C/ 00 SC 0	Р	L	# 145	C/ 1	SC	1.4		P 26	L 34	# 88
Anslow, Pete	Ciena			D'Ambros	sia, Johr	า		Independent		
Comment Type T	Comment Status D			Commen	t Type	Е	Comment S	Status D		Bucket
120E.3.3.3.1 and 120E 400GBASE-R signal" a Pattern 5 is scrambled The properties of a PRI but using a PRBS31 se http://www.ieee802.org found to be adequate fo	.3.4.1.1 allow a test pattern s found in Table 122-9. idle, but pattern 3 is "TBD BS31Q pattern defined as equence in place of PRBS1 /3/bs/public/adhoc/logic/de or this purpose.	n of "Pattern 5, P to replace "PRBs per 120.5.10.2.3 3, were analysed c11_15/anslow_	attern 3, or a valid S31"" "PRBS13Q test pattern" d in 01_1215_logic.pdf and	Susp 1.4.7 codin defin The F	ected re 2f 400G ng subla ed in Cla PCS for edReme	eference i BASE-R: yer ause 82 f 400GbE dv	in the following s : An IEEE 802.3 for 400 Gb/s ope BASE-R is defir	statement - family of Physeration. (See If ned in Clause	sical Layer devic EEE Std 802.3, 4 119	ces using the physical Clause 119.)
SuggestedRemedy				chan	ae text t	∽, o followir	na			
Define a PRBS31Q tes PRBS31 pattern in plac In Tables 122-9 and 12	t pattern in a subclause of ce of PRBS13. 3-10 define pattern 3 as "F	120.5.10.2 as pe PRBS31Q".	er 120.5.10.2.3 but with a	1.4.7 codin Claus	2f 400G ig subla se 119.)	BASE-R	: An IEEE 802.3 ed in Clause 119	family of Phys for 400 Gb/s	sical Layer devid operation. (See	es using the physical IEEE Std 802.3,
All with editorial license	9 3 10 Clause 45 10 allow 1	inis pattern to be	controlled.	Proposed	l Respo	nse	Response S	tatus W		
Proposed Response	Response Status W			PRO	POSED	ACCEP	Т.			
PROPOSED ACCEPT.				C/ 45	SC	45.2.1.1	16a	P 44	L 2	# 136
	Dee		# 67	Nicholl, G	Sary			Cisco System	IS	
6/1 50 1.3	P 26		# 27	Commen	t Tvpe	TR	Comment S	Status D		
Rolesal, Faul	Commoco	Je		The	current t	ext only s	specifies a single	e recommened	d CTLE setting r	egister for all 16 lanes
Comment Type T	Comment Status D			of a C	DAUI-	16 chip-to	module interfac	e. In keeping	with all CAUI-4	module
Add new reference to the The year of publication desired. This is the firs	he recently published stand should be considered opti t edition of the MPO-16 sta	dard for the MPO onal, depending andard.	-16 used in clause 121. upon the specificity	imple indivi restri	ementati dual CE ctive. TI	ons there AUI-16 la ne whole	e should be a se ane. A single req point of the MLE	parate recomr gister (and CT) protocol was	nended CTLE ro LE setting) for a to allow board	gister for each Il 16 lanes is too designers flexibility in
SuggestedRemedy				routir	ng of the	e indivuda	al lanes of a CAL	JI-4 or CDAUI	-16 interface.	
Add:				Suggeste	edReme	dy				
ANSI/TIA-604-18:2015 (FOCIS 18)	Fiber Optic Connector Int	ermateability Sta	ndard - Type MPO-16	Pleas 16 ch	se add a nip-to-m	a 'recomm odule inte	nended CTLE se erface.	etting' register	for each indiviud	dal lane of the CDAUI-
Proposed Response	Response Status W			Proposed	l Respo	nse	Response S	tatus W		
PROPOSED ACCEPT Add: ANSI/TIA-604-18:2015 MPO-16	IN PRINCIPLE. FOCIS 18-Fiber Optic Co	nnector Intermat	eability Standard-Type	PRO See I	POSED respons	ACCEP ⁻ e to comi	T IN PRINCIPLE ment #39			
See also comment #26										

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: Clause, Subclause, page, line

C/ **45** SC **45.2.1.116a** Page 1 of 40 12/01/2016 12:02:04

C/ 45	SC 45.2.1.116a	P 44	L 8	# 39	C/ 117 SC 117.1.	1 P77	L 3	# 90
Maki, Jeffe	ry	Juniper Netwo	orks		D'Ambrosia, John	Independent		
Comment	Type TR	Comment Status D			Comment Type E	Comment Status D		Bucket
Table 4	45-90a. CDAUI-16	chip-to-module recommen	ded CTLE regis	ter bit definitions need	There is no mention	of the CDXS / CDAUI-n under	summary of maj	or concepts
to be p	per lane and not per	r module. PCB routing stud	lies for CFP8 co	onnectors show it to be	SuggestedRemedy			
problei The lei	matic to match the	length of all chip-to-module	e traces sufficient	ntly for the TX links.	Add Item h}			
inches	. (See the pink and	vellow traces in the drawi	ng with filename	e "CFP8 PCB Routing	h) The CDMII can be	e extended through the use of t	two CDXS subla	yers and a physical
Examp	ble.png")	,	5	0	instantiation of the C	CDAUI-n.		
Suggested	Remedy				Proposed Response	Response Status W		
Define	Register 1.499 to be interface.	be per-lane for setting of th	e CTLE recomr	mended value for this	PROPOSED ACCE	PT IN PRINCIPLE.		
Proposed I	Response	Response Status W			Add Item h:	e extended through the use of t		vers with a CDALIL-n
PROP	OSED ACCEPT IN	PRINCIPLE.			between them.	e extended through the use of t		
Define	Registers 1.400 th	rough 1.415 as CDAUI-16	chip-to-module	recommended CTLE,				
lane 0	through lane 15 will	th editorial license.			C/ 119 SC 119.1.	5 P 89	L 3	# 137
See al	so comment #150.				Nicholl, Gary	Cisco Syster	ns	
C/ 117	SC 117.1	P 76	L 41	# 89	Comment Type TR	Comment Status D		
D'Ambrosia	a, John	Independent			Figure 119-2. Don't corresponding to the	we need a "postFEC Interleave e "preFEC distribution" block in	" block in the Rx	a data path
Comment	Type E	Comment Status D		Bucket	SuggestedPomody			-
The tex	xt below is partially	correct, but it is also partia	ally incomplete -			arlagua" blogk into Figure 110.2		
The CI	DMII is an ontional	logical interface between t	he MAC sublav	er and the Physical	Add a posifed me	eneave block into Figure 119-2		
Layer ((PHY). The CDAUI-	-n interface may optionally	be used to exte	and the CDMII.	Proposed Response	Response Status 🛛 🛛 🛛 🛛 🖤		
					PROPOSED ACCE	PT IN PRINCIPLE.		
lt is tru conjun	e that the CDMII ca ction with the CDX	an be physically extended S sublayer.	by the CDAUI-n	, but this is done in	Add a block after the	e FEC decode in the RX path c	alled: Post FEC	Interleave.
Suggested	Remedy				Add a sublaver para	agraph after the Reed-Solomon	decoder sublave	er with details, with
Chang	e text to -				editiorial license. Th	is will move some of the text ou	ut of 119.2.5.3.	
The CI Layer (to optic	DMII is an optional (PHY). The CDXS s onally extend the C	logical interface between t sublayer in conjunction with DMII.	he MAC sublay h the CDAUI-n i	er and the Physical Interface may be used				
Proposed I	Response	Response Status W						
		-						

PROPOSED ACCEPT.

C/ 119 SC 119.1.5

1119 SC 119.1.5 P89 L3 # 35 Viet, David Juniper Networks Improve Networks Acatel-Lucent Figure 119-2: has a boxes called '64Br68B Encode' and '64Br68B Encode' and '64Br68B Encode' and '64Br68B Encode' and '64Br68B Encode's and '74B and '74Br68 Encode's and rate matching' Cli 119 SC 119.1.5 P89 L14 # 17 Change harge the tile of sub classes into two pices 'rate matching' and '74Br68B Encode's and rate matching' Mapping Reference Point Not identified SuggestedRemody Change harge the tile of sub classe 119.2.4.1 from 'Transmit process' to 'Encode and rate matching'' Add text to the end of 119.2.4.1 Note-The stream of 66-bit blocks generated by this process is used as the reference signal for mopping to OTN. See ITU-T G.708 [B50]. Change harge the tile of sub classe 119.2.5.7 from 'Receive process' to 'Decode and rate matching'' Mapping from OTN. See ITU-T G.708 [B50]. The CS-Ego rest is Mapping from OTN. See ITU-T G.708 [B50].									
Mail, David Junjer Networks Summent Type T Comment Status D Figure 119:2 has a boxes called *648/668 Encode* and *648/668 Encode* blocks *00 Encode* Core in 18 *119 SC 1119.1.5 F88 18 18 *11 The SC 118.5 F88 L12 #18 18 *18 *11 The SC 118.1.5 F88 L12 #18 18 *18 Comment Type TR	C/ 119 SC 119.1	.5 P 89	э L З	# 35	C/ 119	SC 119.1.5	P 89	L 14	# 17
Comment Type T Comment Status D Comment Type T Comment Status D Signet 115:2 Signet fields Decode "hot the frages: D Receive Process: The clock/rate matching function is not shown in the figure. D DTM Mapping Reference point in Figure 119-2 as the input of the "256B/257B Transcode" block in the TX direction and the output of the "Reverse Transcode" block in the RAdoB encode/decode? Add the TX direction and the output of the "Reverse Transcode" block in the RAdoB encode/decode? Mapset Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. Mapping Reference point in Figure 119-2 as the input of the "256B/257B Transcode" block in the TX direction and the output of the "Reverse Transcode" block in the RAdoB encode/decode? PROPOSED ACCEPT IN PRINCIPLE. Change the TX box tilt to "Encode and rate matching" Also change the till of sub clause 119.2.5.1 from "Receive process" to "Decode and rate matching" Note-The stream of 64-bit block segnerates The RS Segnerates D The RAS for Repring the till of sub clause 119.2.5.7 from "Receive process" to "Decode and rate matching" Also change the till of sub clause 119.2.5.7 from "Receive process" to "Decode and rate matching" Note-The endow of 64-bit block segnerated by this process is used as the reference signal for de-mapping from OTN. See ITU-T G.709 [B50].	Ofelt, David	Junipe	er Networks		Trowbrid	ge, Steve	Alcatel-Luce	nt	
Figure 119:2 has a base called "484/686 Encode" and "648/686 Decode" but the corresponding text sections (112:2.4.1 and 119:2.4.1) and 119:2.5.7) are called Transmit Process" and Signit the transmit and receive process subsections into two pieces "rate matching" and "64/686 encode/edoceb block. Split the transmit and receive process subsections into two pieces "rate matching" and "64/686 encode/edoceb block. PROPOSED ACCEPT IN PRINCIPLE. Change the title of sub clause 119.2.4.1 from "Transmit process" to "Encode and rate matching" Also change the title of sub clause 119.2.4.1 from "Transmit process" to "Encode and rate matching" Abso change the title of sub clause 119.2.5.7 more "Recieve process" to "Decode and rate matching" Change tals (on page 93, line 27): The FCS generates Change the title of sub clause 119.2.5.7 more "Recieve process" to "Decode and rate matching" Abso change the title of sub clause 119.2.5.7 more "Recieve process" to "Decode and rate matching" Abso change the title of sub clause 119.2.5.7 more "Recieve process" to "Decode and rate matching" Abso change the title of sub clause 119.2.5.7 more "Recieve process" to "Decode and rate matching" Abso change the title of sub clause 119.2.5.7 more "Recieve process" to "Decode and rate matching" Abso change the title of sub clause 119.2.5.7 more "Recieve process" to "Decode and rate matching" Y119 SC 119.1.5 P89 L 12 # 18 <td>Comment Type T</td> <td>Comment Status</td> <td>D</td> <td></td> <td>Commer</td> <td>t Type TR</td> <td>Comment Status D</td> <td></td> <td></td>	Comment Type T	Comment Status	D		Commer	t Type TR	Comment Status D		
Corresponding text sections (119:2.4.1 and 119:2.6.7) are Called * Lansmit Process and Receive Process: The clockariae matching lunction is not shown in the figure. SuggestedRemedy SuggestedRemedy Subtract matching lunction is not shown in the figure. Note: The standard a frate matching in the pieces 'rate matching' and 'sbit the transmit and receive process studeed blocks. No PROPOSED ACCEPT IN PRINCIPLE. No Reported Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. No Note: The stream of 66-bit blocks generated by this process is used as the reference signal for mapping to OTN. See ITU-T G.709 [B50]. Note: The stream of 66-bit blocks generated by this process is used as the reference signal for mapping to OTN. See ITU-T G.709 [B50]. Change the TX box title to 'Decode and rate matching' Also change the title of sub clause 119:2.5.7 from 'Receive process' to 'Decode and rate matching' Note: The stream of 66-bit blocks generated by this process is used as the reference signal for de-mapping from OTN. See ITU-T G.709 [B50]. Change also (on page 103, line 43): The PCS generates L 12 # 18 Change also (on page 103, line 43): The PCS forms 16 Decomment Matching' Also change the title of sub clause 119:2.5.7 from 'Receive process' to 'Decode and rate matching' Note: The stream of 66-bit blocks generated by this process is used as the reference signal for de-mapping from OTN. See ITU-T G.709 [B50]. See also comment #18 L 12 # 18 Yi 119 <td< td=""><td>Figure 119-2 has a</td><td>boxes called "64B/66B E</td><td>ncode" and "64B/66B [</td><td>Decode" but the</td><td>OTN</td><td>Mapping Reference</td><td>ce Point Not identified</td><td></td><td></td></td<>	Figure 119-2 has a	boxes called "64B/66B E	ncode" and "64B/66B [Decode" but the	OTN	Mapping Reference	ce Point Not identified		
biggestedRemedy Split the transmit and receive process subsections into two pieces 'rate matching' and d'abédie encodidecode'. Add a 'rate match' box to the top of figure 119-2 in between the CDMIII and the 64b66b encodidecode'. Add a 'rate match' box to the top of figure 119-2 in between the CDMIII and the 64b66b encodidecode'. Add a 'rate matching' Moposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. Monogen the title o 'Encode and rate matching'' Also change the title o 'sub clause 119.2.4.1 from 'Transmit process' to 'Encode and rate matching'' Mole The stream of 66-bit blocks generated by this process is used as the reference signal for mapping to OTN. See ITU-T G.709 [B50]. Add text to the end of 119.2.6.1 Note The stream of 66-bit blocks generated by this process is used as the reference signal for mapping to OTN. See ITU-T G.709 [B50]. Change also (on page 93, line 27): The fraces mole blocks generated by this process is used as the reference signal for de-mapping from OTN. See ITU-T G.709 [B50]. Change also (on page 103, line 43): The F25 forms 16 See also comment 418 ************************************	corresponding text "Receive Process".	The clock/rate matching	19.2.5.7) are called "I r J function is not shown i	ansmit Process" and n the figure.	Suggeste	edRemedy			
Split the transmit and receive process subsections into two pieces "rate matching" and "Subsectionation and the object and subsections in the top of figure 119-2 in between the COMII and the 64b66b encode/decode blocks. Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. Change the TX box tills to "Encode and rate matching" Also change the tille of sub clause 119.2.4.1 from "Transmit process" to "Encode and rate matching" Also change the tille of sub clause 119.2.5.7 from "Recieve process" to "Decode and rate matching" Change also (on page 103, line 27): The transmit process generates to: The PCS generates Change the tille of "Decode and rate matching" Also change the tille of sub clause 119.2.5.7 from "Recieve process" to "Decode and rate matching" Change also (on page 103, line 43): The RS box tills to "Decode and rate matching" Also change the tille of sub clause 119.2.5.7 from "Recieve process" to "Decode and rate matching" Change also (on page 103, line 43): The RS box tills to "Decode and rate matching" Also change the tille of sub clause 119.2.5.7 from "Recieve process" to "Decode and rate matching" Change also (on page 103, line 43): The RS box tills to "Decode and rate matching" Also change the tille of sub clause 119.2.5.7 from "Recieve process" to "Decode and rate matching" Change also (on page 103, line 43): The RS box tills to "Decode and rate matching" Also change the tille of sub clause 119.2.5.7 from "Recieve process" to "Decode and rate matching" Also change the tille of the top of the	SuggestedRemedy				Indic Tran	ate OTN Mapping	Reference point in Figure 1	19-2 as the input	of the "256B/257B Transcode" block in
"64b666 encode/decode blocks. Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. PROPOSED ACCEPT IN PRINCIPLE. Change the TX box title to "Encode and rate matching" Add text to the end of 119.2.4.1 Also change also (on page 93, line 27): The transmit process generates The ransmit process generates The row of the stream of 6f-bib blocks generated by this process is used as the reference signal for de-mapping from OTN. See ITU-T G.709 (B50). Change also (on page 93, line 27): The transmit process generates The rCS generates The row of the stream of 6f-bib blocks generated by this process is used as the reference signal for de-mapping from OTN. See ITU-T G.709 (B50). Change also (on page 103, line 43): The RS-FEC receive function forms 16 The PCS forms 16 See also comment #18 Y119 SC 119.1.5 P 89 Virtual to decode as a departed in in the 648/668 Encode/Decode blocks Togested/Remedy Include clock rate adaptation in the 648/668 Encode/Decode blocks W Yoppeord Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. W	Split the transmit ar	nd receive process subse	ctions into two pieces "	rate matching" and	the F	x direction			
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to: The PCS generates Change the RX box title to "Decode and rate matching" Also change the title of sub clause 119.2.5.7 from "Recieve process" to "Decode and rate matching" Change also (on page 103, line 43): The RS-FEC receive function forms 16 to: The PCS forms 16 See also comment #18 7/ 119 SC 119.1.5 P 89 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 L 12 # 18 7/ 119 SC 119.1.5 P 80 L 12 L 12 # 18 7/ 119 SC 119 S	The transmit proces	ss generates			for a	e-mapping from O	IN. See IIU-I G.709 [B50]		
The PCS generates Change the RX box title to "Decode and rate matching" Also change the title of sub clause 119.2.5.7 from "Recieve process" to "Decode and rate matching" Change also (on page 103, line 43): The RS-FEC receive function forms 16 to: The PCS forms 16 See also comment #18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC to main the subscript of the subscr	to:	0							
Change the RX box title to "Decode and rate matching" Also change the title of sub clause 119.2.5.7 from "Recieve process" to "Decode and rate matching" Change also (on page 103, line 43): The RS-FEC receive function forms 16 to: The PCS forms 16 See also comment #18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 rowbridge, Steve Alcatel-Lucent comment Type TR Comment Status D Clock Rate Adaptation (idle/Ll/ordered set insertion/deletion) location not indicated 'uggestedRemedy Include clock rate adaptation in the 64B/66B Encode/Decode blocks 'poposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE.	The PCS generates	i							
Also change the title of sub clause 119.2.5.7 from "Recieve process" to "Decode and rate matching" Change also (on page 103, line 43): The RS-FEC receive function forms 16 to: The PCS forms 16 See also comment #18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 118 // 119 SC 119.1.5 P 89 L 12 # 18 // 118 // 119 SC 119.1.5 P 89 L 12 # 18 // 119 SC 119.1.5 P 89 L 12 # 18 // 118 // 119 SC 119.1.5 P 89 L 12 # 18 // 118 // 119 SC 119.1.5 P 89 L 12 # 18 // 118 // 118 // 118 // 118 // 118 SC 119.1.5 P 89 L 12 # 18 // 118 // 118 SC 119.1.5 P 89 L 12 # 18 // 118 // 118 SC 119.1.5 P 89 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 L 12 # 18 // 118 SC 119.1.5 P 80 L 12 L 12 # 18 // 118 SC 119 L 12 K 18 // PROPOSED ACCEPT IN PRINCIPLE.	Change the RX box	title to "Decode and rate	matching"						
Change also (on page 103, line 43): The RS-FEC receive function forms 16 to: The PCS forms 16 See also comment #18 2/ 119 SC 119.1.5 P 89 L 12 # 18 2/ 119 SC 119.1.5 P 89 L 12 # 18 2/ 119 SC 119.1.5 P 89 L 12 # 18 2/ 10 SC 119	Also change the titl matching"	e of sub clause 119.2.5.7	from "Recieve process	s" to "Decode and rate					
The RS-FEC receive function forms 16 to: The PCS forms 16 See also comment #18 2/ 119 SC 119.1.5 P 89 L 12 # 18 2/ 119 SC 119.1.5 P 89 L 12 # 18 rowbridge, Steve Alcatel-Lucent 2/ mment Type TR Comment Status D Clock Rate Adaptation (idle/Ll/ordered set insertion/deletion) location not indicated 2/ uggestedRemedy Include clock rate adaptation in the 64B/66B Encode/Decode blocks 2/ roposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE.	Change also (on pa	ıge 103, line 43):							
The PCS forms 16 See also comment #18 2/ 119 SC 119.1.5 P 89 L 12 # 18 2/ involvidge, Steve Alcatel-Lucent 2/ involvidge, Steve Include clock rate adaptation in the 64B/66B Encode/Decode blocks 2/ inposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. PROPOSED ACCEPT IN PRINCIPLE.	The RS-FEC receiv	e function forms 16							
See also comment #18 2/ 119 SC 119.1.5 P 89 L 12 # 18 irowbridge, Steve Alcatel-Lucent Comment Type TR Comment Status D Clock Rate Adaptation (idle/Ll/ordered set insertion/deletion) location not indicated indicated 'uggestedRemedy Include clock rate adaptation in the 64B/66B Encode/Decode blocks 'roposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. V	The PCS forms 16								
C/ 119 SC 119.1.5 P 89 L 12 # 18 irowbridge, Steve Alcatel-Lucent Comment Type TR Comment Status D Clock Rate Adaptation (idle/LI/ordered set insertion/deletion) location not indicated SuggestedRemedy Include clock rate adaptation in the 64B/66B Encode/Decode blocks Viroposed Response PROPOSED ACCEPT IN PRINCIPLE. W	See also comment	#18							
include clock rate adaptation in the 64B/66B Encode/Decode blocks Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE.	C/ 119 SC 119.1		9 L 12	# 18					
Comment Type TR Comment Status D Clock Rate Adaptation (idle/Ll/ordered set insertion/deletion) location not indicated SuggestedRemedy Include clock rate adaptation in the 64B/66B Encode/Decode blocks Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE.	Trowbridge, Steve	Alcate	l-Lucent						
Clock Rate Adaptation (idle/Ll/ordered set insertion/deletion) location not indicated SuggestedRemedy Include clock rate adaptation in the 64B/66B Encode/Decode blocks Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE.	Comment Type TR	Comment Status	D						
SuggestedRemedy Include clock rate adaptation in the 64B/66B Encode/Decode blocks Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE.	Clock Rate Adaptat	ion (idle/Ll/ordered set in	sertion/deletion) locatio	on not indicated					
Include clock rate adaptation in the 64B/66B Encode/Decode blocks <i>roposed Response Response Status</i> W PROPOSED ACCEPT IN PRINCIPLE.	SuggestedRemedy								
Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE.	Include clock rate a	daptation in the 64B/66B	Encode/Decode block	6					
PROPOSED ACCEPT IN PRINCIPLE.	Proposed Response	Response Status	w						
	PROPOSED ACCE	PT IN PRINCIPLE.							
See the response to comment #35	See the response to	o comment #35							

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: Clause, Subclause, page, line

C/ 119 SC 119.1.5 Page 3 of 40 12/01/2016 12:02:06

C/ 119	SC 119.2.1	P 90	L 11	# 138	C/ 119	SC 119.2.1	P 90	L 20	# 6		
Nicholl, G	ary	Cisco Systems	5		Baden, Erio	С	Broadcom				
Comment I thou 120). the te Suggestee Chang strear may v "When where for ea and sl	Type E ght we were referr If this is the case t rm "PCS Lane" on <i>dRemedy</i> ge "When commun ns. Per direction (f rary in phase and n communicating we each bit stream is ach direction (TX a kew dynamically".	Comment Status D ing to this '16 encoded bit stru- then it might be clearer to also line 32 of the same page. hicating with the PMA, the 400 RX or TX), these serial stream skew dynamically." to with the PMA, the 400GBASE is referred to as a PCS Lane (and RX) originate from a com	eams' as PCS o refer to them 0GBASE-R PC ns originate fro -R PCS uses PSCL). Althou mon clock, the	Lanes (see Clause here. In fact we use CS uses 16 encoded bit om a common clock but 16 encoded bit streams, ght the 16 PCS lanes ey may vary in phase	Comment Type TR Comment Status D E Data is not distributed to Code Words, but to FECs SuggestedRemedy E Replace sentence starting with 'The data stream is distributed to two FEC.' with The data stream is distributed to two logical FECs, weach of which encodes the data to Code Words. Add 'The' to the beginning of the next sentence: 'The two FEC codewords are then' Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. PROPOSED ACCEPT IN PRINCIPLE.						
Proposed PROF Chang "Whe strear may v to: "Wher (also I comm	Response POSED ACCEPT I ge: nn communicating ns. Per direction (f ary in phase and n communicating w known as PCS lan ion clock but may	Response Status W N PRINCIPLE. with the PMA, the 400GBASE RX or TX), these serial stream skew dynamically." with the PMA, the 400GBASE tes). Per direction (RX or TX), vary in phase and skew dyna	E-R PCS uses ns originate fro -R PCS uses the PCS lane amically."	16 encoded bit m a common clock but 16 encoded bit streams s originate from a	Chang The da errors. To: The da errors. Chang 'The tw	e: ata stream is dist ata stream is dist	ributed to two FEC codeword ributed to two 5140-bit blocks ntence to: ds are then.'	Is and then FEC	encoded to control		

C/ 119 SC 119.2 Baden, Eric	.1 P 90 Broadcom	L 33	# 7	C/ 119 Baden, Eric	SC 119.2.1	P 90 Broadcom	L 39	# 8
Comment Type TR Declare what we d	Comment Status D know about PCS lane identifica	tion		Comment T The des	ype TR scription does	Comment Status D	what the receive	process entails
SuggestedRemedy				SuggestedF	Remedy			
change TBD on lin unique, per PCS la	e 33 to : ne markers (values are TBD)			On line ", redist	34, after 'Next ributes the FE	the PCS', add the following C code word symbols to for) text: n a single stream	и ,
Proposed Response	Response Status W			Proposed R	esponse	Response Status W		
PROPOSED ACC	EPT IN PRINCIPLE.			PROPC	SED ACCEPT	IN PRINCIPLE.		
It attains alignmen transmitted on eve individual PCS lan To: It attains alignmen periodically transm lanes, the individua then re-ordered an	marker lock based on the comm y PCS lane. After alignment mar as are identified using TBD and the marker lock based on the comm itted on every PCS lane. After ali I PCS lanes are identified using d deskewed.	ion AM0 pattern kers are found o hen re-ordered a ion marker (CM) gnment markers the unique mark	that is periodically in all PCS lanes, the ind deskewed. portion that is are found on all PCS er portion (UM) and	Next the to: Next the stream. See als	 PCS remove PCS re-interl The PCS ther o comment #1 	s alignment markers, eaves the correced FEC co removes alignment marker 39	dewords on a 10- s,	bit basis to form a single
Also see response	to comment #10.			C/ 119	SC 119.2.3.	1 P 91	L 20	# 140
C/ 119 SC 119.2	.1 <i>P</i> 90	L 39	# 139	Nicholl, Gar	у	Cisco Syste	ems	
Nicholl, Gary	Cisco System	IS		Comment T	ype E	Comment Status D		
Comment Type TR	Comment Status D			This is v	/ery confusing	"The LSB of the hexadecin	nal value represer	nts the first transmitted
There is no mention stream is distribute	n of the reverse of the process m d to two FEC codewords "	entioned in line	20, i.e. "The data	Especia you hav	illy when binar te to transpose	y values are shown in Figur the hex values but not the	e 119-3 in the ord binary values). T	er of transmission (so his means the binary
SuggestedRemedy				value of 0x01	a data contro	block is actually 0x10 when	eas I had always	heard it refered to as
Add some text to n	ake it clear that the "the data str	eam from the tw	vo FEC codewords are	Suggested	?emedv			
descrambles the d	going on to mention that "Next the data back to	e PCS removes 64B/66B and the	alignment markers, en decodes the	No prop	osed resolutio	n. iust saving :)		
64B/66B encoded	data."			Proposed R	esponse	Response Status W		
Proposed Response PROPOSED ACC	Response Status W EPT IN PRINCIPLE.			PROPC	SED REJECT			
See the response	o comment #8			No prop This is o	osed remedy. consistent with	the lower Ethernet rates.	see 49.2.4.1, 82.2	.3.1, etc.

C/ 119 SC 119.2.3.2	P 91	L 35	# 40	C/ 119	SC 119.2.3.	5 <i>P</i>	93 Dar Natwork	L 2	# 33
Slavick, Jen	Avago Techno	biogles		Ofeit, David	1	Juni	Der Network	5	
Comment Type E The block_type field is a Character or Ordered s	Comment Status D used to identify blocks that co et.	ontain a Start C	Bucket Character, Terminate	Comment T There i the rate	<i>Type</i> T is quite a bit of e matching deta	Comment Status functionality hiding be ails are hidden behind	 D ahind the sin the referne 	nple referenc	ce to 82.2.3.6. Most of
SuggestedRemedy				Suggested	Remedy				
Delete the word "charac	cter" after Terminate			Either	copy the text fro	om 82.2.3.6 or add a	hint that the	crossreferer	nce is worth following.
Proposed Response	Response Status W			Somet to 82.2	hing like: "Idle .3.6"	control characters ar	d the part th	ey play in ra	te matching is identical
PROPOSED ACCEPT.				Proposed I	Response	Response Status	W		
C/ 119 SC 119.2.3.2	P 92	L 1	# 41	PROP	OSED REJECT	-			
Slavick, Jeff	Avago Techno Comment Status	ologies	Bucket	The be Rate m	havior is identionation	cal to that of 82.2.3.6 ared in 119.2.4.1. see	, so the refer	rence is corr	ect as stated. 35
Figure 119-3 is a duplic	ate of 82-5		200101	CI 110	SC 440.2.2	• D	13	/ 45	# 04
SuggestedRemedy				Ofelt David	30 11 9.2.3 .	o P	93 Der Network	L 15 S	# 34
Remove 119-3 and cha	nge all references to it to poi	nt to 82-5		Commont.		Commont Status			
Proposed Response PROPOSED ACCEPT.	Response Status W			There i the rate	is quite a bit of e matching deta	functionality hiding be ails are hidden behind	ehind the sin the referne	nple referenc	ce to 82.2.3.9. Most of
				Suggested	Remedy				
C/ 119 SC 119.2.3.5 Trowbridge, Steve	P 93 Alcatel-Lucen	<i>L</i> 1 t	# 19	Either Somet	copy the text fro hing like: "Orde	om 82.2.3.9 or add a ered sets and the par	hint that the t they play ir	crossreferer rate matchi	nce is worth following. ng is identical to
Comment Type TR	Comment Status D			82.2.3.	9"				
Missing EEE functional than the "Idle" control c	ity and clock rate adaptation haracters that are inherited for	from the descri rom 82.2.3.6	ption - it is much more	Proposed I PROP	Response OSED REJECT	Response Status	w		
SuggestedRemedy				The he	havian in identi.		aa tha nafa		
Change section heading change text to "Behavio 82.2.3.6"	g to "Idle (/I/), Low Power Idle or of Idle and Low Power Idle	e (/Ll/), and cloo control charact	ck rate adaptation", ters are described in	The be	navior is identio	cal to that of 82.2.3.9	, so the refe	rence is corr	ect as stated.
Proposed Response	Response Status W								
PROPOSED REJECT.									
The heading is consisteness see response to comme	ent with that of 82.2.3.6. Rate ent #35	e adaptation is	covered in 119.2.4.1,						

C/ 119 SC 119.2.3.8 Page 6 of 40 12/01/2016 12:02:06

C/ 119	SC 119.2.3.8	P 93	L 15	# 20	C/ 119	SC ·	119.2.4.1	P 93	L 30	# 21
Trowbrid	ge, Steve	Alcatel-Lu	icent		Trowbridge	, Steve		Alcatel-Lucent		
Commen	nt Type T	Comment Status D			Comment	Туре	TR	Comment Status D		
It is r that a for cl	not clear that it is no are the same as de lock rate adaptatior	ot only the format of orde scribed in 82.2.3.9, in pa n.	ered sets, but the bel articular that ordered	navior of ordered sets sets can be deleted	Since t for the insert i second	the AMs m: if the dles - the d parag	s occupy < e layers ab his is refle raph only	200ppm of space, idles are ove are -100ppm and the lay cted in the last sentence of the refers to deleting idles.	not necessarily /ers below are - ne first paragra	deleted to make room +100ppm, you may oh of 119.2.4.2, but the
Suggeste	edRemedy				Suggested	Remed	v.	j		
Cnar	nge text to "The bei	navior of ordered sets is	described in 82.2.3.	9."	After th	ne last s	sentence o	of the first paragraph of 119.2	2.4.2. add "See	119.2.3.5 and
Proposed	d Response	Response Status W			119.2.3	3.8". De	elete the 2	nd paragraph of 119.2.4.2 si	nce it is wrong.	
PRO	POSED REJECT.				Proposed I	Respon	se	Response Status W		
It is c "Orde inclue	correct as stated. ered sets are speci ding clock compen	ified identically as in 82.2 sation.	2.3.9." Implies all asp	ects are identical	PROP Chang The tra signals The tra accom multipl control There market ordere market	OSED / e: ansmit p s receive ansmit p modate e clock l charac are suff rs, in ac d sets a rs. See	ACCEPT I process ge ed from th process m the transi domains, ters or ser icient idle Idition to h are remove 119.2.4.4	N PRINCIPLE. enerates 66-bit blocks based e CDMII. One CDMII data tra ust delete idle control charac mission of alignment markers it may also perform clock rat quence ordered sets or the in control characters to delete andling clock compensation ed, if necessary, to accommon for more details.	upon the TXD- ansfer is encode ters or sequence s. If the PCS tra- e compensation sertion of idle on n order to make Idle control chi- odate the insertion	63:0> and TXC<7:0> ed into one 66-bit block. ce ordered sets to ansmit process spans in via the deletion of idle control characters. e room for alignment aracters or sequence ion of the alignment
					To:	n o mit n		paratas 66 hit blacks based	upon the TVD	(62:0) and TVC (7:0)

The transmit process generates 66-bit blocks based upon the TXD<63:0> and TXC<7:0> signals received from the CDMII. One CDMII data transfer is encoded into one 66-bit block. If the PCS transmit process spans multiple clock domains, it may also perform clock rate compensation via the deletion of idle control characters or sequence ordered sets or the insertion of idle control characters. Idle control characters or sequence ordered sets are removed, if necessary, to accommodate the insertion of the alignment markers. See 119.2.3.5 and 119.2.3.8 for the deletion and insertion rules, and 119.2.4.4 for more details on alignment markers.

See also comment #9

C/ 119 SC 119.2 Baden, Eric	4.1 P 93 Broadcom	L 34	# 9	Cl 119 Ofelt, David	SC [,]	119.2.4.4	P 96 Juniper Netwo	L 17 rks	# 36
Comment Type TR Add reference to Cl SuggestedRemedy On line 37, add the and deletion rules"	Comment Status D .82 IDLE deletion rules following sentence: 'Refer to CL8	2 section 82.2.	3.6 for IDLE insertion	Comment The te idle co happer this ha mentio	<i>Type</i> ext curre ontrol ch ns or the oppen.	T ntly says " aracters fr at you can The receiv natching a	Comment Status D Room for the alignment mark om the CDMII data stream". insert/delete anything that is re-side "alignment marker ren and therefore is fine.	ters is created This doesn't r legal for clock noval" section	by periodically deleting nake it clear where this compensation to make (119.2.5.4) doesn't
Proposed Response PROPOSED ACCE See response to co	Response Status W PT IN PRINCIPLE. mment #21			Suggested Add a comme compe	Remed reference ent goes ensation	ly ce to the tr s through) both in lo	ransmit process (119.2.4.1) (to make it clear that rate mat cation and mechanism. "Roc	or "rate match" tching is the sa om for the aligr	section if the related me as clock ment markers is
Cl 119 SC 119.2 Nicholl, Gary Comment Type ER It probably makes s lanes. SuggestedRemedy	4.4 P 96 Cisco Systems <i>Comment Status</i> D ense to clarify (or remind everyor	L 9 s	# 141 Bucket dealing with 16 PCS	Proposed I PROP Chang Room from th to: Room	a by the Respon OSED / ge: for the a he CDM for the a	a transmit p se ACCEPT I alignment III data stre alignment	Process (119.2.4.1)". Response Status W N PRINCIPLE. markers is created by periodi pam markers is created by the tra	ically deleting i nsmit PCS (se	dle control characters e 119.2.4.1).
Change "In order to support deskew and Proposed Response PROPOSED ACCE	support deskew and reordering of reordering of the 16 individual f <i>Response Status</i> W PT.	of individual PC PCS lanes"	S lanes " to "In order to	Cl 119 Nicholl, Ga Comment For cla	SC - ary <i>Type</i> arity per	119.2.4.4 E haps we s	P 96 Cisco Systems <i>Comment Status</i> D hould add PMA service interf	L 34	# 142 Bucket of "What is shown in
				Table Suggested Chang lanes." PCS la	119-1 is <i>Remed</i> ge "Wha " to " T anes at	s how the a ly t is shown he format the PMA s	alignment markers 34 appear in Table 119-1 is how the ali shown in Table 119-1 is how ervice interface"	on the PCS la gnment marke v the alignmen	nes." rs appear on the PCS t markers appear on the

Proposed Response Response Status W

PROPOSED ACCEPT.

C/ 119 SC 119.2.4.4 Anslow, Pete	P 96 Ciena	L 40	# 146	Cl 119 Nicholl, Ga	SC ary	119.2.4.4		P 97 Cisco System	L 4 ns	# 143
Comment Type T C	Comment Status D			Comment	Туре	TR	Commen	nt Status D		
The alignment marker enco A proposed set of markers	dings in Clause 119 are was analysed in	e TBD.		The en BIP7 o	ncoding octets.	g descriptio	on in the hea	ader for Table 11	19-1 is incorrect.	There are no BIP3 or
http://www.ieee802.org/3/bs discussed at the 11 Decem "shoulder" on the 4:1 interfe	s/public/adhoc/logic/dec ber Logic Ad Hoc call, v paved lanes clock conte	11_15/anslow_01 where it was noted of characteristic	_1215_logic.pdf and I that there is a On the call it w3as	Suggested Remo	<i>Remed</i> ve the l	<i>dy</i> head desc	ription {M0.I	M1.M2. BIP3.M4	.M5.M6. BIP7} f	rom Table 119-1.
proposed to change the con Marker encoding with 48-bi transitions than AMO) and 4	nmon part of the marke common part (taken fr 8-bit unique part has be	r to be 48 bits lon om AM6 for 100G een analysed with	g to reduce this effect. bE as it has more significantly improved	Proposed PROF	Respoi OSED	nse ACCEPT	Response IN PRINCIP	e Status W LE.	, , , , ,	
SuggestedRemedy		anualy o Logic A		See re	esponse	e to comm	ent #10.			
Change the common part o 100GbE followed by their in	f the alignment markers verse: "0x9A, 0x4A, 0x	to be the first thr 26, 0x65, 0xB5, 0	ee bytes of AM6 for kD9".	C/ 119 Baden, Eri	SC c	119.2.4.4		P 97 Broadcom	L 7	# 10
Set the unique part of the a markers proposed in anslov	lignment markers to be v_01_1215_logic.pdf fo	the first three byte llowed by their inv	es of the unique erse:	Comment	Туре	TR	Commen	nt Status D		of the entries
0x9E, 0xEB, 0x27, 0x61, 0x 0x50, 0x74, 0x88, 0xAF, 0x 0xB4, 0xB7, 0xEA, 0x4B, 0x	8B, 0x77 48, 0x15			Suggested	ncoaine IRemea	g descriptio dy	on in Table	119-1 does not r	natch the format	of the entries
0xE4, 0xFB, 0xF1, 0x1B, 0x 0xDC, 0x58, 0xEE, 0x23, 0x	(04, 0x0E (A7, 0x11			Chang { M0, 1	ge the E M1, M2	Encoding d 2, FIXED3,	escription to M4, M5, M6	o be: 6, FIXED7, Uniqu	ue FEC Lane Ide	entifier}
0xBD, 0xA9, 0xBF, 0x42, 0 0x97, 0x67, 0x77, 0x68, 0x	x56, 0x40 98. 0x88			Proposed	Respoi	nse	Response	Status W		
0x24, 0x35, 0xA5, 0xDB, 0x 0x57, 0x64, 0x51, 0xA8, 0x	CA, 0x5A			PROP	OSED	ACCEPT	IN PRINCIP	LE.		
0x28, 0xF9, 0x3E, 0xD7, 0x 0xCB, 0xD1, 0xAD, 0x34, 0 0x5E, 0x1E, 0x38, 0xA1, 0x	06, 0xC1 x2E, 0x52 E1, 0xC7			Chang {CM0, Also s	e the h CM1, . ee resp	neading of .CM5, UM0 ponse to co	the table wh 0, UM1.UM5 omment #14	hich is currently i 5} 6.	ncorrect to:	
0x19, 0x98, 0xF9, 0xE6, 0x 0x84, 0xEC, 0x20, 0x7B, 0x 0x13, 0xA4, 0xED, 0xEC, 0 0x3F, 0x8A, 0xBE, 0xC0, 0	67, 0x06 :13, 0xDF x5B, 0x12 x75. 0x41			Also o Chang There	n page je: is a po	96, line 28 ortion that is	3: s common a	cross all alignme	ent markers, and	d then a unique portion
This makes the AMs 96 bits free running PRBS9.	long, which will fit in 6	x 257-bit blocks v	vith 6 bits set to the	per P0 To: There CM5).	CS lane is a po and th	e. ortion that is ien a uniqu	s common a e portion pe	across all alignme er PCS lane (des	ent markers (des	signated as CM0 to to UM5).
Proposed Response R	esponse Status W			,,				(0	- /
PROPOSED ACCEPT.										
[Editor's note: page change	d from 119 to 961									

Cl 119 SC 119.2.4.4 P 98 L 25 # 144 Nicholl, Gary Cisco Systems	C/ 119 SC 119.2.4.5 P 99 L 30 # 11 Baden, Eric Broadcom
Comment Type E Comment Status D Bucket Figure 119-6. The aligment marker comprises of 13 x 10bit FEC symbols per PCS lane. Isn't that unlucky ?? SuggestedRemedy Image: Comment Status	Comment Type TR Comment Status D Description is unclear and does not really match the functions SuggestedRemedy Replace sentences on lines 30 and 31 with the following: To improve error correction ability, symbols from the two FEC codewords are symbol interleaved, to form the final PCS lanes. Data is distributed to the two FECs by breaking the stream up into 10 bit message symbols, and then distributing those message symbols in a round robin fashion to the two FECs.
See response to comment #146 Cl 119 SC 119.2.4.4 P 99 L 23 # 133 Nicholl, Gary Cisco Systems Cisco Systems Comment Type TR Comment Status D	Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. Change: Data is distributed to those two FEC codewords by performing a 10 b round robin distribution of the tx_scrambled<256:0> data as follows To:
The note "163 840 257-bit blocks between AM insertions" is somewhat ambiguous. Do the "163 840 x 257-bit blocks" include the alignment markers and 136 bit pad ? I don't believe they do, but that is not the impression that Figure 119-7 gives. Also are the "163 840 x 257- bit blocks" at the aggregrate or the PCS lane level. At this point in the block diagram (Figure 119-2) we have no distributed the data into 16 x PCS lanes, so I presume the reference is to the aggregate data stream which is not what Figure 119-7 infers. <i>SuggestedRemedy</i> Please clarify. If as I suspect that the alignment marker insertion occurs on the aggregate data stream before distribution to PCS lanes, then I would redraw the figure to make this clear. Also need to clarify whether the "163 840 x 257-bit blocks" include the alignment markers and 136 bit pad or not. <i>Proposed Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Response</i> <i>Res</i>	Data is distributed to two 5140-bit blocks by performing a 10-bit round robin distribution of the tx_scrambled<256:0> data. Cl 119 SC 119.2.4.5 P 99 L 31 # 42 Slavick, Jeff Avago Technologies Comment Type E Comment Status D Bucket We distribute 10 bits of data SuggestedRemedy Change "10 b" to "10-bit" Proposed Response Response Status W
PROPOSED REJECT. It is clear from the previous discussion of this subject on page 96, line 25.	PROPOSED ACCEPT.

C/ 119	SC 119.2.4.5	P 99	L 33	# 37	C/ 119	SC 119.2.4.	6 P 99	L 50	# 124
Ofelt, Dav	/id	Juniper Netw	orks		Nicholl, G	ary	Cisco Sys	tems	
Comment The p uses section	t Type T pre-fec distrubtion d the data stream aft on 119.2.4.4 which o	Comment Status D oesn't really use tx_scramt er alignment markers are ir doesn't have a name.	bled as defined ir nserted, so it is u	n 119.2.4.3- it really sing the output of	Comment I am r theref 257-b	<i>Type</i> T not sure this is te ore each k-sym it blocks produce	Comment Status D echnically correct "The PCs bol message corresponds ed by the transcoder (with	S interleaves two F to one half of a gro the exception of th	EC codewords, oup of 40 interleaved he alignment marker
Suggeste Defin	<i>dRemedy</i> e a tx_scrambled_a	am in 119.2.4.4 and then us	se this in the pre-	-FEC distribution in	which code	I don't beleive is word does not co	s the intent ? Also due to the alignment of the intent ? Also due to the option of the second s	ne 10bit preFEC in 257-bit blocks prod	terleaving each FEC uced by the transcoder.
119.2 Proposed	2.4.5 I Response	Response Status W			Suggester Pleas	dRemedy e clarify.			
PRO	POSED ACCEPT II	N PRINCIPLE.			Proposed	Response	Response Status W		
On Pa The g To:	age 96, line 25, cha group of alignment r	nge: narkers shall be inserted o	nce every 163 84	40 257-bit blocks.	PROF Chan The P to one	POSED ACCEPT ge: PCS interleaves t half of a group	FIN PRINCIPLE. wo FEC codewords, there of 40 interleaved 257-bit b	fore each k-symbo locks produced by	ol message corresponds the transcoder (with the
The g varial varial Chan	roup of alignment r ble tx_scrambled_a ble tx_scrambled. ge the variable to to	narkers shall be inserted o m is created by inserting th k_scrambled_am on page \$	nce every 163 84 le group of alignr 99, lines 32 and 3	40 257-bit blocks. The ment markers in the 36.	excep to: The P bit blc 257-b blocks	tion of the alignr CS distributes a locks, therefore ea it blocks produce s being directly in	nent marker blocks) group of 40 257-bit block ach k-symbol message co ed by the transcoder (with nserted periodically into th	s on a 10-bit round presponds to one h the exception of th e data stream)	robin basis to two 5140- nalf of a group of 40 ne alignment marker
					[Edito	r's note: line 50	added to the comment]		
					<i>C</i> / 119 Baden, Er	SC 119.2.4.	6 P 99 Broadcon	L 50	# 12
					Comment	Type TR	Comment Status D		

Description is unclear as to how the FECs are organized

SuggestedRemedy

replace sentence on line 50 starting with 'The PCS interleaves." with the following: The 400G RS(544,514) is formed from two, logical, 200G RS(544,514) FECs operating in parallel. The PCS interleaves 10 bit message symbols from the scrambler on a round robin basis, to these two, logical, FECs. Therefore, it takes 40 - 257 bit blocks from the transcoder to provide two codewords of message symbols, one to each, logical FEC. Each code is based on the generating polynomial given by Equation (119-1).

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See the response to comment #124

C/ 119 Nicholl, G	SC 119.2.4.6	P 99 Cisco System	L 50	# 123	C/ 119 Gustlin, M	SC 119.2.4.6	P 100 Xilinx	L 14	# 63
Comment	Type T Con	nment Status D			Comment	Type F	Comment Status D		Bucket
Shoul shall i based	dn't we also specify the v mplement RS(544,514)" I on 10bit symbols and ha	values of "t" and "m" I think it is important as the ability to correc	in the sentence ' to know that RS ct up to 15 symbo	The PCS sublayer FEC we are using is ols per FEC codeword.	The tw codew to lable	vo FEC codewords vord1. When creating them as codeword	that are interleaved are cui g a detailed bit ordering dia dA and codewordB.	rrently labled as agram, I found t	codeword0 and hat it would be clearer
Suggeste	dRemedy				Suggested	Remedy			
Chan	ge "The PCS sublayer sh	nall implement RS(544	4,514)" to "The F	CS sublayer shall	Chang	e all instances of C	codeword0 to CodewordA,	and Codeword1	to CodewordB.
imple in futu	ment RS(544,514,15,10) ire references.	. After this is defined	once you can sh	orten it to RS(544,514)	Proposed	Response	Response Status W		
Proposed	Response Resp	oonse Status W			PROP	USED ACCEPT.			
PROF	POSED REJECT.				C/ 119	SC 119.2.4.6	P 100	L 33	# 69
It is st	ated that is it a 10-bit svr	mbol:			Gustlin, M	ark	Xilinx		
Galois	s Field GF(2^10) where the	he symbol			Comment	Туре Т	Comment Status D		
size is	s 10 bits.				The n	umbering of bits for	the FEC codewords is reve	ersed from stan	dard IEEE custom
And t This i	=15 is stated in sub claus s all consistent with the d	se 119.2.5.3. lescriptions in clause	91.		(msb f the nu numbe	irst). The current de bmering is reversed ering, remove the re	escription follows the prece d with a reversing function. eversal and stick with the p	dence establish This has led to recedence of 80	ned by 802.3bj. But then confusion. Simplify this 02.3bj without the
C/ 119	SC 119.2.4.6	P 99	L 52	# 125	revers	al. This is also cons	sistent with the proposed b	it ordering diagr	am.
Nicholl, G	ary	Cisco System	is		Suggested	lRemedy			
Comment	Type TR Con	nment Status D			Make	the changes as spe	ecified in gustlin_3bs_04_0	116.	
"Each terms consi	FEC codeword, FEC codestently throughout the do	enerating "We seem de or FEC block. I this cument. I recommend	to be a bit incor nk we should pic I FEC codeword	sistent in using the k one term and use it	Proposed PROP	Response OSED ACCEPT.	Response Status W		
Suggeste	dRemedy								
Chan gener	ge "Each code is based o ating "	on the generating " to	" Each codewor	d is based on the					
Proposed	Response Resp	oonse Status 🛛 🛛 🛛 🛛 🛛 🛛 🖉							
PROF	POSED ACCEPT IN PRI	NCIPLE.							
Chan	ge:								
Each to:	code is based								
The F	RS(544,514) code is base	ed							
and c The c Exam To	hange (page 101 line 22) oefficients of the generat ple codewords for each o): for polynomial for eac code are provided in <i>i</i>	h code are prese Annex 91A.	nted in Table 119-2.					
The c Table	oefficients of the generat 119-2. Example codewo	or polynomial for the ords for the RS(544,57	RS(544,514) coo I4) code are prov	de are presented in vided in Annex 91A					
				T ^(k) I I I I I I I I I I				-	

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: Clause, Subclause, page, line

C/ 119 SC 119.2.4.6 Page 12 of 40 12/01/2016 12:02:06

Cl 119 SC 119.2.4.7 P 102 L 15 # 126 Nicholl, Gary Cisco Systems Cisco Systems	C/ 119 SC 119.2.4.8 P 103 L 1 # 66 Gustlin, Mark Xilinx
Comment Type ER Comment Status D Suggesting adding some text to explain what the pseudo code above actually does.	Comment Type T Comment Status D There currently is no transmit bit ordering diagram.
SuggestedRemedy Add some text to get across the message that the individual PCS lanes on the PMA service interface are comprised of an interleave of 10b RS FEC symbols from the two FEC codewords. perhaps include the disagram on slide 6 of http://www.ieee802.org/3/bs/public/15_11/gustlin_3bs_03_1115.pdf. It would also help to explain why the data from the two FEC codewords is played out in such a stange looking order. Proposed Response Response Status W	SuggestedRemedy Add in the transmit bit ordering diagram as shown in gustlin_3bs_02_0116 as figure 119- 10. Remove the editors note and the TBD. Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. Add this statement as well (into section 119.2.4.8): The transmit bit ordering is illustrated in Figure 119-10.
 PROPOSED ACCEPT IN PRINCIPLE. Change: Once the data has been FEC encoded, two FEC codewords are interleaved before the data is distributed to each PCS lane. To: Once the data has been FEC encoded, two FEC codewords are interleaved on a 10-bit basis before the data is distributed to each PCS lane. In addition, see the diagram as added in comment #66 which should clear up any confusion. 	Cl 119 SC 119.2.4.9 P 103 L 26 # 43 Slavick, Jeff Avago Technologies Avago Technologies Comment Type T Comment Status D Redundant shall statement with the last paragraph of 119.2.1. Also this is the generator not the checker section. SuggestedRemedy Change the first paragraph of 119.2.4.9 to read "The PCS has the ability to generate a scrambled idle test pattern which is suitable for receiver tests and for certain transmitter tests
C/ 119 SC 119.2.4.7 P 102 L 26 # 62 Gustlin, Mark Xilinx	Proposed Response Response Status W PROPOSED ACCEPT.
Comment Type E Comment Status D There is a placeholder for a PCS block distribution diagram, at this time there is no plans on having this diagram. SuggestedRemedy Delete the figure title: Figure 119-9-PCS Block distribution. And delete the TBD. Proposed Response Response Status W PROPOSED ACCEPT.	[Editor's note: Subclause changed from 119.2.5.9 to 119.2.4.9] C/ 119 SC 119.2.5.1 P 103 L 43 # 13 Baden, Eric Broadcom Comment Type TR Comment Status D Bucket The receive function is a PCS function and not an FEC function. SuggestedRemedy Change 'RS-FEC' to 'PCS' on line 43. Proposed Response Response Status W PROPOSED ACCEPT. V PROPOSED ACCEPT. V V

C/ 119 SC 119.2.5.1 P 103	L 46	# 127	C/ 119 S	C 119.2.5.3	P 97	L 28	# 47
Nicholl, Gary Cisco Sy	stems		Slavick, Jeff		Avago Techr	nologies	
Comment Type ER Comment Status D Add "alignment" in front of markers.		Bucket	Comment Type Bypass err	T or indication	Comment Status D feature is not included. This	s is a very useful	feature to enable the
SuggestedRemedy Change "Note that alignment marker lock is ach processed and therefore the markers are proce environment" to "Note that alignment marker lop processed and therefore the alignment markers environment Proposed Response Response Status W PROPOSED ACCEPT.	nieved before FEC co ssed in a high error p ck is achieved before are processed in a h	odewords are probability e FEC codewords are high error probability	feature. W uncorrected FEC design the specific the FEC co codeword v bypass this feature woo	d error rate o /hen segmer d error rate n hs (which inc ation ensure dewords still vas complete buffering sir uld be usable	f 0 you can reduce latency l the link aren't running ear 0 can be achieved. Der lude this feature) would like s the appropriate check is of occurs, the FEC skips buffe ely fixed before passing it or the you're non-fixable error before bypass_correction i	by turning off the at the specified li signs supporting ly support it for 4 done to ensure M ering the data to nto the PCS deco rate (uncorretable s usable, and by	error indication mits then an 25GE and 100GE RS- 00G as well, so adding TTFPA. Correction of validate that the oder. It's safe to e errors) is 0. This pass correction is
C/ 119 SC 119.2.5.1 P 103 Nicholl, Gary Cisco Sv	L 52 stems	# 128	SuggestedRem	nedy	FEC's definition.		
Comment Type ER Comment Status D I thought we were using the term "PCS Lane" r change in the order of the text. Also change "F function" to be consistent with the rest of the CI	ather than "FEC Lan EC receive function" ause.	<i>Bucket</i> e" Also a proposed to "PCS receive	Add the fol "The Reed indication f of this optic (see X). W FEC hype	owing text to Solomon de eature to red on is indicate nen the options, indication	the end of 119.2.5.3 coder may optionally provid uce the delay contributed by d by the assertion of the FE n is provided it is enabled b enable variable (see X)	e the ability to by y the RS-FEC su C_bypass_indica y the assertion o	pass the error blayer. The presence ation_ability variable f the
SuggestedRemedy							
Change "The FEC receive function shall suppo lanes and a maximum Skew Variation of 4 ns" 1 maximum Skew of 180 ns, and maximum Skev	t a maximum Skew o o "The PCS receive Variation of 4 ns. be	of 180 ns between FEC function shall support a etween PCS Lanes."	When FEC indication a	_bypass_cou and the value	rection_enable is asserted, of FEC_bypass_indication_	the decoder sha _enable has no e	ll not bypass error ffect.
Dropood Pooponoo	,		When FEC	_bypass_ind	ication_enable is asserted,	additional error n	nonitoring is performed

Proposed Response Response Status W PROPOSED ACCEPT.

by the RS-FEC sublayer to reduce the likelihood that errors in a packet are not detected. The Reed-Solomon decoder counts the number of symbol errors detected on all PCS lanes in consecutive non-overlapping blocks of 8192 codewords. When the number of symbol errors in a block of 8192 codewords exceeds 5560, hi_ber shall be set to true and the Reed-Solomon decoder shall cause synchronization header rx_coded<1:0> of each subsequent 66-bit block that is delivered to the PCS decoder to be assigned a value of 00 or 11 for a period of 60 ms to 75 ms."

Change the definition of hi_ber in 119.2.6.2.2 to read "Boolean variable which indicates when the Symbol Error Rate being received has exceeded the threshold defined in 119.2.5.3 when the RS-FEC is operating in FEC_indication_bypass mode."

Proposed Response Response Status W

PROPOSED REJECT.

It has been shown from a technical point of view that bypass indication could be added without worry of MTTFPA concerns in sun_01_1215_logic, but have not yet seen a presentation or consensus on adding this new mode to the standard.

Cl	119	P
SC	119.2.5.3	1

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C/ 119 SC 119.2.5.3 P 104 L 14 # 38	C/ 119 SC 119.2.5.3 P 104 L 31 # 130
Dfelt, David Juniper Networks	Nicholl, Gary Cisco Systems
Comment Type T Comment Status D The decoded data from the RS decode is described to be put into rx_scrambled, but it really doesn't, since the alignment markers are still in the bitstream.	Comment Type TR Comment Status D Remove the reference to "FEC correction bypass"
SuggestedRemedy Define a rx_scrambled_am which gets the output of the RS decode function. Then the alignment marker removal section (119.2.5.4) takex rx_scrambled_am and produces rx_scrambled.	Change "When the Reed-Solomon decoder determines that a codeword contains errors (when the bypass correction feature is enabled) or contains errors that were not corrected (when the bypass correction feature is not supported or not enabled)." to "When the Reed- Solomon decoder determines that a codeword contains errors that were not corrected "
Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE.	Proposed Response Response Status W PROPOSED ACCEPT.
On line 14 change to rx_scrambled_am.	C/ 119 SC 119.2.5.3 P 104 L 33 # 131 Nicholl, Gary Cisco Systems 131
The vector am_rx shall be removed prior to transcoding. To: The vector am_rx shall be removed from rx_scrambled_am to create rx_scrambled prior to transcoding.	Comment Type TR Comment Status D I don't think it is technically correct to include the word "two" in "within the two associated codewords" Why are there "two" associated FEC codewords ? The previous part of the same sentence, only refers to the FEC decoder determinering that there are errors in a
Cl 119 SC 119.2.5.3 P 104 L 22 # 129 Nicholl, Gary Cisco Systems Cisco Systems Cisco Systems	"single" FEC codeword. There is no mention of "two associated FEC codewords" . [Commenter's comment. This FEC codeword interleaving really complicates the description!]
Comment Type TR Comment Status D As detailed in "http://www.ieee802.org/3/bs/public/adhoc/logic/dec11_15/sun_01_1215_logic.pdf" there are no practical options to bypass error correction. Remove any reference to "error correction bypass" in the document"	SuggestedRemedy Change "within the two associated codewords," to "within the associated codeword," Proposed Response Response Status W
SuggestedRemedy Remove lines 22 to 28 "The Reed-Solomon decoder may provide the option to perform error detection without error correction to reduce the delay contributed by the RS-FEC sublayer. The presence of this option is indicated by the assertion of the FEC_bypass_correction_ability variable (see 119.3). When the option is provided, it is enabled by the assertion of the FEC_bypass_correction_enable variable (see 119.3). NOTE-The PHY may rely on the error correction capability of the RS-FEC to achieve its performance objectives. It is recommended that acceptable performance of the underlying link is verified before error correction is bypassed. "	Change: within the two associated codewords, To: within the two associated codewords (the two codewords that are interleaved together),
Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. Also remove the MDIO variable from table 119-3 and 119-4. And RF6 from 119.6.4.2. Fix the numbering in 119.6.4.2. With editorial license to clean up any impacted text.	

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: Clause, Subclause, page, line

C/ 119 SC 119.2.5.3 Page 15 of 40 12/01/2016 12:02:06

C/ 119 SC 119.2.5.3 P 104	L 35	# 22	C/ 119	SC 119.2.5	5.4	P 104	L 39	# 45
wang, longtong Huawei			Slavick, Je	eΠ		Avago Techn	ologies	
Comment Type ER Comment Status D			Comment	Туре Т	Commen	t Status D		
Sync header of all 66-bit blocks out of 256B/257B	to 64B/66B trans	coder are corrupted,	The Al	M marker remo	oval runs on rx	_scrambled prod	uced by the dec	oder block.
while "rx_coded_0<1:0>" only indicates the firs	t 66-dit diock in 2	570.	Suggested	lRemedy				
SuggestedRemedy			Chang	e "The first 20	56 message bi	its in every 8192	nd codeword is t	he vector" to read
"it shall ensure that, for every 257-bit block within	the two	also at the autout of the	"Every	8192nd code	words the first	2056 bits of rx_s	crambled blocks	s is the vector"
256B/257B to 64B/66B transcoder, rx_coded_i<1	0 > for i=0 to 3, ar	e set to 11."	Proposed I	Response	Response	e Status W		
Pronosed Response Rosponso Status W	or ioij o io o, ai		PROP	OSED ACCEF	T IN PRINCIP	LE.		
			0					
Change:			Chang "The fi	je rst 2056 mess	age bits in eve	rv 8192nd codev	vord is the vecto	r"
the synchronization header for all 66-bit blocks at	the output of the :	256B/257B to	to read	1				•
64B/66B transcoder, rx_coded_0<1:0>, is set to 1	1		"Every	8192nd code	words the first	1542 bits of rx_s	crambled_am bl	ocks is the vector"
to: the synchronization header for all 66-bit blocks at	the output of the '	256B/257B to 64B/66B	Tho ob	ongo to 1542	hita aamaa fray	m commont #146		
transcoder, rx_coded_j<1:0> for j=0 to 3, are set t	o 11.	2000/2010 10 040/000	The cr	lange to 1542	bits comes noi	in comment #140).	
	/ 25	# 44	C/ 119	SC 119.2.5	5.4	P 104	L 40	# 132
C/ 119 SC 119.2.5.3 P104	L 35	# 44	Nicholl, Ga	ary		Cisco System	IS	
Slavick, Jeff Avago Tech	inologies		Comment	Type ER	Commen	t Status D		
Comment Type T Comment Status D			Is this	the first time v	we have used t	he term 'messag	je' bits ? I don't t	hink the word
What does "mark" mean when error indication is i	n affect?		'messa	age' is required	ł.	-		
SuggestedRemedy			Suggested	lRemedy				
Change "mark" to "discard"			Chang	e "The first 20	56 message bi	its in every 8192	nd codeword" to	"The first 2056 bits in
Proposed Response Response Status W			every 8	8192nd codew	ord"			
			Proposed I	Response	Response	e Status W		
			PROP	OSED ACCEF	T IN PRINCIP	LE.		
The PCS does not discard these blocks, rather it i	narks them for dis	scard by the next layer						
in the stack. Change the text to correct and clarify	it as below:		See re	sponse to con	nment #45			
This causes the PCS to mark all frames that are f	ully or partially wit	hin the two associated						
codewords.	,							
То:								
This causes the PCS to mark (set to EBLOCK_R)	all blocks that are	e within the two						

C/ 119 Gustlin, Ma	SC 119.2.5.6 ark	P 105 Xilinx	L 25	# 64	Cl Ba	119 Iden, Eric	SC 119.2.5.	7	P 105 Broadcom	L 53	# 14
Comment There	<i>Type</i> T Co is a bug in the 256B/2 bled is stated in point	omment Status D 57B to 64B/66B transco	oding algorithm.		Cc	omment Ty Add refer	pe TR rence to CL82	<i>Comment</i> 2 IDLE deletio	t <i>Status</i> D n rules		Bucket
Also ir	n sub-point e2) g<3:0>	has been used but it is	s not described l	now to generate g<3:	0>. Su	lggestedRe	emedy				
Suggested	Remedy					On line 5 and delet	3, add the fol	llowing senten	ce: 'Refer to CL	82 section 82.2	.3.6 for IDLE insertion
Chang d2) Let order)	e: t f_c<3:0> = rx_coded of the block type field	_c<5:2> be the scramb for rx_coded_c.	led first nibble (t	based on transmissio	n Pro	oposed Re PROPOS	sponse SED ACCEPT	Response T IN PRINCIPI	<i>Status</i> ₩ _E.		
d2) Let block t	t g<3:0> = rx_coded_c ype field for rx_coded_	<5:2> be the first nibbl _c.	e (based on trar	nsmission order) of th	e	Change: of idle co	ntrol characte	ers			
Proposed I	Response Re	sponse Status W				to: of idle co	ntrol characte	ors (soo 82.2.	3 6 and 82 2 3 0	for insertion an	d deletion rules)
PROP	OSED ACCEPT IN PR	RINCIPLE.			_			ers (see 02.2.	5.0 and 02.2.3.9	IOI INSERION an	
ln b2) l rx pay	ine 19, change: loads<(64c+7):(64c+4	l)> = 0000 (an arbitrary	value that is late	er replaced by s_c)	CI Sla	119 avick, Jeff	SC 119.2.5.	8	P 106 Avago Techno	L 5 blogies	# 46
to:					Co	omment Ty	pe T	Comment	t Status D		
rx_pay rx_pay is 0xE rx_pay	loads<(64c+7):(64c+4 loads<(64c+3):64c> u then rx_payloads<(64 loads<(64c+3):64c> is	 is set to a value derising Figure 119-3. For c+7):(64c+4)> is 0x1. It solutions of the state of	ived by cross-ref example, if rx_p f no match to 54c+7):(64c+4)>	ferencing ayloads<(64c+3):64c is set to 0000.	>	What is the granularity of the g	he point of the ty of error rate o provide vali Y, then use a enerate valid	e scrambled id e (10b checkir id data to the d a PMA test par I FEC data stre	dle checker? FE ng instead of 66k output of the des ttern. (Scramble eams)	C statistics pro b) and you need crambler. If yo d Idle Generati	vide superior I the FEC engine to be u can't link up a full on is needed to enable
Delete	steps d2) and e2).				Su	iggestedRe	emedy				
Chang	e step h2) from:					Remove	the scramble	idle checker f	rom clause 119.		
If h<3:0	0> = 0000, rx_coded_	c<1>=1 (invalidate syne	chronization hea	der)	Pr	oposed Re	sponse	Response	Status W		
lf rx_pa	ayloads<(64c+7):(64c-	+4)> = 0000, rx_coded_	_c<1>=1 (invalid	ate synchronization		PROPOS	ED REJECT				
Chang Set c = to: Set c =	′ e step a3) from: ⊧ 0 and h<3:0> = 0000 ⊧ 0.	l.				This is pa The com	art of the adop menter needs	pted baseline. s to show cons	sensus for this cl	hange.	
In b3) l rx_pay to: rx_pay	ine 39, change: loads<(64c+7):(64c+4 loads<(64c+7):(64c+4	e)> = 0000 (an arbitrary e)> = 0000	value that is late	er replaced by s_c)							

C/ 119	SC 119.2.5.8	P 10	06 L 8	8	# 65	C/ 119	SC 1	19.2.6.2.4		P 109	L 48	# 5
Gustlin, Ma	rk	Xilinx				Sun, Phil				Credo		
Comment T	Гуре Т	Comment Status	D			Comment	Туре	т	Comment S	Status D		
This pa	ragraph leaves o	out the transcoder and	d FEC decode f	functions.		cw_ba	d_count	t counts the	e number of	consecutive un	corrected FEC	codewords. But it does
Suggested	Remedy					not spe Counti	ng unco	incorrectabl	cks from one	e from one FEC e FEC provides	lower false unl	lock rates.
Change	e the first part of	the paragraph to:				Suggested	Remedy	V		·		
The scr	rambled idle test-	-pattern checker utiliz	zes the alignme	nt marker lock	state diagram,	counts	the nur	nber of con	secutive un	corrected FEC I	frames from on	e of the FEC decoders.
the PCS operation	S deskew state on S deskew state of S deskew stat	liagram, the FEC dec ring normal data rece	coder, the descr	rambler and th	e transcoder	Proposed I	Respon			Status W		
Proposed F	Response	Response Status	w			FROF	USED F					
PROPO	DSED ACCEPT I	N PRINCIPLE.				See th	e repon	se to comm	nent #68			
Change	e the first part of	the paragraph to:				C/ 119 Nicholl, Ga	SC 1	19.2.6.3		P 110 Cisco Systems	L 2	# 134
The scr	rambled idle test-	-pattern checker utiliz	zes the alignme	nt marker lock	state diagram,	Comment	Type	TR	Comment S	Status D	-	
operati	ng as they do du	ring normal data rece	eption.			Given	that the	alignment r	marker lock	operates indep	endently on eac	ch PCS lane and each
C/ 119	SC 119.2.6.2.	1 <i>P</i> 10)6 L;	38	# 15	PCS la followi	ane is ar	n interleave	of 10but syl	mmbols from tw	vo different FEC	coderwords, the
Baden, Eric	;	Broado	com			valid a	lignmen	it markers 8	B192 FEC co	dewords apart	to gain alignme	ent marker lock"
Comment T	Type TR	Comment Status	D		Bucket	Suggested	Remedy	V				
The out	tput of the Encod	ler is forwarded to the	e transcoder			Please	e clarify	what is mea	ant by " 8192	2 FEC codewor	ds apart" on a l	² CS lane which
Suggested	Remedy					the alig	gnment	marker spa	cing per PC	s lane in terms	of 10-bit RS sy	mbols instead ?
Change	e 'PMA' to 'transc	oder' on line 38				Proposed I	- Respon	se	Response S	Status W	·	
Proposed F PROPC	Response DSED ACCEPT.	Response Status	w			PROP	OSED A	ACCEPT IN		Ξ.		
C/ 119	SC 119.2.6.2.	1 <i>P</i> 10)6 L4	43	# 16	Chang Each a	e: alignmer	nt marker lo	ock process	ooks for two va	lid alignment m	arkers 8192 FEC
Baden, Eric	;	Broado	com			codew	ords ap	art to gain a	alignment m	arker lock		
Comment 7 The out	<i>Type</i> TR tput of the Encod	Comment Status ler is forwarded to the	D e transcoder		Bucket	Each a Reed-	alignmer Solomor	nt marker lo n symbols a	ock process apart (on a p	looks for two va er PCS lane ba	alid alignment m Isis) to gain alig	iarkers 278 528 10-bit inment marker lock
SuggestedF Change	Remedy e 'PMA' to 'transc	oder' on line 43										
Proposed F PROPC	Response DSED ACCEPT.	Response Status	w									

C/ 119 SC 119.2.6.3 Page 18 of 40 12/01/2016 12:02:06



TIFL. INtechnical required Entectional required Ontyene	rai requireu Triechinical L'editorial Grgeneral	C/ 119	Fage 19 01
COMMENT STATUS: D/dispatched A/accepted R/rejected	RESPONSE STATUS: O/open W/written C/closed Z/withdrawn	SC 119.2.6.3	12/01/2016
SORT ORDER: Clause, Subclause, page, line			

12:02:07

70

71

To:

The probability that the decoder fails to indicate a codeword with t+1 errors as uncorrected is not expected to exceed 10-16.

[Editor's note: tilde character changed to [Tilde] in Comment text.]

C/ 120 SC 120.5.10.2.3

P 139 L 27 Avago Technologies

Healey, Adam

Comment Type E Comment Status D

"Gray coding" is used here where "Gray mapping" is used in 120.5.6.1.

SuggestedRemedy

Change "Gray coding" to "Gray mapping".

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Gray coding is used more times in the draft than Gray mapping, which is only used in the title of 120.5.6.1 (also true for IEEE Std 802.3bi).

Change the title of 120.5.6.1 to "Gray coding for PAM4 encoded lanes"

C/ 120 SC 120.5.10.2.3

Healey, Adam

P 139 L Avago Technologies

L 34

Comment Type T Comment Status D

The PRBS13Q test pattern is intended to be used for PAM4 transmitter measurements in the same way that PRBS9 is used for PAM2 transmitter measurements. 120.5.10.1.2 does not require that the PRBS9 pattern generator seeds should be randomized or set to specific values. Either this requirement is unnecessary for PRBS13Q or is missing from PRBS9.

SuggestedRemedy

Table 94-11 (as referenced in the editor's note) specified a different seed per physical lane in order to avoid correlated crosstalk during receiver training. In this case, the test pattern is being used for transmitter measurements and not receiver training so the definition of the seed does not seem to be required. Remove the last sentence of the second paragraph and the editor's note.

Proposed Response Response Status W

PROPOSED ACCEPT.

C/ 120	SC 120.	5.10.2.3	P 139	L 35	# 72
Healey, Ada	m		Avago Techn	ologies	
Comment Ty	ире т	Comm	ent Status D		
The des ambiguit test patt	cription of ty can be e ern genera	the PRBS13Q eliminated with ator.	test pattern is well an example of the	-written. Howeve first N PAM4 sy	er, any possible mbols produced by the
SuggestedR	emedy				

Include an example of the intended test pattern generator output for a specified seed value.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Add after the 2nd paragraph of 120.5.10.2.3:

 Dense, ries manufactor Dense, ries manufactor Comment Type T Comment Status D Comme	C/ 120C SC 120C.3.2 P 229 L 43 # 148 David Piore Mollapox Mollapox	C/ 120D SC 120D.3.1.1 P 231 L 22 # 95
Suggested/Remedy Change 'A CDAUI-16 module output shall meet all specifications in 38E.3.2 with the exception of exception that the signaling rate per lane is 26.5625 Gbd ± 100 ppm.* to: A CDAUI-16 module output shall meet all specifications in 38E.3.2 with the exception of expendion in cludes an RS-FEC sublayer. The signaling rate A CDAUI-16 module measurement methodology is as defined in 83E.4 and 109B.4 with the following exceptions:* In 120C.4, change 'The CDAUI-16 module output shall meet all specifications in 83E.3.2 with the exception that the signaling rate A CDAUI-16 module measurement methodology is as defined in 83E.4 and 109B.4 with the following exceptions:* Proposed Response Response Status W PROPOSEID ACCEPT IN PRINCIPLE. Change: 'n Comment Status B Change: 'n A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the following exceptions:* Comment Type T Comment Type C Proposed Response Status W PROPOSEID ACCEPT IN PRINCIPLE. Change: 'n Comment Status B Comment Type T Comment Type T Comment Status B Continued so an RS-FEC sublayer. ''. 109B.3.2.1 for a PHY that includes an RS-FEC sublayer.'' The signaling rate per lane is 26.5625 Gbd ± 100 ppm.* to: '' The cock recovery unit as specified in 109B.3.2.1 for a PHY that includes an RS-FEC sublayer.'' The original premise for the D_p and N_p values for the linear fit method defined in 94.3.12.5.2. Th sublayer.'' In 120C.4, add an exception: ''. The eye height, eye width, and vertical eye closure are as specified in 109B.3.2.1 f	Comment Type T Comment Status D Chip-to-module CDAUI-16 is FEC protected with a BER spec of 1e-6, so extrapolating the module output to 1e-15 as in chip-to-module CAUI-4 is irrelevant. The spec in 109B.3.2.1.2, Eye opening using measurement method B, is more appropriate, and allows the legacy non-FEC method as an option.	Comment Type TR Comment Status D CRU bandwidth No definition of CRU requirement to measure the output waveform and jitter SuggestedRemedy Add footnote to table or subection to be referenced
exceptions: Proposed Response Status W Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. Change: "A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the exception that the signaling rate per lane is 26.5625 Gbd ± 100 ppm." to: "A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the following exceptions: "The signaling rate per lane is 26.5625 Gbd ± 100 ppm." The eye height, eye width, and vertical eye closure are as specified in 109B.3.2.1 for a PHY that includes an RS-FEC sublayer." In 120C.4, add an exception: "The eye height, eye width, and vertical eye closure are measured as specified in 109B.3.2.1 for a PHY that includes an RS-FEC sublayer." (I 120D SC 120D.1 P 235 (I 120D SC 120D.1 P 235 L 5 # 75 Healey, Adam Avago Technologies Comment Type E Comment Status D Comment Type E Comment Status D Missing space: "in120D.3.2.3". SuggestedRemedy	SuggestedRemedy Change "A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the exception that the signaling rate per lane is 26.5625 Gbd ± 100 ppm." to: A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the exception of eye height, eye width, and vertical eye closure and signaling rate. A CDAUI-16 module output shall meet the eye height, eye width, and vertical eye closure and signaling rate. A CDAUI-16 module output shall meet the eye height, eye width, and vertical eye closure specified in 109B.3.2.1 for a PHY that includes an RS-FEC sublayer. The signaling rate of each lane is 26.5625 GBd ± 100 ppm." In 120C.4, change "The CDAUI-16 chip-to-module measurement methodology is as defined in 83E.4 with the following exceptions:" to "The CDAUI-16 chip-to-module measurement methodology is as defined in 83E.4 and 109B.4 with the following	"The clock recovery unit (CRU) used in the optical 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." 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 ghiasi_3bs_01_0116.pdf <i>Proposed Response Response Status</i> W PROPOSED REJECT. Consensus on change of CRU bandwidth has not been achieved.
PROPOSED ACCEPT IN PRINCIPLE. Change: "A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the exception that the signaling rate per lane is 26.5625 Gbd ± 100 ppm." to: "A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the following exceptions: "A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the following exceptions: "A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the following exceptions: "A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the following exceptions: "A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the following exceptions: "The signaling rate per lane is 26.5625 Gbd ± 100 ppm." The signaling rate per lane is 26.5625 Gbd ± 100 ppm. The signaling rate per lane is 26.5625 Gbd ± 100 ppm. The signaling rate per lane is 26.5625 Gbd ± 100 ppm. The signaling rate per lane is 26.5625 Gbd ± 100 ppm. The signaling rate per lane is 26.5625 Gbd ± 100 ppm. The signaling rate per lane is 26.5625 Gbd ± 100 ppm. The signaling rate per lane is 26.5625 Gbd ± 100 ppm. The signaling rate per lane is 26.5625 Gbd ± 100 ppm. The signaling rate per lane is 26.5625 Gbd ± 100 ppm. The signaling rate per lane is 26.5625 Gbd ± 100 ppm. The signaling rate per lane is 26.5625 Gbd ± 100 ppm. The sig	exceptions:" Proposed Personase Personase Status M	Healey, Adam Avago Technologies
Change:There may be an additional exception to the linear fit method defined in 94.3.12.5.2. The subclause specifies that the D_p and N_p values for the linear fit acculation should be and 16 respectively. These may not be the correct values for CDAUI-8.''A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the following exceptions:There may be an additional exception to the linear fit method defined in 94.3.12.5.2. Th subclause specifies that the D_p and N_p values for the linear fit acculation should be and 16 respectively. These may not be the correct values for CDAUI-8'The eye height, eye width, and vertical eye closure are as specified in 109B.3.2.1 for a PHY that includes an RS-FEC sublayer. "The original premise for the D_p and N_p values is that they should span the inter-syml the original premise for the D_p and N_p. values is that they should span the inter-syml the original premise for the D_p and N_p. values is that they should span the inter-syml the original premise for the D_p and N_p. values is that they should span the inter-syml the original premise for the D_p and N_p. values is that they should span the inter-syml the original premise for the D_p and N_p. values is that they should span the inter-syml the original premise for the D_p and N_p. values is that they should span the inter-syml the original premise of the D_p and N_p. values is that they should span the inter-syml the original premise of the D_p and N_p. values is that they should span the inter-syml the original premise of the D_p and N_p. values is that they should span the inter-syml the original premise of the D_p and N_p. values is the number of feedbat taps from the COM calculation. For the current CDAUI-8 reference receiver, these value should be D_p = 2 and N_p = 13.CI 120D SC 120D.1P 235L 5#	PROPOSED ACCEPT IN PRINCIPLE.	Comment Type T Comment Status D
exceptions: - The signaling rate per lane is 26.5625 Gbd ± 100 ppm. - The signaling rate per lane is 26.5625 Gbd ± 100 ppm. - The eye height, eye width, and vertical eye closure are as specified in 109B.3.2.1 for a PHY that includes an RS-FEC sublayer. " In 120C.4, add an exception: - The eye height, eye width, and vertical eye closure are measured as specified in 109B.3.2.1 for a PHY that includes an RS-FEC sublayer. " In 120D SC 120D.1 P 235 L 5 # [75] Healey, Adam Avago Technologies Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. Change "with the exception that the PRBS13Q test pattern, a D_p value of 2, and an N_p value	Change: "A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the exception that the signaling rate per lane is 26.5625 Gbd ± 100 ppm." to: "A CDAUI-16 module output shall meet all specifications in 83E.3.2 with the following	There may be an additional exception to the linear fit method defined in 94.3.12.5.2. That subclause specifies that the D_p and N_p values for the linear fit calculation should be 2 and 16 respectively. These may not be the correct values for CDAUI-8.
C/ 120D SC 120D.1 P 235 L 5 # 75 Healey, Adam Avago Technologies # 75 Proposed Response Response Status W Comment Type E Comment Status D Bucket PROPOSED ACCEPT IN PRINCIPLE. Change "with the exception that the PRBS13Q test pattern is used" to "with the exceptions that the PRBS13Q test pattern, a D_p value of 2, and an N_p value SuggestedRemedy SuggestedRemedy 13 are used"	exceptions: - The signaling rate per lane is 26.5625 Gbd ± 100 ppm. - The eye height, eye width, and vertical eye closure are as specified in 109B.3.2.1 for a PHY that includes an RS-FEC sublayer. " In 120C.4, add an exception: "- The eye height, eye width, and vertical eye closure are measured as specified in 109B.3.2.1 for a PHY that includes an RS-FEC sublayer. "	SuggestedRemedy The original premise for the D_p and N_p values is that they should span the inter-symbol interference that would be addressed by the reference transmitter and receiver. A "walk- back" effect for pre-cursor compensation must also be considered (see http://www.ieee802.org/3/maint/public/healey_1_0911.pdf). Based on this premise, the D_p value should be 1 plus the number of pre-cursor taps in the transmitter feed-forward equalizer and the N_p value should be D_p+1+N_b where N_b is the number of feedback taps from the COM calculation. For the current CDAUI-8 reference receiver, these values should be D_p = 2 and N_p = 13.
Comment Type E Comment Status D Bucket Change "with the exception that the PRBS13Q test pattern is used" to SuggestedRemedy SuggestedRemedy 13 are used"	C/ 120D SC 120D.1 P 235 L 5 # 75 Healey Adam Avage Technologies 4 75 1	Proposed Response Response Status W
Insert the missing space.	Comment Type E Comment Status D Bucket Missing space: "in120D.3.2.3". SuggestedRemedy Insert the missing space.	PROPOSED ACCEPT IN PRINCIPLE. Change "with the exception that the PRBS13Q test pattern is used" to "with the exceptions that the PRBS13Q test pattern, a D_p value of 2, and an N_p value of 13 are used"

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: Clause, Subclause, page, line

C/ 120D SC 120D.3.1.1 Page 21 of 40 12/01/2016 12:02:07

C/ 120D SC 120D.3.1.1 P 236 L 53 # 29	C/ 120D SC 120D.3.1.1 P 237 L 7 # 81
	Healey, Adam Avago Technologies
np needs to be adjusted for dp+nb+1 SuggestedRemedy change text to:	There are multiple references to 94.3.12.3 (differential and common-mode voltage requirments). 94.3.12.3 states that the measurement of the transmitter peak-to-peak differential output voltage is to be based on QPRBS13 as defined in 94.2.9.3. For CDAUI-8, this measurement should be based on the PRBS13Q test pattern.
exception that the PRBS13Q test pattern is used and n_p is equal to 13.	SuggestedRemedy
Proposed Response Response Status W PROPOSED ACCEPT.	In the first paragraph of 120D.3.1.1, the exception is noted for the linear fit method. Expand this exception to include the signal level measurement defined in 94.3.12.3.
[Editor's note: Page changed from 237 to 236]	Proposed Response Response Status W
C/ 120D SC 120D.3.1.1 P 236 L 53 # 76 Healey Adam Avago Technologies 4 76 1	PROPOSED ACCEPT IN PRINCIPLE.
Comment Type E Comment Status D Bucket A cross-reference to the definition of the PRBS13Q test pattern could be helpful. SuggestedRemedy	Add footnote to: "Differential peak-to-peak output voltage (max)", "Common-mode voltage (max)", "Common-mode voltage (min), and "AC common-mode output voltage (max, RMS)" cells of Table 120D-1 : "Measurement uses the method described in 94.3.12.3 with the exception that the PRBS13Q test nattern is used "
Proposed Response Response Status W PROPOSED ACCEPT. Change: "the PRBS13Q test pattern is" to: "the PRBS13Q test pattern (see 120 5 10 2 3) is"	Add sentence to 120E.3.1.2 "Signal levels" : "Unless otherwise noted, differential and common-mode signal levels are measured with a PRBS13Q test pattern." C/ 120D SC 120D.3.1.1 P 237 L 18 # 78
[Editor's note: Page changed from 237 to 236]	Healey, Adam Avago Technologies
C/ 120D SC 120D.3.1.1 P 237 L 5 # 80 Healey, Adam Avago Technologies	Comment Type T Comment Status D R_LM The level separation mismatch ratio (R_LM) in Table 120D-1 is not aligned with the corresponding COM parameter in Table 120D-7. R_LM R_LM
Longent Type I Comment Status D	SuggestedRemedy
content of 94.3.12.2 is the following: "The 100GBASE-KP4 signaling rate shall be 13.59375	In Table 120D-1, change the R_LM value to 0.95.
GBd +/- 100 ppm per lane." This material has no bearing on this CDAUI-8 parameter and the reference seems inappropriate	Proposed Response Response Status W
SuggestedRemedy	PROPOSED ACCEPT. See also comments #117 and #28
Create a local subclause for "Signaling rate and range" that contains information relevant to CDAUI-8 and change the reference in Table 120D-1 to point to this new subclause. An alternative is to simply remove the reference.	
Proposed Response Response Status W	
PROPOSED ACCEPT IN PRINCIPLE. Remove the reference.	

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: Clause, Subclause, page, line

C/ 120D SC 120D.3.1.1 Page 22 of 40 12/01/2016 12:02:07

C/ 120D	SC 120D.3.1.	1 P 2	37	L 18	# 118	
Hegde, Raj		Broad	lcom	Corporation		
Comment T Current 94.3.12 allows f	ype T ly, the entry in th .5.1 for the trans or large asymmet	Comment Status ne Reference column mitter linearity meas etry between -1/3 an	D for F surem d +1/3	RLM(min) in Table 1: ient method. This m 3 levels.	20D-1 points to easurement met	<i>R_LM</i>
SuggestedF	Remedy					
Change that this An upda	e the measureme s topic was discu ated presentation	ent method to tighter issed in a presentati n will be submitted ir	n the a on at n supp	allowed asymmetry i the 12/07/15 Electric port of this comment	n the TX output cal Ad-hoc meet t.	. Note ting.
Proposed R PROPC See res	Response DSED ACCEPT ponse to comme	Response Status N PRINCIPLE. ent #73	w			
C/ 120D	SC 120D.3.1.	1 P 2	37	L 18	# 117	
Hegde, Raj		Broad	lcom	Corporation		
Comment T The Lev same in SuggestedF	ype E vel Seperation m the COM Parar Remedy	<i>Comment Status</i> iismatch ratio RLM(r neters Table 120D-7	D nin) v ′ (Paç	alue in Table 120D- je 242 Line 5)	1 does not matc	R_LM the
Change	the RLM (min)	value in Table 120D	-1 fro	m 0.92 to 0.95		
Proposed R PROPC See als	Response DSED ACCEPT. o comments #28	Response Status 3 and #78	w			
C/ 120D	SC 120D.3.1.	1 P 2	37	L 18	# 77	
Healey, Ada	am	Avag	o Tec	hnologies		
Comment T In Table linearity	ype E e 120D-1, the pa are not aligned	Comment Status rameter names under with the values.	D er "Ou	utput waveform" and	l "Output Jitter a	<i>Bucket</i> nd
SuggestedF Make n	Remedy ecessary adjustr	ments to achieve co	rect a	alignment.		
Proposed R PROPC	Response DSED ACCEPT.	Response Status	w			

C/ 120D SC 120D.3.1	.1 P 2:	37 L 18	# 7	74
Healey, Adam	Avago	Technologies		
Comment Type E The parameter name "	Comment Status R_LM" is not correctly	D formatted.		Bucket
SuggestedRemedy Change "RLM" to italic	text and "LM" to subs	script in the parame	eter name.	
Proposed Response PROPOSED ACCEPT	Response Status	w		
C/ 120D SC 120D.3.1 Healey Adam	.1 P 2: Avage	37 L 18	# [73
Comment Type T	Comment Status	n		RIM
The transmitter linearit	v toot mothod dofinod	in 04 2 12 5 1 con	mininterpret line	

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. This incorrectly degrades the R_LM value. Also, the normalization process for ES1 and ES2 forces the outer signal levels to be equal magnitude. Since this may not be case with the actual signal (especially since the mean value is removed), the normalization can actually introduce distortion.

SuggestedRemedy

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. Redefine the normalized signal levels to be measured signal levels, minus the mean of the measured signal levels, and then divided by the largest signal level magnitude. If this method is adopted, the transmitter linearity test pattern defined in 120.5.10.2.4 is no longer required for CDAUI-8 chip-to-chip and more tests can be completed based on the PRBS13Q measurement alone.

roposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

2 improved methods of determining ES1 & ES2 have been proposed. The remedy suggested here, and the "Calculating ES1 and ES2 using Least Squares algorithm" proposal made to the electrical Ad Hoc.

Consensus needs to be achieved on which remedy to adopt. See also comment #118

C/ 120D SC 120D.3.1.1 Page 23 of 40 12/01/2016 12:02:07

C/ 120D SC 120D.3	.1.1 P 237	L 18	# 28	C/ 120D SC 12	20D.3.2.1	P 239	L 35	# 120
Mellitz, Richard	Intel Corporati	on		Hegde, Raj		Broadcom Co	orporation	
Comment Type TR	Comment Status D		R_LM	Comment Type	т	Comment Status D		
RLM of 0.95 was sug parameter in table 12 SuggestedRemedy	gested in healey_3bs_02_1115 20D-7 . The two parameters sho	b.pdf and was ad ould match.	dopted for the RLM	In Table 120D- used is RS-FEC to all the receiv	5, for Recei C Symbol E vers.	iver Interference Toleranc rror Ratio. In CDAUI-8, th	e parameters, the FEC error cou	e performance metric nt may not be available
Change "Level separ	ation mismatch ratio RI M(min)	' to 0 95 in Tabl	e 120d-1	SuggestedRemedy				
Proposed Response PROPOSED ACCEP See also comments #	Response Status W T. t117 and #78			Use Bit Error R Symbol Error R Electrical Ad-ho An updated pre	atio for that atio' to 'Bit oc on 12/07 esentation w	t particular lane as the per Error Ratio' This topic wa //15. vill be submitted in suppor	rformance metric s addressed in a rt of this commer	: Change 'RS-FEC presentation at the nt.
C/ 120D SC 120D.3 . Hegde, Raj	1.1 P 237 Broadcom Co	L 24 rporation	# 119	Proposed Response PROPOSED A Contingent on 0	e F CCEPT IN Consensus	Response Status W PRINCIPLE.		
In Table 120D-1, Sigr transmitters having a distortion, a relaxed b discussed in a preser SuggestedRemedy Lower the limit to 29d comment. Proposed Response PROPOSED REJEC Comment #32 asks for Consensus needed.	hal-to-noise-and-distortion ratio richer variety of transitions and budget would allow for ease of i ntation at the Electrical Ad-hoc IB. An updated presentation wil <i>Response Status</i> W T. or an increase in SNDR.	(min) is set at 3 more mechania mplementation. on 11/30/15.	a1dB. With PAM4 sm to generate This topic was	Ci 120D SC 12 Hegde, Raj Comment Type In Table 120D-I RS-FEC Symbol the receivers. SuggestedRemedy Use Bit Error ratio Proposed Responsion PROPOSED AU	T 6, for Recei ol error ratio atio as the p o' An updat e F	P 240 Broadcom Cc Comment Status D iver Jitter Tolerance parar b. In CDAUI-8, the FEC en performance metric instea ed presentation will be su Response Status W PRINCIPLE	L 13 prporation meters, the perfo rror count may no d. Change 'RS-F bmitted in suppo	# 121 rmance metric used is of be available to all EC Symbol error ratio rt of this comment.
C/ 120D SC 120D.3.	1.1 P 237	L 26	# 79	See comment #	#120	PRINCIPLE.		
Healey, Adam	Avago Techno	ologies						
Comment Type E The heading is "Outp this table row.	Comment Status D ut jitter and linearity" but there a	are no "linearity'	Bucket					
SuggestedRemedy								
Change heading to "(Dutput jitter".							
Proposed Response	Response Status W							
PROPOSED ACCEP	T.							

C/ 120D SC 120D.3.2.2 P 240 L 14 # 96 Ghiasi, Ali Ghiasi Quantum LLC Ghiasi Quantum LLC	C/ 120DSC 120D.4P 241L 50# 82Healey, AdamAvago Technologies				
Comment Type TR Comment Status D	Comment Type T Comment Status D				
Receiver jitter tolerance must test for full range of sinusoidal jiter componnet allowed to propagate down the link by the Golden PLL.	The response to Draft 1.0 comment #53 was to incorporate slides 6 to 8 of the presentation healey_3bs_02_1115 with the exception of the single-ended termination resistance R d That value was set to 55 Ohms. However, the A y, A fe, and A ne levels				
SuggestedRemedy Replace Table 120-D-6 with Table 87-13 without identifying any specific test cases. Users will choose how many frequencies is required to gurantee interoperability	were not adjusted in accordance with that change. The result is that the transmitter modeled by COM has v_f values below the minimum value required for actual transmitters.				
material and http://www.ieee802.org/3/bs/public/15_09/ghlasi_30s_01b_0915.pdf for background consolidate these two presentation for Atlanta as ghlasi_3bs_01_0116.pdf	Using the calibration method defined in healey_3bs_02_1115 slide 5, the A_v, A_fe, and A_ne values should be 0.45, 0.45, and 0.65 V respectively.				
Proposed Response Response Status W	Proposed Response Response Status W				
PROPOSED REJECT. When the equivalent comment was made against draft 1.0 there was support for	PROPOSED ACCEPT. See also comment #31 which proposed slightly different parameters.				
however no proposal based on discrete frequencies has been made. There is currently no consensus to change the draft.	C/ 120D SC 120D.4 P 241 L 50 # 31 Mellitz, Richard Intel Corporation Intel Corporation <t< td=""></t<>				
C/ 120D SC 120D.4 P 241 L 21 # 30	Comment Type TR Comment Status D				
Mellitz, Richard Intel Corporation	Calculations were based on Rd=40 and since Rd=55 and np should be 13 if the Zc=85 ohms then readjustment is required to achieve Vfmin of 0.4v for the reference package.				
Zc seems to have been chosen from incremental trending. If we compromise between the original value of 78.20hms and 900hms, it would still represent limits of a real package.	SuggestedRemedy In Table 120D-7, change Av=Afe=0.445 and Ane=0.6675 Proposed Response Response Status W				
Combined with 280ff Cd would required SNR_Tx to be 33.4dB for SND_Tx of 31dB. The aggregate seems to improve COM for most channels.					
SuggestedRemedy	See response to comment #82				
In Table 120D-7, change Zc=85	C/ 120D SC 120D.4 P 242 L 6 # 32				
Proposed Response Response Status W	Mellitz, Richard Intel Corporation				
PROPOSED ACCEPT.	Comment Type TR Comment Status D SNR_Tx				
	The specification of SNDR is 31dB. However the COM computation includes some reflection noise of the package which is included in SNDR.				
	SuggestedRemedy				
	In Table 120D-7, change SNR_Tx to 33.4dB				
	Proposed Response Response Status W				
	PROPOSED REJECT. Comment #119 asks for a reduction in SNDR. Consensus needed.				

C/ 120D SC 120D.4

C/ 120D SC 120D.4	P 242 L 7	# 122	C/ 120E	SC 120E.1.1	P 247	L 51	# 147
Hegde, Raj	Broadcom Corporation		Anslow, Pete		Ciena		
Comment Type T Comment St	tatus D	SNR_Tx	Comment Ty	pe T	Comment Status D		
Updates to the COM table 120D-7: 1) The transmitter signal-to-noise ratio levels of distortions in PAM4. 2) The CDAUI-8 FEC does not require SuggestedRemedy 1) Relax the SNR_TX to 29dB 2) Increase the detector error ratio to 1	(SNR_TX) at 31dB doesn't acco the detector error ratio to be at 1 0^-5.	modate for higher	120E.1.1 less than frame los interpack Firstly, 6 Secondly with a BE unmeasu	says "The bit 10-6 provided ss ratio (see 1 tet gap when p 5.2 × 10-13 sho r, with a BER o ER of 1E-5 and ureable.	error ratio (BER) when process that the error statistics are suf 4.223) of less than $6.2 \times 10-13$ rocessed according to Clause uld be $6.2 \times 10-11$. f 1E-6 and random errors, the random errors, the resulting F	sed according ficiently rand for 64-octet f 120 and Clau resulting FLR LR would be	g to Clause 120 shall be om that this results in a frames with minimum use 119." R would be 4E-50. Even 4E-34 which is still
An updated presentation in support of t	these comments will be submitte	d	SuggestedRe	emedy			
Proposed Response Response Sta	atus W		Change XXX." wh	the content of <i>"</i> nere "XXX" is 1	120E.1.1 to be just: "The bit err 0-6 or as changed by other co	or ratio (BER mments.) shall be less than
PROPOSED ACCEPT IN PRINCIPLE. Increase the detector error ratio to 10^- comment #61), but do not relax SNR_ increased	-5 as there seems to be consens TX as comment #32 is requestin	sus on this (see g that it be	Proposed Re PROPOS	esponse SED ACCEPT.	Response Status W		
Increase the SER in Tables 120D-5 an	d 120D-6 to 10-4.		C/ 120E	SC 120E.1.1	P 247	L 53	# 61
C/ 120D SC 120D.5.4.3	P 245 L 22	# 111	Mazzini, Mar	CO	Cisco Systems		
Hegde, Raj	Broadcom Corporation		Comment Ty	pe T	Comment Status D		
Comment Type T Comment St The current channel operating margin of account several potential non-idealities SuggestedRemedy	tatus D of 'Greater than or equal to 2dB' is in a typical PAM4 receiver.	does not take into	Referring http://ww 26), for E rather tha http://ww CDAUI-8	to w.ieee802.org, DFE-less links, an burst one. If w.ieee802.org, are still good a	'3/bs/public/adhoc/logic/aug25 seems the correct assumption yes, according to '3/bs/public/15_11/mazzini_3bs assuming 1E-5 BER.	_15/anslow_(is to keep ra s_01_1115.pd	01_0815_logic.pdf (slide ndom error model df, slide 9, margins over
this comment.	pdated presentation will be subm	litted in support of	SuggestedRe	emedy			
Proposed Response Response Sta PROPOSED ACCEPT.	atus W		Replace with "sh row 53.	"shall be less all be less that	than 10-6 provided that the ern 10-5 provided that the error s	ror statistics a tatistics a	are sufficiently random." sufficiently random." into
C/ 120E SC 120E.1	P 246 L 52	# 112	Replace on notes	"All 3 PAM4 ey a b of Table 1	/es, at 10-6 probability" with "A 20F-1	II 3 PAM4 ey	es, at 10-5 probability"
Hegde, Raj	Broadcom Corporation		Proposed Re	sponse	Response Status W		
Comment Type T Comment St	tatus D		PROPOS	SED ACCEPT	IN PRINCIPLE.		
Although the draft text mentions that 'th coupling frequency is not specified.	ne lanes are AC-coupled within the	he module', the AC	On line 5 "shall be	3, replace: less than 10-6	" with: "shall be less than 10-5'	n	
SuggestedRemedy			In footno	tes a,b of Tabl	e 120E-1 replace "All 3 PAM4 (eyes, at 10-6	probability" with "All 3
Please add the line 'the low-frequency shall be less than 50kHz'.	3dB cutoff of the AC coupling with	thin the module	See also	comment #11	3		
Proposed Response Response Sta	atus W						
PROPOSED ACCEPT.							

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: Clause, Subclause, page, line

Cl	120E
SC	120E.1.1

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C/ 120E SC 120E.1.1 P 247 L 53 # 113 Hegde, Raj Broadcom Corporation Broadcom Corporation	C/ 120E SC 120E.3.1 P 249 L 35 # 149 Dawe, Piers Mellanox
Comment Type T Comment Status D The current draft sets the BER limit at 10^-6. The CDAUI-8 FEC does not need the BER to be so low. SuggestedRemedy SuggestedRemedy Change the BER limit to 10^-5. An updated presentation will be submitted in support of this comment.	Comment Type T Comment Status D The C2M CAUI-4 host output 20% to 80% transition time min is 10 ps. Here for C2M CDAUI-8, the host compliance board is the same, the signalling rate is a little higher, a good transmitter should be a little faster and may be using some FFE to get a reasonable opening of a multilevel eye. So a slightly lower limit should apply. I can't see how a very fast host output would ever be worse than a compliant slow output. We could consider removing this spec or changing to a slew rate spec, but if we don't:
Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. See response to comment #61	SuggestedRemedy Change magenta TBD to magenta 9. Update the PICS.
C/ 120E SC 120E.3.1 P 249 L 28 # 59 Mazzini, Marco Cisco Systems	This comment was WITHDRAWN by the commenter.
Comment Type T Comment Status D In order to improve the CDAUI-8 C2M, a maximum VEC at TP1a should be specified. Assuming max p-p output voltage requirement and minimum eye height, eye VEC can be as high as 15.5dB. Refer to http://www.ieee802.org/3/bs/public/15_11/mazzini_3bs_01_1115.pdf, slide 12. Will be back with a proposal about Vertical eye closure (max) in the future.	C/ 120E SC 120E.3.1 P 249 L 35 # 151 Dawe, Piers Mellanox Comment Type T Comment Status D The minimum host output transition time in CAUI-4 and CEI-28G-VSR is 10 ps. Here for
SuggestedRemedy Add a row into Table 120E-1 Define "Vertical eye closure (max)" with value TBD. Proposed Response Response Status W	C2M CDAUI-8, the driver could be faster and may be using more FFE to get a reasonable opening of a multilevel eye, so a lower limit could apply. It seems that the practical effect of this spec is to stop hosts using high output emphasis (but with PAM4, the eye mask controls that too), and to deter implementers of very fast (=good) drivers with low loss host lanes.
PROPOSED ACCEPT IN PRINCIPLE. However, the Table will not be altered until a value is agreed.	SuggestedRemedy We could change magenta TBD to magenta 10 ps, same as CAUI-4, or move to a slew rate spec, or consider deleting the row, as unnecessary, or leave it as it is for another cycle.
	Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change transition time value in Table 120E-1 to 10ps (black).
 Change transition time value in Table 120E-2 to 9.5ps (black).
 Change PICS item TH10 (Host transition time) to 10ps (black).
 Change PICS item TM8 (Module transition time) to 9.5ps (black).

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C/ 120E SC 120E.3.1.6	P 251	L 3	# 103	C/ 120E	SC ·	120E.3.1.	6.1	P 251	L 31	# 23
Ghiasi, Ali	Ghiasi Quantur	n LLC		Smith, Ben				Inphi Corpora	ition	
Comment Type TR	Comment Status D		CRU bandwidth	Comment 7	Гуре	т	Commer	t Status D		
Host output eye must be i	measured with a reference C	CRU		The ref	erence	receiver	currently inc	ludes a CTLE de	efined in 83E.3.2	2.1.1. Due to the
SuggestedRemedy				Increas	ed sen	Sitivity of Islizer (LF	PAM4 to rea	sidual ISI, an imp eficial	proved CILE (th	at includes a low-
The clock recovery unit (C	CRU) for the eye measureme	ent has a corne	er frequency of 4 MHz	Suggested	Pomod					
and a slope of 20 dB/deca	ade. When using a clock rec	overy unit as a	a clock for BER	Suggesteur	of omit	y h 01 12	0115 alaatu			dP pool/ing atop sizes
frequency jitter from the n	of low- frequency litter from ti neasurement	ne data to the	CIOCK removes this low-	Results	s in san	ne preser	tation show	a typical improv	ement in margir	of 0.5 to 1.0 dB.
see http://www.ieee802.o	rg/3/bs/public/15_09/ghiasi_	_3bs_01b_091	5.pdf for background	Current	t refere	nce to C	LE defined	in 83E.3.2.1.1 sl	nould be replace	ed by the table on slide
material and http://www.ie	ee802.org/3/bs/public/15_0	7/ghiasi_3bs_0	01_0715.pdf plan to	4 of sm	1201_01	_122115_	elect. Plea	se note that an a	nalogous chang	ge is required for
Consolidate these two pre		181_308_01_01	16.pui	Bropood E		00.0.2.1.	Deenener			
Proposed Response	Response Status W			FIOPOSEU						
Consensus on change of	CRU bandwidth has not ber	en achieved		Bring R	leferen	ce CTLE	definition in	LE. Ito 120E as new	sub-clause bas	ed on 83E.3.2.1.1 and
				slide 4	of					
C/ 120E SC 120E.3.1.6	P 251	L 3	# 108	http://w	ww.iee	e802.org	/3/bs/public/	adhoc/elect/21D	ec_15/smith_01	_122115_elect.pdf
Ghiasi, Ali	Ghiasi Quantur	n LLC								
Comment Type TR	Comment Status D		CRU bandwidth							
Host output eye must be i	measured with a reference C	CRU								
SuggestedRemedy										
The clock recovery unit (C	CRU) for the eye measureme	ent has a corne	er frequency of 4 MHz							
and a slope of 20 dB/deca	ade. When using a clock rec	overy unit as a	a clock for BER							
frequency jitter from the n	of low- frequency litter from ti neasurement	ne data to the	CIOCK removes this low-							
see http://www.ieee802.o	rg/3/bs/public/15_09/ghiasi_	_3bs_01b_091	5.pdf for background							
material and http://www.ie	ee802.org/3/bs/public/15_0	7/ghiasi_3bs_(01_0715.pdf plan to							
consolidate these two pre	sentation for Atlanta as ghia	asi_3bs_01_01	16.pat							
Proposed Response	Response Status W									
PROPOSED REJECT.										

Duplication of comment #103

C/ 120E SC 120E.3.1.6.1

C/ 120E	SC 120E.3.1.6.1	P 252	L 37	# 60	C/ 120E	SC 120E.3	.2	P 252	L 11	# 152
Mazzini, N	larco	Cisco Systems			Dawe, Pier	S		Mellanox		
Comment Refere in 83E deal w http://v to use Need and fig Suggested Remo Add fo H(f)=[u Where	Type T ence receiver for hos 5.3.2.1.1, Several con- vith CDAUI-8 interfac www.ieee802.org/3/k c CTLE(2p1z) + LFEC to define a new form gure (instead of Figu dRemedy ve reference to 83E. ormula: (GP1P2)/Z1]x{(jf+Z1) e (for linear Boost):	Comment Status D t output eye width and eye htributions shown this refere le. Into s/public/15_11/mazzini_3b Q (1p1z) was given. ula (instead of referrring to re 83E-10), will do in the fur 3.2.1.1 into 120E.3.1.6.1. /[(jf+P1)x(jf+P2)]}x{(jf-Z_LF	eight evaluatic ence receiver e bs_01_1115.pd 83E-4), table (ture. F)/(jf-P_LF)]	on it's currently defined equalizer it's enough to f, slide 5-8, a proposal instead of Table83E-2)	Comment T The mi CDAUI reason module observ is to sto too), ar restrict Suggested We cou as it is Proposed F PROPO	Type T nimum modul -8, the transm able opening to look faste ation filter is a op modules u do to deter im tve. Remedy uld change ma for another cy Response DSED ACCEF	Commen e output transit nitter should be of a multilevel e r than the host i little slower tha sing high outpu plementers of v agenta TBD to p rcle. Response PT IN PRINCIPI	t Status D ion time in CEI- a little faster an eye, so a lower I (lower cmplianc an in OIF. It see t emphasis (but ery fast (=good) magenta 10 ps, Status W LE.	28G-VSR is 9.5 p d may be using s imit should apply e board loss). Or ms that the prac with PAM4, the e modules. So it s or move to a slew	Transition time is. Here for C2M ome FFE to get a . We would expect the n the other hand, the tical effect of this spec aye mask controls that should not be too
G is th P1 is th P2 is th Z1 is th Z_LF P-LF i Proposed PROF See re	the DC/LF Gain the CTLE Boost Pole the CTLE Boost Pole the CTLE Boost Zerc inear De-emphasis): is the De-emphasis Z is the De-emphasis F <i>Response</i> F POSED ACCEPT IN esponse to comment	Freq 1 Freq 2 Freq 1 Zero Freq Pole Freq Response Status W PRINCIPLE. #23			Cl 120E Ghiasi, Ali Comment T Module Suggested The clo and a s measu frequer see htt	SC 120E.3 SC 120E.3 Type TR e output must Remedy ock recovery u slope of 20 dE rements, pass ncy jitter from p://www.ieee8	<i>Commen</i> be measurd wit unit (CRU) for th decade. When sing of low- freq the measureme 302.org/3/bs/pu	P 252 Ghiasi Quant t Status D h a reference C he eye measure to using a clock r uuency jitter from ent. blic/15_09/ghias	L 31 um LLC RU ment has a corne ecovery unit as a the data to the o si_3bs_01b_0915	# 109 <i>CRU bandwidth</i> er frequency of 4 MHz clock for BER clock removes this low- 5.pdf for background
					materia consoli <i>Proposed F</i> PROPO Conser	al and http://w date these tw Response DSED REJEC nsus on chang	ww.ieee802.org o presentation <i>Response</i> CT. ge of CRU band	g/3/bs/public/15_ for Atlanta as gh <i>Status</i> W dwidth has not b	_07/ghiasi_3bs_0 iiasi_3bs_01_01 een achieved.	1_0715.pdf plan to 16.pdf

C/ 120E SC 120E.3.2.1 Page 29 of 40 12/01/2016 12:02:07

Cl 120E SC 120E.3.2 Ghiasi. Ali	1 P 252 Ghiasi Quantun	L 31 n LLC	# 104	C/ 120E SC 120E.3.3.3.1 P 29 Heade, Rai Broad	54 L 53 # 115
Comment Type TR Module output must be SuggestedRemedy The clock recovery uni and a slope of 20 dB/d measurements, passin frequency jitter from th see http://www.ieee800 metacial and http://www.ieee800	Comment Status D measurd with a reference CRU (CRU) for the eye measureme ecade. When using a clock rec g of low- frequency jitter from the measurement. 2.org/3/bs/public/15_09/ghiasi_	J ont has a corner overy unit as a c ne data to the clo 3bs_01b_0915.p	CRU bandwidth frequency of 4 MHz lock for BER ock removes this low-	Comment Type T Comment Status The reference CRU bandwidth is currently service may find this setting too high. SuggestedRemedy Change the reference CRU bandwidth to 4N of this comment Proposed Response Response Status PROPOSED REJECT. Response Status	D CRU bandwidth et at 10MHz. Several implementation styles IHz. A presentation will be submitted in support W
Proposed Response PROPOSED REJECT. Duplicate of comment	Response Status W	si_3bs_01_0116	5.pdf	Consensus on change of CRU bandwidth ha C/ 120E SC 120E.3.3.3.1 P 25 Ghiasi, Ali Ghias Comment Type TB Comment Status	us not been achieved. 55 <i>L</i> 20 # 110 i Quantum LLC
C/ 120E SC 120E.3.2 Dawe Piers	1 P 252 Mellanox	L 32	# 150	10 MHz CRU adds extra burden to the host http://www.ieee802.org/3/bs/public/15_09/gh	SerDes see niasi_3bs_01b_0915.pdf
Comment Type T We should spec or test high-loss host, which w has 19 ps here. SuggestedRemedy Change 12 ps to 19 ps Proposed Response PROPOSED REJECT. How can reducing the	Comment Status D the module output for the wors on't output a fast maximum-an <i>Response Status</i> W ransition time of the crosstalk of	et case, which is plitude signal. ∃	Transition time when it's driving a lhat's why 83E.3.2.1	SuggestedRemedy Replace 10 Mhz with 4 MHz Also change Table 120E-4 reference to Tabl see http://www.ieee802.org/3/bs/public/15_0 material and http://www.ieee802.org/3/bs/public/15_0 Proposed Response PROPOSED REJECT. Consensus on change of CRU bandwidth ha	le 88-13 with Table 87-13 19/ghiasi_3bs_01b_0915.pdf for background blic/15_07/ghiasi_3bs_01_0715.pdf plan to ta as ghiasi_3bs_01_0116.pdf W as not been achieved.
talk ? C/ 120E SC 120E.3.3 Dawe, Piers	3 P 254 Mellanox	L 42	# 154	C/ 120E SC 120E.3.3.3.1 P 24 Ghiasi, Ali Ghiasi Comment Type TR Comment Status	i Quantum LLC D CRU bandwidth
Comment Type T	Comment Status D			10 MHz CRU adds extra burden to the host http://www.ieee802.org/3/bs/public/15_09/gh	SerDes see niasi_3bs_01b_0915.pdf
The difference between SuggestedRemedy Increase ESMW to e.g Proposed Response PROPOSED ACCEPT	 b Eye width and ESMW is too la 0.35 UI (0.05 UI less than Eye Response Status W IN PRINCIPLE. 	arge width), or 0.4 U	l.	SuggestedRemedy Replace 10 Mhz with 4 MHz Also change Table 120E-4 reference to Tabl see http://www.ieee802.org/3/bs/public/15_0 material and http://www.ieee802.org/3/bs/pu consolidate these two presentation for Atlant	le 88-13 with Table 87-13)9/ghiasi_3bs_01b_0915.pdf for background ıblic/15_07/ghiasi_3bs_01_0715.pdf plan to ta as ghiasi_3bs_01_0116.pdf
Set the value of ESMW	' in Table 120E-4 to 0.4 UI (in b	lack)		Proposed Response Response Status PROPOSED REJECT. Consensus on change of CRU bandwidth ha	W as not been achieved.
TYPE: TR/technical require	d ER/editorial required GR/ge	neral required 1	T/technical E/editorial G/g	neral	C/ 120E Page 30 of 40

COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn SC 120E.3.3.3.1 12/01/2016 12:02:07 SORT ORDER: Clause, Subclause, page, line

C/ 120E SC 120E.3.	4.1 <i>P</i> 257	L 19	# 24	C/ 120E	SC 120E.3	.4.1.1	P 257	L 43	# 106
Smith, Ben	Inphi Corporat	ion		Ghiasi, Ali			Ghiasi Quanti	um LLC	
Comment Type T	Comment Status D			Comment 7	Type TR	Comme	nt Status D		CRU bandwidth
The "high loss" modu 13.8dB (10.25dB plus	le stressed input test sets the fr s host transmitter package losse	equency-deperes). It appears a	ndent attenuation to as though the current	10 MHz http://w	z CRU adds e ww.ieee802.o	ktra burden to rg/3/bs/public	o the host SerDes c/15_09/ghiasi_3b	see s_01b_0915.pdf	
intent is that the patter	ern generator does not impleme	nt any form of p	pre-emphasis.	Suggestedl	Remedy				
smith_01_122115_el emphasis in the trans link. Therefore, the n operation of the link, opening can be attair smith_3bs_01a_0915 provides reasonable	ect), operation over high loss C; smitter (to reduce the impact of j nodule stressed input test appea and it isn't even clear that (in the led for the currently described to 5.pdf, a fixed TXFIR with 10% pi performance over a wide range	and and a second	ected to require pre- in order to close the sistent with the likely TXFIR) the 50mV eye in nphasis (i.e., [-0.1,0.9])	Replac Also ch see http materia consoli Proposed F	e 10 Mhz with hange Table 12 p://www.ieee8 al and http://ww date these two Response	4 MHz 20E-4 referer 02.org/3/bs/p ww.ieee802.o p presentation <i>Respons</i>	nce to Table 88-13 ublic/15_09/ghias rg/3/bs/public/15_ n for Atlanta as gh the Status W	with Table 87-1 i_3bs_01b_0915 07/ghiasi_3bs_0 iasi_3bs_01_01	3 Jugdf for background 10–0715.pdf plan to 16.pdf
SuggestedRemedy				Conser	ISED REJEC	i. e of CRU bai	ndwidth has not be	een achieved.	
The existing descripti generated by adding and bounded uncorre	on of the stressed signal genera sinusoidal jitter, random jitter, lated jitter to a clean pattern, fo	ation reads: "Th llowed by frequ	ne stressed signal is ency-dependent	<i>Cl</i> 120E Hegde, Raj	SC 120E.4	2	P 258 Broadcom Co	L 47	# 114
attenuation". It is sug	gested to add the following text:	aluto ho roquir	ad in the nettern	Comment 7	Гуре Т	Comme	nt Status D		
generator to meet the	e TP4a EH6 and EW6 specificat	ions.		The cu	rrent eye widt	n and height r	neasurement met	hod does not all	ow for a large enough
Proposed Response	Response Status W			pre-cur	sor in the mod	lule TX neces	sary to overcome	the channel los	s. The receiver may
PROPOSED ACCEP	Т.			cursor.	large pre-curs	for but the ey	e width and heigh	t could be too lo	w with the larger pre-
CL 120E SC 120E 2	A 1 1 D 257	1 16	# 146	Suggestedl	Remedy				
Hegde, Raj	Broadcom Cor	poration	# 110	modify receive	the step 2) in er. A presentat	120E.4.2 to a ion will be su	Illow a pre-cursor bmitted in support	term to be added of this comment	to the reference t.
Comment Type T	Comment Status D		CRU bandwidth	Proposed F	Response	Respons	e Status W		
The current reference implementation styles	e CRU bandwidth of 10MHz mag S.	y be too high fo	r several	PROPO Pendin	OSED ACCEP	T IN PRINCI	PLE.		
SuggestedRemedy					5 1				
Change the reference of this comment.	e CRU bandwidth to 4MHz. A pr	esentation will	be submitted in support						
Proposed Response	Response Status W								
PROPOSED REJEC Consensus on chang	T. e of CRU bandwidth has not be	en achieved.							

C/ 120E SC 120E.4.2 Page 31 of 40 12/01/2016 12:02:07

					·		
C/ 120E	SC 120E.4.2	P 258	L 54	# 153	C/ 121	SC 121.11.3	3.2 <i>P</i> 163
Dawe, Pier	S	Mellanox			Kolesar, P	aul	CommScope
Comment T "Calcul betwee find the timing, Suggested	Type T late the time cer en MIDCDFR an e decision time: a and the measur Remedy	Comment Status D atter of the middle eye width (T d MIDCDFL with a value of 10 a real CDR should not take the rement will be more reproducil	Cmid) as the m)^-6.": there are at many measu ble at a higher p	id-point in time more practical ways t rrements to get its probability.	Comment ANSI/ to publish The fir standa contrib	<i>Type</i> T IIA-604-18 Fibe ned in Novembe st five TBDs in f ird. The last two pution kolesar_3	Comment Status D er Optic Connector Intermatea er 2015. An IEC equivalent w this clause can be determine o TBDs will be addressed in Bbs_01_1215_mmf.pdf for fur
TCmid	should be eithe	r half way between the mean of	crossing times :	as usual, or, if it can b	e Suggested	Remedy	
shown 10GBA Proposed F PROPO The me height	to be an improv ISE-R. Response OSED REJECT. ethod used to de and width in Anr	ement on that, half way betwe <i>Response Status</i> W etermine Tcmid is based on th nex 83E, which was based on	e method used a 10^-6 probab	ontours, as in to determine eye vility.	Chang The M (TBD) A-k-0, IEC 61 meet t flat into as def	e the first two s DI adapter or re 7-1-3: MPO ada or interface 7-1 1754-7-1 TBD A he dimensional erface for 2 to T	entences of the clause as inc eceptacle shall meet the dime apter interface - opposed key -10 TBD: MPO active device NSI/TIA-604-18. The plug te specifications of interface 7- BD fibres designation FOCIS
C/ 121	SC 121.10	P 155	L 22	# 4	Proposed	Response	Response Status W
King, Jonat	than	Finisar			PROP		
Comment 7	Type ER	Comment Status D				COLD NOOLI I	
Fiber o (chann Suggested Add the same a immed generic	ptic cabling mod el) to 'link segme Remedy e sentence "The as a simplex fibe iately before the c cabling standa	del section needs text to equal ent', as is done in other optics fiber optic cabling model (cha er optic link segment." sentence "The term channel rds "	te the fibre optic clauses. annel) defined h is used here for	c cabling model here is the r consistency with	Chang "The N (TBD) TBD: I TBD. ⁻ specifi to TBD	e the first two s 1DI adapter or r 7-1-3: MPO ada MPO active dev The plug termina cations of interf 0 fibres, as defir	entences of the clause from: ecceptacle shall meet the dim apter interface - opposed key ice receptacle, flat interface, ating the optical fiber cabling face 7-1-4 TBD: MPO female ned in IEC 61754-7-1."
generic	cability stariua	105.			to		
(comm 52,68,	enter notes that 87, 88 etc	this is the same text as used	in equivalent se	ections in clauses	"The N design	1DI adapter or relation FOCIS 18	eceptacle shall meet the dim 3 A-k-0 as defined in ANSI/TI
Proposed F	Response	Response Status W			the op	tical fiber cablin	g shall meet the dimensional

PROPOSED ACCEPT.

or Intermateability Standard (FOCIS 18) was equivalent will likely not be published until 2017. e determined using references to the ANSI/TIA ddressed in a separate comment. Please refer to nf.pdf for further rationale.

L 36

26

clause as indicated here:

eet the dimensional specifications for interface opposed keyway configuration designation FOCIS 18 ctive device receptacle, flat interface, as defined in The plug terminating the optical fiber cabling shall interface 7-1-4 TBD: MPO female plug connector, ation FOCIS 18 P-2x16-1-0-2-2 -604-18.

neet the dimensional specifications for interface opposed keyway configuration, or interface 7-1-10 at interface, as defined in IEC 61754-7-1 iber cabling shall meet the dimensional APO female plug connector, flat interface for 2 -7-1."

neet the dimensional specifications for d in ANSI/TIA-604-18. The plug terminating dimensional specifications of designation FOCIS 18 P-2x16-1-0-2-2 as defined in ANSI/TIA-604-18."

This change follows the recommendations in kolesar_3bs_01_1215_mmf, reviewed in the MMF ad hoc of 18th December, 2015.

Set text colour to black for 121.11.3.2.

See also comment #26.

C/ 121 SC 121.11.3.2 Page 32 of 40 12/01/2016 12:02:07

C/ 121 SC 121.11.3.2 P 163 L 41 # 25 Kolesar, Paul CommScope CommScop	C/ 122 SC 122.1 Ghiasi, Ali	P 182 Ghiasi Quantur	<i>L</i> 24 m LLC	# 97		
Comment Type T Comment Status D The two TBDs in the last sentence of the paragraph can be removed becasue the IEC standards are published. It is possible to add further performance embellishments on the second standard that stipulate the minimum insertion loss and return loss of the MDI-to-cabling interface. Those will be proposed in the remedy to specify: insertion loss Class Cm (the lowest performance class) that specifies a mean <= 0.50 dB and a maximum <= 1.0 dB for 97% of mated combinations; return loss Class 2m that specifies a minimum of 20 dB, consistent with the requirement on the Tx, Rx, and cable plant. SuggestedRemedy	Comment Type TR Comm Fiber optics cable plant RL is TB SuggestedRemedy Assuing 26 dB ROSA RL with 4 d suggest to use 20 dB Proposed Response Respor PROPOSED REJECT. See response to comment #177, http://www.ieee802.org/3/bs/com	ent Status D D of 35 dB connectors I nse Status W against P802.3bs D uments/P802d3bs_D1	has an aggregat 11.0 in 1p0_comments_	e RL of 19.73 dB so final_ID.pdf#page=46		
Change the sentence as indicated: The MDI shall meet the interface performance specifications of IEC 61753-1 TBD and IEC 61753-022-2 TBD for performance Class Cm/2m.	As per consensus from SMF Ad Hoc on 6 October 2015: "There was agreement that the various reflection specifications should be dealt with as a group in association with a study of the penalty they cause." A complete proposal has not yet been made.					
PROPOSED ACCEPT IN PRINCIPLE. [Editor's note: Comment Type set to T]	C/ 122 SC 122.1.1 Stassar, Peter	P 169 Huawei Techno	L 47 blogies	# 2		
Change the 5th sentence in 121.11.3.2 from: "The MDI shall meet the interface performance specifications of IEC 61753-1 TBD and IEC 61753-022-2 TBD."	Comment Type ER Comm Clause 122.1.1 currently contains and Clause 119", which seems e according to Clause 120 first before	ent Status D s the sentence ".whe ditorially a "funny" or ore processing it acco	n processed acc der, while it is in ording to Clause	cording to Clause 120 tentional to process 119.		
to "The MDI shall meet the interface performance specifications of IEC 61753-1 and IEC 61753-022-2 for performance Class Cm/2m."	SuggestedRemedy Add "next" between "Clause 120 according to Clause 120 and nex	and" and "Clause 11 (t Clause 119"	9" to read ".whe	n processed		
Set text colour to black for 121.11.3.2.	Proposed Response Response PROPOSED ACCEPT IN PRINC Add "then" between "Clause 120 according to Clause 120 and the	nse Status W CIPLE. and" and "Clause 11 n Clause 119"	9" to read "when	n processed		

C/ 122 SC 122.1.1

C/ 122 SC 122. Mazzini Marca	7	P 176	L 20	# 55	C/ 122	SC 122.7.1	P 176	L 7	# 84		
Comment Type T	Comment Stat				Comment	Tune T					
Starting form Receiver Sensitivity Inner OMA of -9.25dBm (draft 1.0 value), considering 0.2dB MPI penalty (was 0.5dB) into the budget, implementation penalty of 4.8dB and channel loss of 3dB, OMA Outer and Launch power in OMA outer minus TDP can be re- calculated. Refer to http://www.ieee802.org/3/bs/public/adhoc/smf/15_12_15/mazzini_01a_1215_smf.pdf, for MPI penalty. <i>SuggestedRemedy</i> In Table 122-6 Change "Outer Optical Modulation Amplitude (OMAouter), each lane (min)" from 0.2 to - 0.25 dBm Change "Average launch power, each lane (min)" from -1.9 to -2.35 dBm					As proposed in traverso_3bs_01a_1115, the -DR4 link budget can be shifted down while maintaining adequate Rx sensitivity margin.						
					Suggested	Remedy					
					Change launch power in OMAouter minus TDP to -2.5 dBm. Change outer modulation amplitude (OMAouter), each lane (min) to -1.5 dBm. Change average launch power, each lane (min) to -4.0 dBm						
					Proposed Response Response Status W						
					PROPOSED REJECT. No consensus has been reached on these changes to the parameter values. Different values are proposed by comment #55						
Change "Launch p Change "RINxxOM Change "Optical r Change "Transmit	oower in OMAouter min MA (max)" to "RIN26OM eturn loss tolerance (m tter reflectance (max)" f	us TDP, eac /A (max)" ax)" from TBI rom -20 to -2	h lane (min)" fi D to 26 dB 26 dB	rom -0.8 to -1.25 dBm	<i>Cl</i> 122 Ghiasi, Ali	SC 122.7.2	P 176 Ghiasi Quan	L 33 tum LLC	# 91		
Proposed Response	Response Stati	us W			Comment	Type TR	Comment Status D				
PROPOSED REJECT. No consensus was reached during the SMF ad hoc on 15 December 2015 to make this change in parameter values. Different values are proposed by comment #84. See also response to comments #177, against P802.3bs D1.0 in http://www.ieee802.org/3/bs/comments/P802d3bs_D1p0_comments_final_ID.pdf#page=46 As per consensus from SMF Ad Hoc on 6 October 2015: "There was agreement that the various reflection specifications should be dealt with as a group in association with a study		SuggestedRemedy Assuming 26 dB ROSA with 4 35 dB connector has an aggregate RL of 19.73 dB, so suggest to use 20 dB for RIN measurement and tolerance Proposed Response Response Status W PROPOSED REJECT. See response to comment #97									
of the penalty they	/ cause."				C/ 122	SC 122.7.2	P 177	L 11	# 1		
Contributions add	ressing MPI penalty pe	nalty allocation	on and reflection	on specifications are	Stassar, P	eter	Huawei Tecl	nnologies			
See also response	e to comment #97.				Comment	Type ER	Comment Status D				
				Table 122-7: Row on "Damage threshold, each lane (min)", contains "(min)", which shouldn't be there in the same way as the same row in Table 123-8. It is already a threshold and this should not be tested because it is a destructive test							
					Suggested	lRemedy					
					Remov	ve "(min)" from T	able 122-7 for "Damage Thi	eshold, each lar	ne (min)".		
					Proposed	Response	Response Status W				
					PROP to 177	OSED ACCEPT , Line set to 11]	IN PRINCIPLE. [Editor's no	ICIPLE. [Editor's note: Subclause set to 122.7.2, P			
					In Tab lane"	le 122-7, change	e "Damage threshold, each l	ane (min)" to "Da	amage threshold, each		
TYPE: TR/technical re	auired ER/editorial rec	uired GR/ae	eneral required	T/technical E/editorial G	/general		CI 1	22	Page 34 of 4		

C/ 122	Pag
SC 122.7.2	12/

ige 34 of 4	40
/01/2016	12:02:07

C/ 122	SC 122.7.3	P 177	L 1	# 85	C/ 122	SC 1	22.7.3	P 17	7	L 38	# 86
Lewis, Davi	id	Lumentum			Lewis, Dav	/id		Lumer	tum		
Comment 7	Туре Т	Comment Status D			Comment	Туре	т	Comment Status	D		
As prop maintai	posed in traver ining adequate	so_3bs_01a_1115, the -DR4 li Rx sensitivity margin.	ink budget can l	be shifted down while	As pro mainta	posed ir aining ad	n traverso dequate F	o_3bs_01a_1115, the Rx sensitivity margin.	-DR4 link b	oudget can l	be shifted down while
Suggested	Remedy				Suggested	IRemedy	V				
Change Change	e average rece e receiver sens	ive power, each lane (min) to - itivity (OMAinner), each lane (-7 dBm. max) to -10.3 d	Зm.	Chang Chang	le alloca le power	ition for p r budget (enalties (for max TDP (for max TDP) to 5.5 c) to 2.5 dB. B.		
Proposed F	Response	Response Status W			Proposed	Respons	se	Response Status	w		
PROPO No con values	OSED REJECT sensus has be are proposed b	 en reached on these changes by comment #54	to the paramete	er values. Different	PROP See re	OSED F sponse	REJECT. to comm	nent #84			
C/ 122	SC 122.7.3	P177	L 20	# 54	C/ 122	SC 1	22.7.3	P 17	7 Svetome	L 42	# 53
Mazzini, Ma	arco	Cisco System	IS			Turna	-	Commont Status	D		
Comment 7	Туре Т	Comment Status D			Power	budget	I should b	Comment Status	U aw values d		erring to
Comme Inner C discrep	ent #75 (Dudek DMA from -9.1 t bancy was fixed	 against Draft1.0 was accepte o -9.25dBm into Table 122-7. we believe is better to reduce 	ed with change Still in agreeme e TX OMA by 0.	to Receiver Sensitivity nt with the fact 15dB and put Receiver	http://v 7, with 0.2dB	http://www.ieee802.org/3/bs/public/adhoc/smf/15_12_15/mazzini_01a_1215_smf.pdf, slide 7, with 26dB TX/RX reflectance and 55dB connector RL the maximum MPI penalty is < 0.2dB (deterministic upper bound). SuggestedRemedy					
sensitiv	vity OMA inner	back to -9.25dBm. This allow	some TX OMA	and power relaxation	Suggested						
(see http://www.ieee802.org/3/bs/public/15_11/traverso_3bs_01a_1115.pdf). Referring to http://www.ieee802.org/3/bs/public/adhoc/smf/15_12_15/mazzini_01a_1215_smf.pdf, slide 10 or a pictorial view of the power budget. In this way Average receiver power (min) should be reduced by 0.45dB						In Table 122-8 Change "Power budget (for max TDP)" from 6 to 5.7 dB Change "Maximum discrete reflectance" from -35 to -55 dB					
Suggested	Remedy				Chang	e "Alloca	ation for	penalties (for max TD	P)" from 3 t	to 2.7 dB (2	.5 for TDP + 0.2 for MPI)
In Table	e 122-7				Proposed	Respons	se	Response Status	W		
Change Change	e "Average rec e "Receiver sei	eive power, each lane (min)" fr nsitivity (OMAinner), each lane	rom -4.9 to -5.4 e (max)" from -9	1 to -9.25 dBm	PROP See co	DSED F	#55				
Proposed F	Response	Response Status W			C/ 122	SC 1	22.8	P 17	8	L 4	# 87
PROPO	OSED REJECT				Palkert, To	m		Luxter	a		
See res	sponse to com	ment #55			Comment	Туре	т	Comment Status	D		
					Suggested DR4 s	IRemedy ection te	y est proce	dures to be updated p	er attached	l presentatio	on.
					Proposed	Respons	se	Response Status	w		
					PROP Prese curren A com needs	OSED A ntation d t form is plete pro to be es	ACCEPT loes not p not suita oposal is stablished	IN PRINCIPLE. provide a complete pro- able for inclusion in Cl- invited to be discussed	oposal for C ause 122. d in an SM	Clause 122 t IF Ad Hoc a	test procedures. The ind a consensus view
TYPE: TR/t	technical requir	ed ER/editorial required GR/	general required	d T/technical E/editorial (G/general				C/ 122		Page 35 of 40

COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn SC 122.8 12/01/2016 12:02:07 SORT ORDER: Clause, Subclause, page, line

CI 122 SC 122.8.7 P 180 L 6 # 92	C/ 122 SC 122.8.9 P 180 L 16 # 57
Ghiasi, Ali Ghiasi Quantum LLC	Mazzini, Marco Cisco Systems
Comment Type TR Comment Status D	Comment Type T Comment Status D
RIN test condition is TBD	From discussions occurred during Dec 15th ad-hoc call, seems Receiver sensitivity is
SuggestedRemedy	not guoted into 122.8.9.
Assuing 26 dB ROSA RL with 4 of 35 dB connectors has an aggregate RL of 19.73 dB so	SuggestedRemedy
Proposed Response Response Status W	Change "Receiver sensitivity, which is defined for an ideal input signal" into Receiver sensitivity, which is defined for an ideal NRZ input signal into 122.8.9 and into 123.8.9.
PROPOSED REJECT. See comment #97	Proposed Response Response Status W
CI 122 SC 122.8.8 P 180 L 14 # 93 Ghiasi, Ali Ghiasi Quantum LLC Comment Type TR Comment Status D Transmitter optical waveform need to be measured with a CRU Suggested Remarky	The comment description does not correctly reflect the discussions during the SMF ad hoc on 15 Dec 2015. The consensus was that the value of 4.7 dB given in http://www.ieee802.org/3/bs/public/adhoc/smf/15_12_01/king_01_1215_smf.pdf is the difference in sensitivity between an ideal PAM4 signal and an ideal NRZ signal for the same receiver. There was also consensus that the receiver sensitivity in the P802.3bs draft would not be defined to be for an NRZ signal and that therefore 4.7 dB was not an
The clock recovery unit (CRU) used in the optical 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.	appropriate value to use. C/ 122 SC 122.8.10 P 180 L 25 # 94 Ghiasi, Ali Ghiasi Quantum LLC
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 ghiasi_3bs_01_0116.pdf	Stress receiver sensitivity must tolerate low frequency jitter propagating from the transmitter downstream
Proposed Response Response Status W	SuggestedRemedy
PROPOSED REJECT. There is no consensus on using a CRU for optical waveform measurement.	Sinusoidal jitter componnet of stress receiver sensitivity is as following The sinusoidal jitter is used to test receiver jitter tolerance.

There is no consensus on using a CRU for optical waveform measurement. See also response to comment #4 against P802.3bs D1.0 in http://www.ieee802.org/3/bs/comments/P802d3bs_D1p0_comments_final_ID.pdf#page=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.

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 ghiasi_3bs_01_0116.pdf

Proposed Response Response Status W

PROPOSED REJECT.

A complete proposal for how the stressed receiver sensitivity test will be performed has not been provided.

See also response to comment #5 against P802.3bs D1.0 in http://www.ieee802.org/3/bs/comments/P802d3bs_D1p0_comments_final_ID.pdf#page=1

C/ 122 SC 122.8.10 Page 36 of 40 12/01/2016 12:02:07

C/ 122 SC 122.8.10 P 180 L 25 Mazzini Marco Cisco Systems	# 58	C/ 122 SC 122.11.2	2 P 183 Cisco Systems	L 17 # 50
Commont Type T Commont Status D		Commont Type T	Commont Status D	
Stressed receiver sensitivity is the only parameter ensuring interop PAM4 implementation technologies. It should be defined assuming right amount of stress occurring on each the three slicer levels of th It cannot be an NRZ signal.	erability across different g a PAM4 signal, with the he PAM4 receiver DUT.	Change maximum disc Refer to http://www.ieee802.org f, slide 6	/3/bm/public/smfadhoc/meeting	riate for MPO angled connector. gs/apr30_13/kolesar_01_0413_smf.pd
SuggestedRemedy Add "Stressed Receiver sensitivity is defined for a stressed PAM4 122.8.10 and 123.8.10.	input signal", into	SuggestedRemedy Change "-35 dB" to "-5 Proposed Response	5 dB" Response Status W	
PROPOSED ACCEPT IN PRINCIPLE.		PROPOSED REJECT See comment #97		
A complete proposal for how the stressed receiver sensitivity test v requested, including the means to ensure "the right amount of stres three slicer levels".	vill be performed is ss occurring on each the	C/ 122 SC 122.11.3 Mazzini, Marco	2 P 184 Cisco Systems	L 22 # 48
C/ 122 SC 122.10 P 182 L 24	# 49	Comment Type TR	Comment Status D	
Mazzini, Marco Cisco Systems		Referring to	/2/hm/nuhlia/amfadhaa/maatina	no/onr20 12//closer 01 0112 omfad
Comment Type T Comment Status D Set a value for Optical return loss into Table 122-12: referring to http://www.ieee802.org/3/bm/public/smfadhoc/meetings/apr30_13/ f, slide 6 about TIA , the appropriate value is 49dB.	kolesar_01_0413_smf.pd	f, slide 6-10. Performa Into slide 9-10 a guida standard is given. Into >=60dB mated, >= 550	Ince of which the MDI should spe slide 6 the appropriate Return lo Bunmated.	or MPO female angled connectors. ecify referring to IEC 61753-021-2 oss is given too: for D/1 (APC) is
SuggestedRemedy		SuggestedRemedy		
Change "Optical return loss (min)" from TBD to 49 dB into Table 12	22-12	Replace performance accordingly to D/1: row	_evel D/3 with performance leve 26, 55dB instead of 35dB.	el D/1. Change Editor's note
Proposed Response Response Status W PROPOSED REJECT. See comment #97		Proposed Response PROPOSED REJECT	Response Status W	
C/ 122 SC 122.11 P 179 L 31 Mazzini, Marco Cisco Systems	# 52	See comment #97		
Comment Type T Comment Status D Set a value for Optical return loss - proposed 26dB refer to http://www.ieee802.org/3/bs/public/adhoc/smf/15_12_15/mazzini_0 6	01a_1215_smf.pdf, slide			
SuggestedRemedy				
In Table 122-11 Change "Optical return loss" from TBD to 26 dB				
Proposed Response Response Status W PROPOSED REJECT. See comment #97				
			01, 100	

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: Clause, Subclause, page, line

C/ 122 SC 122.11.3.2 Page 37 of 40 12/01/2016 12:02:07

C/ 122 SC 122.12.4.6 P 189 L 8 # 51 Mazzini, Marco Cisco Systems Cisco Systems <th>C/ 123 SC 123.7.1 P 198 L 39 # 98 Ghiasi, Ali Ghiasi Quantum LLC Ghiasi</th>	C/ 123 SC 123.7.1 P 198 L 39 # 98 Ghiasi, Ali Ghiasi Quantum LLC Ghiasi					
Comment Type T Comment Status D	Comment Type TR Comment Status D					
Change maximum discrete reflectance value to appopriate for MPO angled connectors. Refer to	RINxxOMA and Optical return loss tolerance are TBD					
http://www.ieee802.org/3/bm/public/smfadhoc/meetings/apr30_13/kolesar_01_0413_smf.pd f, slide 6	SuggestedRemedy Assuming 26 dB ROSA with 4 35 dB connector has an aggregate RL of 19.73 dB, so					
SuggestedRemedy	Suggest to use 20 dB for Rin measurement and tolerance					
In 122.12.4.6, OC2 Change "-35 dB" to "-55 dB"	PROPOSED REJECT.					
Proposed Response Response Status W	See comment #97					
PROPOSED REJECT. See comment #97	CI 123 SC 123.7.1 P 198 L 42 # 99 Ghiasi, Ali Ghiasi Quantum LLC Ghiasi					
C/ 123 SC 123.1.1 P 191 L 30 # 3 Stassar, Peter Huawei Technologies Huawei Technologies Huawei Technologies Huawei Technologies	Comment Type TR Comment Status D Transmitter reflectance is TBD					
Comment Type ER Comment Status D	SuggestedRemedy					
Clause 123.1.1 currently contains the sentence ".when processed according to Clause 120 and Clause 119", which seems editorially a "funny" order, while it is intentional to process according to Clause 120 first before processing it according to Clause 119.	Suggest 26 dB Proposed Response Response Status					
SuggestedRemedy	PROPOSED REJECT. See comment #97					
Add "next" between "Clause 120 and" and "Clause 119" to read ".when processed according to Clause 120 and next Clause 119"	C/ 123 SC 123.7.2 P 199 L 28 # 101					
Proposed Response Response Status W	Ghiasi, Ali Ghiasi Quantum LLC					
PROPOSED ACCEPT IN PRINCIPLE. Add "then" between "Clause 120 and" and "Clause 119" to read "when processed according to Clause 120 and then Clause 119"	Comment Type TR Comment Status D Differece in receive OMA is TBD					
Cl 123 SC 123.7.1 P 198 L 28 # 100	SuggestedRemedy Suggest 3 dB					
Ghiasi, Ali Ghiasi Quantum LLC	Pronosed Response Response Status W					
Comment Type TR Comment Status D Differece in launch OMA is TBD	PROPOSED REJECT. No justification has been provided and the proposed value is not consistent with values in					
SuggestedRemedy Suggest 3 dB	existing Clauses.					
Proposed Response Response Status W PROPOSED REJECT. No justification has been provided and the proposed value is not consistent with values in existing Clauses.						

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: Clause, Subclause, page, line

C/ 123 SC 123.7.2

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C/ 123 SC 123.7.2 Ghiasi Ali	P 199 Gbiasi Quanti	L 31 ۱۳۱۱ C	# 107	C/ 123 Mazzini Mi	SC 123.7.3	P 200 Cisco System	L 18	# 56	
Comment Type TR	Comment Status D			Comment 7	Type T	Comment Status D			
Receive reflectance is SuggestedRemedy Suggest 26 dB Proposed Response	TBD Response Status W			Allocati budget http://w 4), this propos will allo	ion for penalty (i doesn't include ww.ieee802.org should be harm al to refer to ne) w to reduce MP	for maximum TDP) of Table 1 it. As presented at SMF ad-h y/3/bs/public/adhoc/smf/15_1 ionized across SMF PMD. In at TIA TR-42.11 revision for I I penalty over 400GBASE-FI	23-9 doesn't in noc meeting (rei 2_15/mazzini_(to same presen _C connector re R8/LR8, assumi	clude MPI then link fer to 01a_1215_smf.pdf, slide tation (slide 8) a eturn loss is given. This ing certain values of	
C/ 123 SC 123.7.2	P 199	L 31	# 102	 TX/RX reflectances. Need further discussion over LC return losses, definition of Transmitter and Receiver reflectances for FR8/LR8 (still TBD into Table 123-7 an 123-8), in order to define the correct MPI penalty (inside "Allocation for penalties" power budget. 					
Ghiasi, Ali	Ghiasi Quantu	ım LLC		Suggested	Remedy				
Comment Type TR Receive reflectance is	Comment Status D TBD			In Tabl Change Change	e 123-9 e "Power budge e "Power budge	t (for maximum TDP") from 6 t (for maximum TDP") from 8	.2dB to TBD for .7dB to TBD for	400GBASE-FR8. 400GBASE-LR8.	
SuggestedRemedy Suggest 26 dB				Change FR8.	e "Allocation for	penalties (for maximum TDP)" from 2.2dB to	TBD for 400GBASE-	
Proposed Response PROPOSED REJECT.	Response Status W			LR8.	e "Allocation for	Denaities (for maximum 1DP	")" from 2.40B to	D TBD for 400GBASE-	
See comment #97			PROPOSED ACCEPT IN PRINCIPLE. Add an editor's note below Table 123-9: [Editor's note: When the penalty due to MPI has been agreed, the values in Table 123-9 will be adjusted to include this penalty.]						
				C/ 123 Ghiasi, Ali	SC 123.8.8	P 202 Ghiasi Quant	<i>L</i> 42 um LLC	# 155	
				Comment T Transm	Type TR hitter optical way	Comment Status D	with a CRU		
				Suggested The clc frequer clock fc remove see htt materia consoli	Remedy ock recovery uni ocy of 4 MHz an or BER measure es this low-frequ p://www.ieee802 al and http://www date these two	t (CRU) used in the optical w d a slope of 20 dB/decade. V ements, passing of low- frequ ency jitter from the measurer 2.org/3/bs/public/15_09/ghias vieee802.org/3/bs/public/15_ oresentation for Atlanta as gh	aveform measu Vhen using a clu ency jitter from nent. i_3bs_01b_091 _07/ghiasi_3bs_ niasi_3bs_01_0	rement has a corner ock recovery unit as a the data to the clock 15.pdf for background _01_0715.pdf plan to 116.pdf	
				Proposed F	Response	Response Status W			
				PROP0 Conser [Editor'	DSED REJECT. Insus on change s note: This con	of CRU bandwidth has not b nment was sent after the clos	een achieved. se of the comme	ent period.]	
TYPE: TR/technical require	d ER/editorial required GR/	peneral required	T/technical E/editorial G/oe	eneral		C/ 1:	23	Page 39 of 40	

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: Clause, Subclause, page, line

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SC 123.8.8

C/ 123	SC 123.8.10	P 202	L 53	#	156
Ghiasi, Ali		Ghiasi Qu	antum LLC		

Comment Type TR Comment Status D

Stress receiver sensitivity must tolerate low frequency jitter propagating from the transmitter downstream

SuggestedRemedy

Sinusoidal jitter componnet of stress receiver sensitivity is as following The sinusoidal jitter is used to test receiver jitter tolerance.

The amplitude of the applied sinusoidal jitter is dependent on frequency as specified in Table 87-13 and is illustrated in Figure 87-5.

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 ghiasi_3bs_01_0116.pdf

Proposed Response Response Status W

PROPOSED REJECT.

Consensus on change of CRU bandwidth has not been achieved. [Editor's note: This comment was sent after the close of the comment period.]