status O					
"LI; The characte	vector contains ers equal to 0x06	a sync header of 10, a block 5 (/Ll/). Returned only if the P	type field of 0x1E CS supports the f	and eight control EEE capability."	C/ 119 Ran, Adee	SC 119.2.6.3	P 114 Intel	L 44	# 79			
In the de "LI; For to	efinition of T_TYI EEE capability, t	PE, change his vector contains eight /Ll/	characters."		Comment Type E Comment Status X The boxes in figures 119-11 and 119-12 are not dotted, they are dashed.							
"LI; The capabili	vector contains ty."	eight /LI/ characters. Returne	d only if the PCS	supports the EEE	Suggested Chang	<i>Remedy</i> e "dotted box" to	"dashed box" in figures 119	-11 and 119-12.				
Conside	er removing the N	IOTE in both cases.			Proposed I	Response	Response Status O					
Proposed R	esponse	Response Status 0										
					C/ 119 Ran Adee	SC 119.4	P 117	L 17	# 80			
C/ 119	SC 119.2.6.3	P 110	L 33	# 77	Commont		Commont Status V					
	_				Uniment "If a Cl	ause 45 MDIO is	s implemented then the PCS	shall "				
"278052 in terms	ype E 28 10-bit Reed-S s of RS symbols s	comment Status X olomon symbols" is confusing so stating the offset this way	J. Alignment mark night not be very	ters are not defined helpful.	This se	eems like a cond eented? The PIC	itional normative statement. S items L1 and L2 are mand	ls it really conditi atory.	onal on MDIO being			
It seems case.	s justifiable to ma	ake an exception to the conve	ntion of separatir	ng thousands in this	This al	so applies to oth	er places in the draft that ref	er to clause 45, s	such as 122.5.5.			
SuggestedF	Remedy				Suggested	Remedy						
Change	to "278528 10-b	it Reed-Solomon symbols", c	r to "2 785 280 bi	ts".	Rephrase to clarify. If necessary, and that loopback may be enabled by other means.							
Proposed R	esponse	Response Status 0			Go ove	er the draft and a	pply corresponding changes	if necessary.				
					Proposed I	Response	Response Status 0					

Cl 119 SC 119.6.3 Ran, Adee Comment Type T Why is this feature opt defined in 119.2.4.9, w SuggestedRemedy	P 119 Intel Comment Status X tional? It points to 119.6.5 (insi vhich does not define it as opti	# 81	C/ 120 Ran, Adee Comment PCSL Suggested Chang	SC 120.5 Type T format applies to <i>IRemedy</i> je "signal" to "bit s	P 13 Intel <i>Comment Status</i> bits (logical), not to a	0 <i>L</i> 30 X signal (electrical).	# 84		
Delete *JTM and make Proposed Response	e item JT1 mandatory. Response Status O			Proposed	Response	Response Status	0		
C/ 120 SC 120.1.3 Ran, Adee	P 125 Intel	L 17	# 82	C/ 120 Ran, Adee	SC 120.5.6.1	P 13 Intel	5 <i>L</i> 8	# 85	
Comment Type T The PMA may also ne convert between 16 la muxing.	Comment Status X eed to perform PAM4 decoding nes (NRZ) and 4 or 8 lanes (P	(not just encodi AM4), since this	ng), if it is used to operation requires bit-	This su conver for driv "PAM4	ubclause does no rsion between PA ving signals but al t encoding and de	t seem to belong belo M4 and NRZ which is so for receiving (as sl ecoding".	bw 120.5.6 (Signal dri s part of the functional hown in figure 120-5).	vers). It defines iity of the PMA, not only . The title should be	
This is shown in figure here.	e 120-5 and described in detail	in 120.3, but is r	nissing from the text	SuggestedRemedy Promote this subclause to level 2 and rename it to "PAM4 encoding and decoding"					
SuggestedRemedy Change "encoding" to	"encoding and decoding".		- h - f (- f h h h h h	Proposed	Response	Response Status	0		
Also, add appropriate mux function when cha	text in 120.2 to include PAM4 anging widths.	decoding into bit	s before/after the bit						
Proposed Response	Response Status O								
C/ 120 SC 120.3 Ran, Adee Comment Type E	P 129 Intel Comment Status X	L 18	# 83						
There seem to be sup SuggestedRemedy Delete the commas, p	erfluous commas around "bit-r ossible rephrase the sentence	nultiplexed".							

Proposed Response Response Status **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn SORT ORDER: Comment ID

C/ 121	SC 121.1	.1	P 153	L 51	# 86	C/ 121	SC	121.7.1	P 160	L 23	# 88
Ran, Adee			Intel			Ran, Adee			Intel		
Comment	Туре Т	Commer	t Status X			Comment 7	Гуре	Е	Comment Status X		
"The bi	it error ratio ((BER) shall be le	ess than 2.4e-4	."		"Signal this par	ing rat ramete	te, each la er name wi	ne" should be "signaling rate o ith quotes, as in:	on each lane".	Alternatively, enclose
I his is It seem which o guaran normat Also ap	a normative hs to refer to can be built f of the compo tee meeting tive requirem oplies to simi	BER requireme a system consis rom several con inents is respon it. Under these ent. lar text in clause	nt without a defining of transmitte aponents coming sible for this required circumstances the as 122 and 123.	nition of "errors" of er, receiver, and g from several ve uirement and the here is no sense i	or test conditions. channel, each of ndors. It is not clear re is no way to in this being a	'with th Gbd +/- Similar Suggestedi per cor Proposed F	e exce - 100 p ly for 1 Remec nment Respor	eption that opm' 121.7.2. dy nse	the "signaling rate, each lane Response Status O	" parameter sp	ecification is 26.5625
Suggested	Remedy	"^			ton compliant provision						
and co the PM	e to text such mpliant char 1D service int	nel is expected terface".	to operate at a b	bit error ratio (BE	R) less than 2.4e-4 at	C/ 93A Ran, Adee	SC	93A.1	P 226 Intel	L 21	# 89
Remov	ve any PICS	associated with	this text.			Comment 7 Table 8	<i>Гуре</i> 33D-6 :	T should not	Comment Status X t apply to CDAUI-16, since the	e signaling rate	is different.
Proposed I	Response	Response	Status O			Suggestedl Create	Remeo a sepa	<i>dy</i> arate table	e for CDAUI-16 and refer to it.		
C/ 121	SC 121.5	.2	P 157	L 40	# 87	Proposed F	Respor	nse	Response Status 0		
Comment T	<i>Type</i> T eam" makes	Commer sense, "signal s	t Status X	ot: these are simp	lv signals.	C/ 00 Ran, Adee	SC	0	P 232 Intel	L 1 2	# 90
This ap	oplies to mar Remedv	ny places in the	draft.	.,	,	Comment 7 There i Similar	<i>Type</i> s no m ly 120l	T nention in D and 120	Comment Status X 120B or 120C that the CDAUI E do not state PAM4 encodin	-16 interfaces	use NRZ encoding.
Chang	e "optical sig	nal streams" to	"optical signals"	consistently acro	oss the draft.	Suggested	Remed	dy		-	
Proposed I	Response	Response	Status O	-		Add tex place, a	kt such and sir	n as "CAU milarly for	I-16 uses NRZ signaling over the PAM4 cases.	16 electrical la	nes" in an appropriate
						Proposed F	Respor	nse	Response Status 0		

C/ 120D SC 120D.3.1.1 P 239 L 18 # 91	C/ 120D SC 120D.3.2.2 P 242 L 3 # 94				
Healey, Adam Broadcom Ltd.	Healey, Adam Broadcom Ltd.				
Comment Type T Comment Status X	Comment Type T Comment Status X				
The transmitter linearity test method defined in 94.3.12.5.1 can misinterpret linear distortion (e.g., settling time of the step) as non-linear level separation mismatch.	The list of exceptions to the receiver jitter tolerance requirements referenced in 94.3.13.4 is incomplete. For example, in 94.3.13.4.1 (Test setup), it is stated that the test channel				
SuggestedRemedy	meets the requirements for Test 2 in 94.3.13.3 and this is the wrong channel for a CDAUI-8				
Measured the signal levels from a PRBS13Q waveform. Define V_A, V_B, V_C, V_D to be average voltage corresponding to the 0, 1, 2, and 3 values, respectively, in the PRBS13Q test pattern.	channel noise sources are disabled" but there is no "Tx noise source" in the test setup (other than the instrinsic SNDR of test transmitter which presumably cannot be disabled). Secondly, it is unclear how the test channel can "meet the requirements for the channel				
Proposed Response Response Status O	used for Test 2" with the Rx noise source disabled. The lack of broadband noise implies the maximum COM value is likely to be exceeded.				
	SuggestedRemedy				
C/ 120D SC 120D.3.1.1 P 239 L 27 # 92	Since 94.3.13.4 is essentially a reference to Annex 93C with some clarifications,				
Healey, Adam Broadcom Ltd.	referencing this subclause with another set of clarifications is not a service to the reader.				
Comment Type T Comment Status X	text.				
using a 1.6 MHz corner frequency (and 3 dB of peaking at ~6 MHz). This does not agree with the jitter tolerance corner frequency implied by 120D.3.2.2. SuggestedRemedy Include an exception to the requirements of 94.3.12.6.1 that replaces the high-pass filter parameters with those that agree with the jitter tolerance requirements in 120D.3.2.2.	"Receiver jitter tolerance is verified for each pair of jitter frequency and peak-to-peak amplitude values listed in Table 120D-6. The test setup shown in Figure 93–12, or its equivalent, is used. The test channel meets the insertion loss requirement for Test 2 in Table 120D-5. The synthesizer frequency is set to the specified jitter frequency and the synthesizer output amplitude is adjusted until the specified peak-to-peak jitter amplitude for that frequency is measured at TP0a. The test procedure is the same as the one described				
Proposed Response Response Status O	In 120D.3.2 [Interference Tolerance], with the exception that no broadband holse is added.				
	The receiver under test shall meet the RS-FEC symbol error ratio requirements for each case in Table 120D-6."				
C/ 120D SC 120D.3.1.1 P 239 L 21 # 93 Healey, Adam Broadcom Ltd. Broadcom Ltd.	Proposed Response Response Status O				
Comment Type T Comment Status X					
A limit of 0.8 for the ratio pmax/vf is challenging for test equipment (see http://www.ieee802.org/3/by/public/adhoc/architecture/ran_021716_25GE_adhoc.pdf).	C/ 120D SC 120D.3.1.1 P 239 L 18 # 95 Healey, Adam Broadcom Ltd. Broadcom Ltd.				
SuggestedRemedy	Comment Type E Comment Status X				
Include a Gaussian filter in the COM transmitter model that represents practical (non-zero) rise and fall times for the source that drives the package model. Use the updated model as the basis for a new limit on provide	In Table 120D-1, the parameter names under the heading "Output waveform" do not align with their respective values.				
Proposed Response Response Status O	SuggestedRemedy				
	Change the formating of the "Parameter" column to achieve the correct alignment.				

Proposed Response Response Status **O**

C/ 120D SC 120D.3.2.1 P 241 L 22 # 96 Healey, Adam Broadcom Ltd. Broadcom Ltd.	C/ 120D SC 120D.3.2.1 P 241 L 22 # 98 Healey, Adam Broadcom Ltd. Broadcom Ltd.
Comment Type T Comment Status X The list of exceptions to the receiver interference tolerance requirements referenced in 94.3.13.3 is incomplete. For example, 94.3.13.3 requires that the test transmitter meet the specifications in 94.3.12 and that R_LM be set to 0.92. These are not the correct values for CDAUI-8. SuggestedRemedy Since 94.3.13.3 is essentially a reference to Annex 93C with some clarifications, referencing this subclause with another set of clarifications is not a service to the reader. Remove the reference to 94.3.13.3 and list the requirements to implement the Annex 93C	Comment Type T Comment Status X Annex 93C requires the specification of a test pattern. No test pattern is defined in either 94.3.13.3 or this subclause. SuggestedRemedy SuggestedRemedy Specify the test pattern for interference tolerance (and jitter tolerance) measurements. Since the measured quantity is "RS-FEC symbol error ratio", the test pattern seems likely to be "scrambled idle encoded by RS-FEC" or similar. Proposed Response Response Status O
procedure for CDAUI-8 in this subclause. Proposed Response Response Status O	C/ 120D SC 120D.3.1.1 P 238 L 53 # 99 Healey, Adam Broadcom Ltd. Comment Type E Comment Status X
Healey, Adam Broadcom Ltd.	N_p and D_p are variables and should be italic text.
Comment Type T Comment Status X It appears that P802.3by has done away with the "coefficients of fitted insertion loss" and "RSS_DFE4" parameters for the interference tolerance test channel (presumably because the parameters are difficult to control and COM-based broadband noise calibration procedure will modulate the noise amplitude as a function of the test channel properties). Are these parameters peeded for this interference tolerance test?	SuggestedRemedy Per comment. Proposed Response Response Status O
SuggestedRemedy Consider simplifying Table 120D-5 by removing the "coefficients of fitted insertion loss" and "RSS_DFE4" rows. However, Annex 93C specifically states that the implementer is required to "(b) verify that RSS_DFE4 is greater than or equal to the value specified". Rather than modify Annex 93C, it would be better to add an exception in 120D.3.2.1 stating that there is no RSS_DFE4 requirement for the test channels. Proposed Response Response Status O	Cl 122 SC 122.11.3.2 P 185 L 42 # 100 Ghiasi, Ali Ghiasi Quantum LLC Comment Type TR Comment Status X Diagrm not clear DiagrestedRemedy Suggest to addoptical lane assignments looking into MDI or 400Gbase-DR4 MDI optical lane assignments Proposed Response Response Status O

C/ 120B SC 120B.1 P 225 L 2 # 101 Ghiasi, Ali Ghiasi Quantum LLC Ghiasi	CI 122 SC 122.8.10 P 180 L 25 # 103 Ghiasi, Ali Ghiasi Quantum LLC Ghiasi Quantum LLC </th
Comment Type TR Comment Status X AC coupling is defined to be <50 Khz	Comment Type TR Comment Status X Stress receiver sensitivity must tolerate low frequency jitter propagating from the
SuggestedRemedy For 10 GbE it was common practice to have 50 KHz low cutoff for DC blocks, we are operating 2.5x faster. It makes sense to increase the DC block to at least 100 KHz.	SuggestedRemedy Sinusoidal jitter is a componnet of stress receiver sensitivity.
Proposed Response Response Status W [Editor's note: Clause changed from 120 to 120B, subclause changed from 120.b1 to 120B.1]	The amplitude of the applied sinusoidal jitter is dependent on frequency as specified in Table 87–13 and is illustrated in Figure 87–5, but scaled from 4 Mhz to 2 MHz.
C/ 122 SC 122.8.8 P182 L 14 # 102	Following presentation provided background material http://www.ieee802.org/3/bs/public/16_01/ghiasi_3bs_01a_0116.pdf.
Ghiasi, Ali Ghiasi Quantum LLC	Proposed Response Response Status O
Comment Type TR Comment Status X Transmitter optical waveform need to be measured with a CRU SuggestedRemedy The clock recovery unit (CRU) used in the optical waveform measurement has a corner frequency of 2 MHz and a slope of 20 dB/decade. When using a clock recovery unit as a clock for BER measurements, passing of low- frequency jitter from the data to the clock removes this low-frequency jitter from the measurement. Following presentation provided background material http://www.ieee802.org/3/bs/public/16_01/ghiasi_3bs_01a_0116.pdf In Atlanta there were general consenous to further reduce CRU BW form 4 to 2 MHz to make it even easier for the receiver, I raised the concern that reducing CRU BW to 2 MHz may increase transmitter jitter penalty. I have identified several representiave PLL from ISSCC 2016 to invesitgate if there will be a transmitter penalty if we reduce the CRU BW to 2 MHz. Overall there is benifit reduing the PLL BW to 2 MHz and these result will be shown in ghiasi_3bs_01_0316.pdf Proposed Response Response Status O	Cl 120D SC 120D.3.1.1 P 239 L 22 # 104 Ghiasi, Ali Ghiasi Quantum LLC Comment Type TR Comment Status X No definition of CRU for measurement of output waveform and jitter SuggestedRemedy Add footnote to table or subection to be referenced "The clock recovery unit (CRU) used in the electrical waveform measurement has a corner frequency of 4 MHz and a slope of 20 dB/decade. When using a clock recovery unit as a clock for BER measurements, passing of low- frequency jitter from the data to the clock removes this low-frequency jitter from the measurement." Following presentation provided background material http://www.ieee802.org/3/bs/public/16_01/ghiasi_3bs_01a_0116.pdf In Atlanta there were general consenous to further reduce CRU BW form 4 to 2 MHz to make it even easier for the receiver, I raised the concern that reducing CRU BW to 2 MHz will increase transmitter penalty jitter penalty. I have identified several representiavie PLL from ISSCC 2016 to invesitgate and show that there is a transmitter penalty if we reduce the CRU BW to 2 MHz. These result will be shown in ghiasi_3bs_01_0316.pdf
	Proposed Response Response Status O

C/ 120D	SC 120D.3.2.2	P 240	L 14	# 105	C/ 120E	SC 120E.1	P 249	L 20	# 108	
Griasi, Ali					Gniasi, Ali					
Receiv	ver jitter tolerance must tes gate down the link by the G	t for full range of si olden PLL.	nusoidal jiter cor	nponnet allowed to	Equation of 10.2	on 120E-1 has a dB	loss of 10.9 dB which is inc	onsistant with Fi	igure 120E-2 with loss	
Suggested	Remedy				Suggested	Remedy				
Replac will cho Follow	ce Table 120-D-6 with Tab pose how many frequencie ing presentation provided	le 87-13 without ide as is required to gur background materia	entifying any spe antee interopera al	cific test cases. Users bility	Please 1.076: L=< (0.	correct the equa	ation to have loss of 10.2 dB sqrt(f)+ 0.6046*f)	as given below	by just removing factor	
http://v In Atla make i will inc	www.ieee802.org/3/bs/publ nta there were general cor t even easier for the receiv rease transmitter penalty j	ic/16_01/ghiasi_3b nsenous to further r ver, I raised the con itter penalty. I have	s_01a_0116.pdf educe CRU BW ncern that reduc e identified sever	form 4 to 2 MHz to ing CRU BW to 2 MHz al representiavie PLL	Proposed F [Editor' 120E.1	Response s note: Clause c]	Response Status W hanged from 120 to 120E, s	ubclause chang	ed from 120.e1 to	
the CR	UBW to 2 MHz. These re	and snow that there esult will be shown	in ghiasi_3bs_0	penaity if we reduce	C/ 120E Ghiasi Ali	SC 120E.3.1.	6 P 252 Ghiasi Quan	L 54	# 109	
		P 237	13	# 106	Comment T Host of	<i>Type</i> TR utput eye must b	Comment Status X e measurd with a reference	CRU		
Ghiasi, Ali	30 1 200 .1	Ghiasi Quanti	um LLC	# 100	Suggested	Remedy				
Comment AC con Suggested For 10 operati	Type TR Comm upling is defined to be <50 <i>Remedy</i> GbE it was common prac ing 2.5x faster. It makes s	ent Status X Khz ice to have 50 KHz ense to increase th	: low cutoff for D e DC block to at	C blocks, we are least 100 KHz.	The clock recovery unit (CRU) for the eye measurement has a corner frequency of 2 MHz and a slope of 20 dB/decade. When using a clock recovery unit as a clock for BER measurements, passing of low- frequency jitter from the data to the clock removes this low- frequency jitter from the measurement. Following presentation provided background material http://www.ieee802.org/3/bs/public/16_01/ghiasi_3bs_01a_0116.pdf In Atlanta there were general consenous to further reduce CRU BW form 4 to 2 MHz to make it even easier for the receiver, I raised the concern that reducing CRU BW to 2 MHz may increase transmitter jitter penalty. I have identified several representiavie PLL from ISSCC 2016 to investigate if there will be a transmitter penalty if we reduce the CRU BW to 2 MHz. Overall there is benifit reduing the PLL BW to 2 MHz and these result will be shown in ghiasi_3bs_01_0316 pdf					
Proposed I [Editor 120D.2	Response Respor 's note: Clause changed fr I]	ose Status W om 120 to 120D, st	ubclause change	d from 120.d1 to						
Cl 120E Ghiasi, Ali	SC 120E.1	P 248 Ghiasi Quanti	<i>L</i> 53 um LLC	# 107	Proposed F	Response	Response Status O			
Comment AC cou	<i>Type</i> TR <i>Comm</i> upling is defined to be <50	<i>ent Status</i> X Khz								
Suggested For 10 operati	<i>Remedy</i> GbE it was common prac ing 2.5x faster. It makes s	ice to have 50 KHz ense to increase th	: low cutoff for D le DC block to at	C blocks, we are least 100 KHz.						
Proposed I	Response Respor	nse Status W								
[Editor 120E.1	's note: Clause changed fr]	om 120 to 120E, su	ubclause change	d from 120.e1 to						

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn SORT ORDER: Comment ID

C/ 120E	SC 120E.3.2.1	P 25	52 <i>L</i> 31	# 110	C/ 120E	SC 120E.3	4.1.1	P 260	L 53	# 112
Ghiasi, Ali		Gniasi	Quantum LLC		Ghiasi, Ali			Ghiasi Quant	JM LLC	
Comment Typ	pe TR	Comment Status	Х		Comment	Type TR	Comme	ent Status X		
Module o	output must be r	neasurd with a refer	ence CRU		10 MH	z CRU adds e	ktra burden to	o the host SerDes		
SuggestedRe	emedy				Suggestea	lRemedy				
The clock and a slo measurer frequency In Atlanta make it e may incre ISSCC 20 to 2 MHz shown in	k recovery unit (ppe of 20 dB/dec ments, passing y jitter from the a there were ger even easier for the ease transmitter 016 to invesitga . Overall there ghiasi_3bs_01.	CRU) for the eye ma ade. When using a of low- frequency jitt measurement. heral consenous to f he receiver, I raised jitter penalty. I hav te if there will be a th is benifit reduing the _0316.pdf	easurement has a corne clock recovery unit as a er from the data to the o urther reduce CRU BW the concern that reduci re identified several repr ansmitter penalty if we PLL BW to 2 MHz and	r frequency of 2 MHz clock for BER clock removes this low- form 4 to 2 MHz to ng CRU BW to 2 MHz resentiavie PLL from reduce the CRU BW these result will be	Replac Also cl Follow http://v In Atla make i make i ISSCC to 2 M shown	ce 10 Mhz with hange Table 1: ing presentatic www.ieee802.0 nta there were it even easier f crease transm 2 2016 to inves Hz. Overall the in ghiasi_3bs_	2 MHz 20E-4 referer n provided b rg/3/bs/public general cons or the receive itter jitter per itgate if there ere is benifit r _01_0316.pdf	nce to Table 88-13 ackground materia c/16_01/ghiasi_3b senous to further r er, I raised the co nalty. I have ident will be a transmit reduing the PLL B	with Table 87-1 al s_01a_0116.pdf educe CRU BW ncern that reduc ified several rep ter penalty if we W to 2 MHz and	3 form 4 to 2 MHz to ing CRU BW to 2 MHz resentiavie PLL from reduce the CRU BW these result will be
Proposed Re	esponse	Response Status	0		Proposed	Response	Respons	se Status O		
C/ 120E	SC 120E.3.3.3	.1 P 25	i8 L 46	# [111	C/ 120E	SC 120E.3	1.6	P 252	L 51	# 113
Ghiasi, Ali		Ghiasi	Quantum LLC		Ghiasi, Ali			Ghiasi Quant	um LLC	
Comment Typ	pe TR	Comment Status	х		Comment	Type TR	Comme	ent Status X		
10 MHz (CRU adds extra	burden to the host \$	SerDes		Host o	utput eye mus	be measurd	with a reference	CRU	
SuggestedRe	emedy				Suggestea	IRemedy				
Replace 10 Mhz with 4 MHz Also change Table 120E-4 reference to Table 88-13 with Table 87-13 Following presentation provided background material http://www.ieee802.org/3/bs/public/16_01/ghiasi_3bs_01a_0116.pdf In Atlanta there were general consenous to further reduce CRU BW form 4 to 2 MHz to make it even easier for the receiver, I raised the concern that reducing CRU BW to 2 MHz will increase transmitter penalty jitter penalty. I have identified several representiavie PLL from ISSCC 2016 to invesitgate and show that there is a transmitter penalty if we reduce the CRU BW to 2 MHz. These result will be shown in ghiasi_3bs_01_0316.pdf Proposed Response Response Status O					The cli and a freque Follow http://v In Atla make i make i ISSCC to 2 M	ock recovery u slope of 20 dB, irements, pass ncy jitter from t ing presentatic vww.ieee802.0 nta there were it even easier f crease transm 2 2016 to inves Hz. Overall the	nit (CRU) for /decade. Who ing of low- fre he measurer on provided b rg/3/bs/public general cons or the receive itter jitter per itter jitter per itter is benifit i	the eye measurer en using a clock re equency jitter from nent. ackground materia c/16_01/ghiasi_3b senous to further r er, I raised the co nalty. I have ident will be a transmit reduing the PLL B	nent has a corne covery unit as a the data to the o al s_01a_0116.pdf educe CRU BW ncern that reduc ified several rep ter penalty if we W to 2 MHz and	r frequency of 2 MHz clock for BER clock removes this low- form 4 to 2 MHz to ing CRU BW to 2 MHz resentiavie PLL from reduce the CRU BW these result will be
					shown	in ghiasi_3bs_	_01_0316.pdf	f Ctatura C		
					1 10000001	10000100	Nespun			

<i>Cl</i> 120E Ghiasi, Ali	SC 1	120E.3.2.1		P 256 Ghiasi (Quantum Ll	<i>L</i> 19 LC	# 114	Cl 123 Ghiasi, Ali	SC	123.8.8		P 204 Ghiasi Quantum	<i>L</i> 41 LLC	# 116
Comment T Module	<i>ype</i> output	TR t must be m	Comment neasurd with	Status) a refere	r nce CRU			<i>Comment T</i> y Transmi	/pe tter o	TR ptical wave	<i>Comment</i> S eform need to I	<i>tatus</i> X be measured with	h a CRU	
SuggestedF The cloo and a sl measur frequen In Atlan make it may inc ISSCC ito 2 MH shown i	Remed ck reco lope of ements cy jitte ta ther even e rease 2016 to lz. Ove n ghias respon	y 520 dB/dec 5, passing of r from the r e were gen easier for th transmitter o invesitgat erall there i si_3bs_01_ se	CRU) for the ade. When of low- frequ measurement teral consent teral teral consent teral teral consent teral conse	e eye mea using a c ency jitte nt. ous to fu I raised t ry. I have II be a tra uing the I	asurement ock recover r from the concern identified some PLL BW to	has a corner free ery unit as a cloc data to the clock e CRU BW form that reducing C several represer enalty if we redu 2 MHz and thes	quency of 2 MHz k for BER removes this low- 4 to 2 MHz to RU BW to 2 MHz ntiavie PLL from the CRU BW se result will be	SuggestedR The cloc frequent clock for remove: Followin http://ww In Atlant make it may inc ISSCC 2 to 2 MH shown in	Remed ck rec cy of 2 r BER s this ag pre ww.iee ta the even rease 2016 z. Ow n ghia	dy covery unit 2 MHz and t measurer low-freque sentation p ee802.org/ re were ge easier for transmitte to invesitg verall there asi_3bs_01	(CRU) used in l a slope of 20 nents, passing nory jitter from provided backg 3/bs/public/16_ neral conseno the receiver, 1 rr jitter penalty ate if there will is benifit redui _0316.pdf	the optical wave dB/decade. Whe of low- frequenc the measuremen round material _01/ghiasi_3bs_(us to further redu raised the conce . I have identified be a transmitter ing the PLL BW t	form measurements n using a clock r y jitter from the or t.)1a_0116.pdf uce CRU BW form rn that reducing d several represent penalty if we reduce to 2 MHz and the	ent has a corner ecovery unit as a data to the clock m 4 to 2 MHz to CRU BW to 2 MHz entiavie PLL from duce the CRU BW ese result will be
Cl 120E Ghiasi, Ali Comment T 10 MHz http://w	SC 1 ype CRU ww.iee	TR adds extra e802.org/3,	1 <i>Comment</i> burden to th /bs/public/1	P 255 Ghiasi (Status) ie host So 5_09/ghia	Quantum Ll C erDes see isi_3bs_01	<i>L</i> 20 LC b_0915.pdf	# 115	Cl 123 Ghiasi, Ali Comment Ty Stress r	spor SC	123.8.10 TR er sensitivi	Response St	P 202 Ghiasi Quantum tatus X e low frequency i	L 53 LLC	# [<u>117</u>]
SuggestedRemedy Replace 10 Mhz with 2 MHz Also change Table 120E-4 reference to Table 88-13 with Table 87-13 see http://www.ieee802.org/3/bs/public/15_09/ghiasi_3bs_01b_0915.pdf for background material and http://www.ieee802.org/3/bs/public/15_07/ghiasi_3bs_01_0715.pdf plan to consolidate these two presentation for Atlanta as opticai. 3bs_01_0116.pdf						for background 715.pdf plan to df	transmitter downstream SuggestedRemedy Sinusoidal jitter componnet of stress receiver sensitivity is as following The sinusoidal jitter is used to test receiver jitter tolerance.						The sinusoidal jitter	
Proposed R	espon.	se	Response S	Status ()			The am Table 8 Followin http://wu In Atlant make it will incre from ISS the CRU Proposed R	plitude 7–13 and og pre ww.iee ta the even ease t SCC 2 J BW espor	e of the ap and is illus sentation p ee802.org/ re were ge easier for t transmitter 2016 to inv to 2 MHz. nse	plied sinusoida trated in Figure orovided backg 3/bs/public/16_ ineral consend the receiver, 1 penalty jitter p esitgate and sl These result v <i>Response St</i>	al jitter is depende 87–5, but scale pround material _01/ghiasi_3bs_(us to further redu raised the conce enalty. I have id how that there is will be shown in g tatus O	ent on frequency d from 4 MHz to)1a_0116.pdf uce CRU BW form rn that reducing entified several r a transmitter per ghiasi_3bs_01_0	as specified in 2 MHz. m 4 to 2 MHz to CRU BW to 2 MHz representiavie PLL halty if we reduce 316.pdf

IEEE P802.3bs D1.2 400 Gb/s E	Ethernet 3rd Task For	ce review comments
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Cl 121 SC 121.9.2 King, Jonathan	P 162 Finisar	L 9	# 118	C/ 121 SC 121.7.2 Dudek, Mike	2 <i>P</i> 160 QLogic	L 29	# 120
Comment Type TR Hazard level is curren The subject was adres	Comment Status X tly TBD ssed in the MMF ad hoc of 11	th Feb 2016 with	presentation:	Comment Type T The Stressed receive	Comment Status X er sensitivity is also modified.		
http://www.ieee802.or	g/3/bs/public/adhoc/mmf/16_(02_11/johnson_3	Bbs_01a_0216_mmf.pdf	SuggestedRemedy replace "and the BEI sensitivity is modified 121.1.1"	R requirement is as specified in d as specified in 121.8.8 and th	e BER requireme	Stessed receiver ent is as specified in
SuggestedRemedy Hazard level is curren	tly TBD	th Eeb 2016 with	presentation:	Proposed Response	Response Status O		
http://www.ieee802.or	g/3/bs/public/adhoc/mmf/16_0)2_11/johnson_(Bbs_01a_0216_mmf.pdf	C/ 121 SC 121.8.1 Dudek, Mike	P 160 QLogic	L 46	# 121
which recommended t Replace 'TBD' with '1M Proposed Response	that 400GBASE-SR16 should M' in 121.9.2, 121.9.7, and 12 <i>Response Status</i> 0	be designated h	azard level 1M rem ES2)	Comment Type T The pattern 5 (scram SuggestedRemedy Turn the magenta te:	Comment Status X abled idle) should definitely be r xt to black.	nodified to use th	ne Clause 119 PCS
C/ 121 SC 121.7.1 Dudek, Mike	P 160 QLogic	L 23	# [119	Proposed Response	Response Status O		
Comment Type T The TDEC specification	Comment Status X			Cl 120C SC 120C.1 Dudek, Mike	P 231 QLogic	L 10	# 122
SuggestedRemedy replace "and the BER specified in 121.8.5 ar	requirement is as specified in nd the BER requirement is as	121.1.1" with ", specified in 121	TDEC is modified as 1.1"	Comment Type T With the increase in the same when using issue having a little r	Comment Status X Nyquist frequency from CAUI-4 g the same equation. With the nore loss in the channel.	l (3% higher) the higher allowed B	loss numbers can't be SER there should be no
Proposed Response	Response Status O			SuggestedRemedy In Figure 120C-2 cha	ange 7.3dB to 7.5dB. (This will	make this the sa	ame as for CDAUI-8)
				Proposed Response	Response Status 0		

C/ 120C SC 120C.3.1 P 231 L 35 # 123	C/ 120E SC 120E.3.2 P 256 L 13 # 126				
Dudek, Mike QLogic	Dudek, Mike QLogic				
Comment Type T Comment Status X There is a conflict between 120C.3.1 and 120C.4. 120C.3.1 would imply that the eye diagrams for the host output are measured for no FEC whereas 120C.4 is saying that eye diagrams are measured as for RS-FEC.	Comment Type T Comment Status X The Bit error rate requirement is only 1e-5 in section 120E.1.1. There is no need to measure the PAM4 eyes or jitter etc. to 10^-6 probability				
SuggestedRemedy Either (preferred) on line 35 add "and the eye height and eye width are measured as specified in 109B.3.2.1 for the module output of a PHY that includes an RS-FEC sublayer." or in 120C.4 insert "module output" between "The" and "eye"	SuggestearemedyChange 10^-6 to 10^-5 in two places. Also on page 259 lines 18 and 19 and 31, pagelines 42 and 43 page 262 line 44, 53, 54. and page 263 line 10. And change the n of samples on page 262 line 43 to 400 thousand.Proposed ResponseResponse StatusO				
Proposed Response Response Status O	C/ 120E SC 120E.3.3.2 P 257 L 41 # 127				
C/ 120D SC 120D.4 P 243 L 41 # 124	Comment Type T Comment Status X				
The COM table here includes a Continuous time filter 2 which is not described in Annex 93A. SuggestedRemedy Amend Annex 93A to include the option of a second Continous time filter. Proposed Response Response Status O	SuggestedRemedy Add additional paragraphs stating the following or create another sub clause (120E.4 that contains this information. The time of a transition from 0 to 3, 3 to 0, 1 to 2, or 2 to 1 is the time at which the si				
C/ 120E SC 120E.4.2 P 266 L 2 # 125 Dudek, Mike QLogic Comment Type T Comment Status X AVupp is incorrectly defined It is not the eye amplitude of the middle eye and logic one and logic zero are problematic for this.	The time of a transition from 0 to 3, 3 to 0, 1 to 2, or 2 to 1 is the time at which the s crosses the mid point of Vmid defined in 120E.4.2. The time of a transition from 0 to 1 or 1 to 0 is the time at which the signal crosses to point of Vlow defined in 120E.4.2. The time of a transition from 2 to 3 or 3 to 2 is the time at which the signal crosses to point of Vupp defined in 120E.4.2. The time of transitions from 0 to 2, or 2 to 0, is the time at which the signal crosses mean value of the 1 level signal in the central 0.05UI of the eye. The time of transitions from 1 to 3, or 3 to 1, is the time at which the signal crosses mean value of the 2 level signal in the central 0.05UI of the eye.				
SuggestedRemedy Replace "is the eye amplitude of the middle eye of the equalized waveform. Eye amplitude is defined as the mean value of logic one minus the mean value of logic zero in the central 5% of the eye" with "is the eye amplitude of the upper eye of the equalized waveform. Eye amplitude is defined for the upper eye as the mean value of the +1 signal minus the mean value of the +1/3 level signal in the central 5% of the eye" Proposed Response Response Status O	Proposed Response Response Status O				

C/ 120E SC 120E.3	.2 P 255	L 47	# 128	C/ 120	SC 120.5.10.1.1	P 137	L 14	# 131
Dudek, Mike	QLogic			Le Chemir	nant, Greg	keysight Techr	nologies	
Comment Type T	Comment Status X			Comment	Type T	Comment Status X		
ESMW is in Magenta stressed test (0.4) when the stressed test (0.4) when the stress of	 It is also smaller (0.25) than the is black. These numbers recovery difficult for a bost to recover the second seco	the value being need to be aligned ar a signal that l	used for the host input ed to close the bas such a small value	Interna runs e	al error counter only error free, counting o	requred to count "one or m nly one error will not allow	ore" errors. A validation to	As the link no longer specified pre-FEC BER
Suggested Demody		ci a signar that i		Suggestee	dRemedy			
Change the value to	0.4 and make it black			Chang	ge text to read "error	counter should be able to	count sufficie	nt errors to verify
Drange the value to				Proposed	Response	Pooponoo Statua		
Proposed Response	Response Status 0			Fioposed	response r			
C/ 120E SC 120E.3 Dudek, Mike	.3.3.1 <i>P</i> 258 QLogic	L 48	# 129	<i>Cl</i> 120E Le Chemir	SC 120E.4.2 nant, Greg	P 262 keysight Techr	L 41 nologies	# [132
Comment Type T	Comment Status X			Comment	Type T	Comment Status X		
different effects on a relatively benign for a 33GHz scope bandw SuggestedRemedy Change the scope ba stressed input signal Proposed Response	host. It could be with slow edg a host. However it could also b idth) and with a lot of uncorrela andwidth for measuring the Moo to be 20GHz. <i>Response Status</i> O	es and little jitte e with fast edge ted jitter. dule output eye	r which would be s (only limited by the and calibrating the host	widths sampl 'samp the re an exp Suggested Repla freque sampl	s and heights implies e rate of 3 samples p ling' oscilloscopes w quired measurement pected accuracy for a <i>dRemedy</i> ce the sentence: "Ca ency of 10 MHz and s les per bit." with the f	a real-time oscilloscope m per bit. This potentially pre- hich otherwise should be c s. The minimum sample r a real-time acquisition proc apture PRBS13Q using a c slope of 20 dB/decade and ollowing:	nethodology b ccludes the us apable and or ate is only impless lock recovery a minimum s	y specifying a minimum se of equivalent-time ften preferred for making portant insofar as it sets unit with a corner ampling rate of 3
<i>Cl</i> 119 <i>SC</i> 119.2.4 Le Cheminant, Greg	.9 P 104 keysight Tech	L 3 nologies	# [130	"Captu a slop sampl	ure the PRBS13Q us e of 20 dB/decade a ling process that prov	ing a clock recovery unit w nd either a minimum samp vides equivalent or better a	vith a corner fr ling rate of 3	requency of 10 MHz and samples per bit, or a
Comment Type T	Comment Status X			Proposed	Response F	Response Status O	,	
Internal test pattern g Testing FEC encoded internal error checked	generator passes scrambled idle d patterns is difficult for both tea rs	e pattern throug st equipment an	h FEC encoder. d burdensome for					
SuggestedRemedv				C/ 122	SC 122.7.2	P 179	L 1	# 133
Add the ability to byp the test pattern)	ass FEC encoder for testing pu	rposes. (Possib	ly never FEC encode	Liu, Hai-Fe Comment	eng <i>Type</i> T	Intel Corporati Comment Status X	on	
Proposed Response	Response Status 0			Updat	e Rx characteristics	in Table 122-7 with calcula	ated MPI pena	alty
				Suggested	dRemedy			
				See p	resentation (liu_01_0	0316) at March meeting for	details	

Proposed Response Response Status **0**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn SORT ORDER: Comment ID

Cl 122 SC 122.7.3 P 179 L 38 Liu, Hai-Feng Intel Corporation Intel Corporation Intel Corporation	8 # 134	C/ 123 SC 123.7.2 Liu, Hai-Feng	P 201 Intel Corporation	L7 # <u>138</u>
Comment Type T Comment Status X Update power budget (for max TDP) in Table 122-8		Comment Type T C Update Rx characteristics in	omment Status X	MPI penalty
SuggestedRemedy Change from 6 dB to 5.6 dB		SuggestedRemedy See presentation (liu_01_03	816) at March meeting for deta	ails
Proposed Response Response Status O		Proposed Response Re	esponse Status O	
Cl 122 SC 122.11.2.2 P 185 L 17 Liu, Hai-Feng Intel Corporation Intel Corporation	7 # 135	C/ 123 SC 123.7.3 Liu, Hai-Feng	P 202 Intel Corporation	L 7 # 139
Comment Type T Comment Status X SM APC MPO has better than 35 RL		Comment Type T C Update Table 123-9 with MR	omment Status X	
SuggestedRemedy change to - 45 dB, and add 4 as the maximum number of -45	dB reflections	SuggestedRemedy See presentation (liu_01_03	816) at March meeting for deta	ails
Proposed Response Response Status O		Proposed Response Re	esponse Status O	
C/ 122 SC 122.12.4.6 P 191 L 4 Liu, Hai-Feng Intel Corporation	# 136	C/ 123 SC 123.11.2.2 Liu, Hai-Feng	P 207 Intel Corporation	L 45 # 140
Comment Type T Comment Status X Item OC2 needs consistent max discrete reflectance		Comment Type T C lower max discrete reflectan	<i>comment Status</i> X ace is needed	
SuggestedRemedy change to less than - 45 dB		SuggestedRemedy change to - 35 dB, and add and LR8, respectively	4 and 6 as the maximum num	nber of -35 dB reflections for FR8
Proposed Response Response Status O		Proposed Response Re	esponse Status O	
C/ 123 SC 123.7.1 P 200 L 1 Liu, Hai-Feng Intel Corporation	# 137	C/ 123 SC 123.12.4.7 Liu, Hai-Feng	P 213 Intel Corporation	L 24 # 141
Comment Type T Comment Status X Update Tx characteristics in Table 123-7 with calculated MPI	penalty	Comment Type T C Item OC2 needs consistent	omment Status X max discrete reflectance	
SuggestedRemedy See presentation (liu_01_0316) at March meeting for details		SuggestedRemedy		
Proposed Response Response Status O		Proposed Response Re	esponse Status O	

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn SORT ORDER: Comment ID

C/ 122 SC 122.7.1 P 178 L 6 # 142	C/ 120D SC 120D.3.1.1 P 239 L 18 # 145
Liu, Hai-Feng Intel Corporation	Hegde, Raj Broadcom Corporation
Comment Type T Comment Status X	Comment Type T Comment Status X
Update Tx characteristics in Table 122-6 with calculated MPI penalty	Currently, the entry in the Reference column for RLM(min) in Table 120D-1 points to
SuggestedRemedy	94.3.12.5.1 for the transmitter linearity measurement method. This measurement method allows for large asymmetry between -1/3 and +1/3 levels.
	SuggestedRemedy
Proposed Response Response Status O	Change the measurement method to tighten the allowed asymmetry in the TX output. A consensus measurement method has been developed and presented in the ad-hoc. An updated presentation will be submitted in support of this comment.
C/ 120D SC 120D.4 P 244 L 7 # 143 Hegde, Raj Broadcom Corporation Broadcom Corporation <td>Proposed Response Response Status O</td>	Proposed Response Response Status O
Comment Type T Comment Status X	
The transmitter signal to noise ratio - SNR_TX may not reflect an updated SNDR definition for the CDAUI-8 TX in Table 120D-1.	Hegde, Raj Broadcom Corporation
SuggestedRemedy	Comment Type T Comment Status X
SNR_TX needs to be updated to reflect the modified SNDR specification (please refer to the comment on SNDR for further details) A presentation will be made in support of this comment	In Table 120D-1, Signal-to-noise-and-distortion ratio (min) is set at 31dB. With PAM4 transmitters having a richer variety of transitions and more mechanism to generate distortion, a relaxed budget would allow for ease of implementation.
Proposed Response Response Status O	SuggestedRemedy
	Allow the SNDR spec to be reduced to 29dB for higher de-emphasis levels. An updated presentation will be submitted in support of this comment.
C/ 120E SC 120E.3.3.3.1 P 258 L 47 # 144 Hegde, Raj Broadcom Corporation Broadcom Corporation Broadcom Corporation Broadcom Corporation	Proposed Response Response Status O
Comment Type T Comment Status X The reference CRU bandwidth is currently set at 10MHz. Several implementation styles	CI 120E SC 120E.3.4.1.1 P 260 L 54 # 147
may find this setting too high.	Hegde, Raj Broadcom Corporation
SuggestedRemedy	Comment Type T Comment Status X
Change the reference CRU bandwidth to 4MHz. A presentation will be submitted in support of this comment	The current reference CRU bandwidth of 10MHz may be too high for several implementation styles.
Proposed Response Response Status W	SuggestedRemedy
[Editor's note: Clause changed from CL120 to 120E]	Change the reference CRU bandwidth to 4MHz. A presentation will be submitted in support of this comment.
	Proposed Response Response Status O

C/ 120E SC 120E.4.2 P 262 L 34 # 148	C/ 122 SC 122.7.2 P 179 L 1 # 151
Hegde, Raj Broadcom Corporation	Nicholi, Gary Cisco Systems
Comment Type T Comment Status X	Comment Type TR Comment Status X
The current eye width and height measurement method does not allow for a large enough pre-cursor in the module TX necessary to overcome the channel loss. The receiver needs	Table 122-7. Update the link budget to reflect an MPI penality of 0.1dB (details in liu_01_0316).
a large pre-cursor but the eye width and height could be too low with the larger precursor.	SuggestedRemedy
SuggestedRemedy	See presentation (liu_01_0316) at March meeting for details
modify the step 2) in 120E.4.2 to allow a pre-cursor term equivalent to be added to the reference receiver. A presentation will be submitted in support of this comment.	Proposed Response Response Status O
Proposed Response Response Status O	
	C/ 122 SC 122.7.3 P 179 L 38 # 152
	Nicholl, Gary Cisco Systems
$\begin{array}{cccccccc} C & 120D & SC & 149 \\ \hline \\ eq:log_log_log_log_log_log_log_log_log_log_$	Comment Type TR Comment Status X
Hegue, Raj Broaucom Corporation	Table 122-8. Update table to reflect an MPI penalty of 0.1dB and a maximum discrete
Comment Type T Comment Status X	reflectance of -45dB (details in liu_01_0316)
The current TX jitter budget does not reflect implementational constraints associated with a	SuggestedRemedy
PAM-4 transmitter	See presentation (liu 01 0316) at March meeting for details
SuggestedRemedy	
The clock random and deterministic jitter specs need to be updated to accomodate wider range of TX designs. A presentation will be made in support of this comment	Proposed Response Status O
Proposed Response Response Status O	
	C/ 122 SC 122.11.2.2 P 185 L 17 # [153] Nicholl, Gary Cisco Systems Cisco Systems The second secon
CI 122 SC 122.7.1 P 178 L 7 # 150	Comment Type TR Comment Status X
Nicholl, Gary Cisco Systems	SM APC MPO has better than 35 RL
Comment Type TR Comment Status X	SuggestedRemedy
Table 122-6. Update the link budget to reflect an MPI penality of 0.1dB (details in line 0.1 0.316). Update the transmitter reflectance (max) to -26 dB	change to - 45 dB, and add 4 as the maximum number of -45 dB reflections
Suggested Demody.	Proposed Response Response Status O
Suggesteurterneuv	
See presentation (IIU_01_0316) at March meeting for details.	
Proposed Response Response Status O	

C/ 122 SC 122.12.4.6 Nicholl, Gary	5 P 191 Cisco Systems	L 8	# 154	C/ 123 Nicholl, Ga	SC 123.7.3	P 202 Cisco Systems	L 7	# 157
Comment Type TR Need consistent max dia	Comment Status X screte reflectance			Comment [®] Table [®] for LR8	<i>Type</i> TR 123-9. Update tl 3 (details in liu_	Comment Status X ne link budget to reflect an MPI pr 01_0316).	enality of 0.	3dB for FR8 and 0.5dB
SuggestedRemedy change to less than - 45 Proposed Response	5 dB Response Status O			Suggested See pr Proposed I	Remedy esentation (liu_ Response	01_0316) at March meeting for de <i>Response Status</i> 0	etails	
Cl 123 SC 123.7.1 Nicholl, Gary Comment Type TR Table 123-7. Update the for LR8 (details in liu_0	P 200 Cisco Systems Comment Status X e link budget to reflect an MPI p 1_0316). Update the transmitte	L 1 enality of 0.3d er reflectance (# 155 B for FR8 and 0.5dB (max) to -26 dB.	C/ 123 Nicholl, Ga Comment ⁻ lower r	SC 123.11.2 ry <i>Type</i> TR nax discrete ref	.2 P 207 Cisco Systems Comment Status X lectance is needed	L 45	# 158
SuggestedRemedy See presentation (liu_0 Proposed Response	1_0316) at March meeting for de <i>Response Status</i> 0	etails	Х. Г	Suggested change and LF Proposed I	Remedy e to - 35 dB, and 88, respectively Response	l add 4 and 6 as the maximum ກເ <i>Response Status</i> O	umber of -3	5 dB reflections for FR8
Cl 123 SC 123.7.2 Nicholl, Gary Comment Type TR Table 123-8. Update the for LR8 (details in liu_0 SuggestedRemedy	P 201 Cisco Systems <i>Comment Status</i> X e link budget to reflect an MPI p 1_0316).	L 8 enality of 0.3d	# [156] B for FR8 and 0.5dB	Cl 123 Nicholl, Ga Comment Need o Suggested	SC 123.12.4 ry Type TR consistent max of <i>Remedy</i>	.7 P 213 Cisco Systems Comment Status X discrete reflectance	L 24	# [159
See presentation (liu_0	1_0316) at March meeting for de	etails		change	e to less than - 3	35 dB		
Proposed Response	Response Status O			Proposed I	Response	Response Status O		

C/ 45 SC 45.2.3	P 61	L 31	# 160	C/ 119	SC 119.2.4.6	P 102	L 1	# 163
Ofelt, David	Juniper Netwo	orks		Dillard, Joh	าท	Microsemi		
Comment Type TR Need to add control bit and fault feature	Comment Status X ts, status bits, and new contro	I registers for the	e pre-FEC degrade	Comment Regard show a illegal	<i>Type</i> E ding the mention an example of re in regards to 802	Comment Status X of the example codewords: v sulting parity given a set of 25 2 3bs due to the different appr	vhile Annex 91 57-bit blocks, I	A (table 91A-3) does believe those blocks are bling
SuggestedRemedy	6 for dotailed changes			Suaaestea	IRemedv			~g.
Proposed Response	Response Status O			Sugge legal c I will a	st ammending A odewords ttempt to provide	nnex 91A or adding an annex	< 119? with an	example of a pair of
C/ 119 SC 119.2 Ofelt, David	P 97 Juniper Netwo	L 39 orks	# 161	Proposed	Response	Response Status O		
Comment Type TR Need to add tx alignme	Comment Status X ent marker bits, rx alignment r	narker bits, high	SER, degraded SER,	C/ 119 Dillard, Joh	SC 119.2.4.8 nn	P 103 Microsemi	L 5	# 164
SuggestedRemedy See ofelt_3bs_01_031 Proposed Response	6 for detailed changes Response Status O			Comment In figur Suggesteo Chang	<i>Type</i> E re 119-8 the inpu <i>IRemedy</i> le to CDMII	Comment Status X It is referred to as XLGMII/CC	GMII	
C/ 119 SC 119.2.4.6	6 <i>P</i> 100	L 51	# 162	Proposed	Response	Response Status O		
Dillard, John Comment Type E	Microsemi Comment Status X			C/ 119 Dillard, Joh	SC 119.2.6.2	.2 P 108 Microsemi	L 31	# 165
The wording of this parallel already described in 1	ragraph seems a little confusi 19.2.4.5, is redundant.	ng, and as it mo	stly restates what was	Comment Refere	<i>Type</i> E ence to XLGMII/C	Comment Status X		
Suggestearkernedy Suggest removing (mo markers).	est of) it, or rewording it (drop	mention of the tr	anscoder, alignment	Same Suggested	issue on line 50 IRemedy			
Possible wording:				Chang	e to CDMII			
The PCS sublayer sha bit blocks from tx_scra blocks, Ma and Mb, as RS(544,514) encoder i	Il implement RS(544,514). The mbled_am on a 10-bit round re described in 119.2.4.5. Thes into codeword A and codeword	ne PCS distribut robin basis into t se are then enco d B, respectively	es a group of 40 257- wo 5140-bit message ded using /.	Proposed	Response	Response Status O		
Proposed Response	Response Status O							

C/ 119 Dillard, Joh	SC 119.2.6.3	P 109 Microsemi	L 31	# 166	Cl 122 Anslow, Pe	SC 122.8.4	<i>P</i> 181 Ciena	L 13	# 168
Comment T The ref This is Suggested Was th Proposed F	Type E fernece to table 1 sue is also seen Remedy is supposed to re Response	Comment Status X 19-1 for valid control charact on pg 110 lines 8,10 efer to table 49-1 ? Response Status 0	ers is incorrect.		Comment The de Ad Hoo The co sequer the run interva	Type T finitions of OM, calls of 2 and nsensus view v nce. The zero le of 6 zeros and ls of the run of	Comment Status X Aouter and ER for PAM4 optic 16 February. vas to base the OMAouter and evel was proposed to be the av the three level was proposed 7 threes.	al signals were I ER definitions /erage of the ce to be the avera	discussed on the SMF on the PRBS13Q entral 2 unit intervals of ge of the central 2 unit
	,				Suggested	Remedy			
<i>Cl</i> 121 Anslow, Pe	SC 121.3.1 te	P 155 Ciena	L 24	# 167	Introdu 123 ba zeros i interva	ce definitions of sed on the zero n the PRBS130 Is of the run of	f OMAouter and ER for PAM4 b level as the average of the co c pattern and the three level as 7 threes in the PRBS13Q patte	optical signals entral 2 unit inte s the average o ern, with editori	into Clauses 122 and ervals of the run of 6 f the central 2 unit al license.
Comment 7 All thre Delay o As the ~10 ps	Type T the PMD's have: constraints: 8192 maximum delay this allows PMI	Comment Status X bit times (16 pause_quanta of time includes the delay throug D implementations that are pa	or 20.48 ns) gh 2 m of fiber a	fter the MDI (which is	Proposed I	Response SC 122.6	Response Status O	L 36	# 169
spool c This wa	of fiber of up to at as discussed on t al to change the	bout 2 m before the MDI. the SMF Ad Hoc call on 2 Fel delay constraint values black	bruary with no of	bjection to the	Anslow, Pe <i>Comment</i>	te Type E	Ciena Comment Status X		
Suggested	Remedy	,			"The p	ositioning of tra	nsmit and receive lanes at the	MDI is specifie	d in TBD."
In 121. constra	3.1, 122.3.1, 123 aint values black.	3.3.1, and the corresponding r	ows of Table 11	6-3, change the delay	Suggested Replac	<i>Remedy</i> e TBD with a c	ross-reference to 122.11.3.1		
Proposed F	Response	Response Status O			Proposed I	Response	Response Status O		
					<i>Cl</i> 122 Anslow, Pe	SC 122.8.1	P 180 Ciena	L 22	# 170
					Comment	Туре Т	Comment Status X		
					A squa undefir 123 on	ne wave is not ned tests. The r the SMF Ad H	used by any existing test or like ow for square wave was propo oc call on 16 February without	ely to be used i osed to be remo objection.	n any of the as yet oved here and in Clause
					Suggested	Remedy			
					Remov	ve the square w	ave row from Tables 122-9 an	d 123-10.	
					Proposed I	Response	Response Status O		

				-					
C/ 123 SC 123.7	.3 P 202	L 22	# 171	C/ 123	SC ·	123	P 200	L 21	# 174
Anslow, Pete	Ciena			Anslow, Pe	ete		Ciena		
Comment Type T	Comment Status X			Comment	Туре	т	Comment Status X		
"The channel inser splice loss given in	tion loss is calculated using TBD 123.11.2.1." was discussed on t	plus an allocatic he SMF Ad Hoc	on for connection and call on 16 February.	There propos	has bee sals for i	en significa removing t	ant discussion on the reflection he various TBDs and magen	on budget for 40 ta values.	00GBASE-LR8 and
SuggestedRemedy				Suggested	Remed	y			
Change to "The ch in Table 123–6 for	annel insertion loss is calculated 400GBASE-FR8 and fiber attenu	using the maxim ation of 0.5 dB/k	num distance specified m plus an allocation	Make with eq	the chai ditorial li	nges propo cense.	osed on page 5 of anslow_3b	os_03_0315 att	ached to this comment
for connection and	splice loss given in 123.11.2.1."	change the "a" to	D black.	Proposed	Respon	se	Response Status 0		
Proposed Response	Response Status O								
				C/ 122	SC ·	122.8.5.1	P 181	L 31	# 175
C/ 122 SC 122	P 178	L 20	# 172	Anslow, Pe	ete		Ciena		
Anslow, Pete	Ciena			Comment	Tvpe	т	Comment Status X		
Comment Type T There has been sig	Comment Status X nificant discussion on the reflecti	on budget for 40	00GBASE-DR4 and	As the and D	re has t GD_ma	been no ob x in Table	jection to the value of 2.24 p 122-12, these should be cha	s for Max mean nged to black	n DGD in Table 122-11
proposals for remo	ving the various TBDs and mage	nta values.		Suggested	 IRemed	V		C	
SuggestedRemedy	proposed on page 2 of analous 2	ha 02 0215 att	ached to this commont	Chang	je 2.24	ps for Max	mean DGD in Table 122-11	and DGD_ma	x in Table 122-12 to
with editorial licens	e.	DS_03_0315 alla	ached to this comment	Diack	D				
Proposed Response	Response Status 0			Proposea	Respon	se	Response Status 0		
				C/ 45	SC 4	45.2.3.14	P 59	L 28	# 176
C/ 123 SC 123	P 200	L 21	# 173	Anslow, Pe	ete		Ciena		
Anslow, Pete	Ciena			Comment	Tvpe	т	Comment Status X		
Comment Type T	Comment Status X			As req	isters 3	.33, 3.44, a	and 3.45 are not used in the	400GBASE-R	PCS, remove the
There has been sig	nificant discussion on the reflecti	on budget for 40	00GBASE-FR8 and	subcla	uses re	lated to the	ese registers from the draft.		
proposals for remo	ving the various TBDs and mage	nta values.		Suggested	Remed	У			
SuggestedRemedy				Remov	ve the s	ubclauses	related to registers 3.33, 3.4	4, and 3.45 fro	m the draft.
Make the changes with editorial licens	proposed on page 4 of anslow_3 e.	bs_03_0315 atta	ached to this comment	Proposed	Respon	se	Response Status 0		
Proposed Response	Response Status O								

C/ 30	SC 30.5.1.1.17	P 3	2	L 15	# 177
Anslow, Pete	9	Ciena	i		
Comment Ty The ma	<i>pe</i> T ximum rates of th	Comment Status ne counters in 30.5	X .1.1.17 and 3	30.5.1.1.18	are TBD
SuggestedR Replace	e <i>medy</i> TBD with approp	priate values in bot	h cases		
Proposed Re	esponse	Response Status	0		