Cl **83** *SC* **83.5.10** *P* **215** *L* **22** # 79

Dawe, Piers Independent

Comment Type **TR** *Comment Status* **R**

Following up on D2.1 comment 33. anslow_05_0709 showed that for two scenarios with an almost-minimum 32 UI delay between lanes, the peak baseline wander was about 50% more than for a single PRBS31. I believe that if the delay is substantially increased, that 50% will substantially reduce. Maybe I'll get the simulation done by the meeting.
The larger delay could be generated by choosing appropriate seeds for each lane's PRBS generator and starting the generators together, but that's implementation.

SuggestedRemedy

The first part of the remedy is similar to last time:
Change "on each of the lanes" to "on each of the PCS lanes" here and at line 30.
Change "one lane and any other lane" to "one PCS lane and any other PCS lane"
In the paragraphs beginning line 38 and line 50, change "lane" or "lanes" to "PCS lane" or PCS lanes".
Delete "Note that bit multiplexing of per-lane PRBS31 may produce a signal which is not meaningful for downstream sublayers."
Provide 20 PRBS31 error counters in each direction, one per PCS lane.
Another solution which would take a few more words would be to generate by 10G lanes and check by 20G PCS lanes, for 100G. Do we have a name for a 10G lane? For 40G, because we have a binary series of lane speeds, generating per lane (whatever that is) and checking per (10G) PCS lane is ideal, but generating by 10G lanes with offset would still work.
Increase the 31 bits (UI) minimum delay between generator lanes to a number TBD, around 2000 UI.

Response *Response Status* **U**

REJECT.

D2.1 comment 33 was rejected based on the analysis in anslow_05_0709. The decision should not be reconsidered unless:
1) simulation results can be provided to show that larger offsets do not significantly increase the baseline wander over PRBS31;
2) it can be shown that it is not unduly onerous to be required to generate 20 PRBS31 sequences that are offset by 2000 UI; and
3) a specific offset value can be provided which meets the necessary requirements.
Note that there is no other aspect of the PMA which is aware of PCS lanes and other mechanisms (e.g., scrambled idle test pattern, BIP) are available for multi-sublayer testing.

Cl **83A** *SC* **83A.2** *P* **383** *L* **6** # 82

Dawe, Piers Independent

Comment Type **TR** *Comment Status* **R**

Following up D2.1 comment 159,
According to 83.3, a PMA has TX and RX directions, each of which has an input and an output. nAUI is intended to connect PMAs, e.g. one in the host and one in a module. Therefore nAUI must connect a (host) TX (transmitter) output to a (module) transmitter input, and a (module) RX (receiver) output to a (host) receiver input. 83B and 86A use the terms host output, module input, module output, host input, which is compatible with 83. But Figure 83A-2 shows two "Transmitter"s and two "Receiver"s, one for each direction. This isn't compatible terminology.

SuggestedRemedy

Change "Transmitter" to "output" or "driver" or "driver output" as appropriate, "Transmit Compliance Point" to "output compliance point", "Receiver" to "input", and "Receiver Compliance Points" and "Receive Compliance Point" to "output compliance point", throughout 83A.

Response *Response Status* **U**

REJECT.

See comment 200 for consistency between 83A & 83B

Cl **83A** *SC* **83A.2.1** *P* **383** *L* **25** # 83

Dawe, Piers Independent

Comment Type **TR** *Comment Status* **A**

SDD21 does not represent loss, it represents forward gain ("through response" or just "response"; 47.4.1 calls it "transmission magnitude response"). For modules, we should stay with S-parameters, as is common industry practice in SFP+, CXP, XAUI (Clause 47) and so on, but the names need cleaning up.

SuggestedRemedy

Change "differential insertion loss" to "differential response". Change "less than" to "more than or equal to". Reverse the signs and the inequality in equation 83A-1 and Figure 83A-3.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See comment 151.

Cl **83A** *SC* **83A.3.3.1** *P* **386** *L* **8** # 84

Dawe, Piers Independent

Comment Type **TR** *Comment Status* **R**

De-emphasis means a relative attenuation of the higher frequencies, as in "Dolby noise reduction is a form of dynamic preemphasis employed during recording, plus a form of dynamic deemphasis used during playback". So de-emphasis is the opposite of what you want.

SuggestedRemedy

We don't need to argue about de- versus pre-: just change "De-emphasis" to "Emphasis", and "Vtx-demph" (or "Vth-demph") to "VMA", throughout.

Response *Response Status* **U**

REJECT.

De-emphasis is an industry standard term.

Cl **85** *SC* **85.10.10.3** *P* **270** *L* **32** # 85

Dawe, Piers Independent

Comment Type **TR** *Comment Status* **R**

"NEXT loss" sounds wrong. We never expected all the power incident on the pair of test fixtures to appear as crosstalk, so how is it "lost"? It seems to be "lost" several times over, to NEXT, to FEXT, to regular transmission loss, and to reflection. This doesn't make sense. A better term than loss, which is used frequently in 802.3, is attenuation, because it focuses on the signal that's there rather than the signal that's "lost". Of course, it would be much better to specify NEXT (-ve dB) rather than "NEXT loss" or "NEXT attenuation" (you need to the right-way-up NEXT to calulate MDNEXT anyway).

SuggestedRemedy

This is a defensive comment. Whatever you do, don't mess up 86A. It will take a lot of comments in probably more than one meeting cycle to repair the collateral damage.

Response *Response Status* **U**

REJECT.
NEXT loss consistent with the use of "loss" for naming other signal impairments e.g., return loss,insertion loss, channel loss..etc..used in clause 85 and other IEEE 802.3 clauses.

See response to comment 15

Cl **85** *SC* **85.10.10.3** *P* **270** *L* **48** # 65

Dawe, Piers Independent

Comment Type **ER** *Comment Status* **R**

Draft says "MDNEXT loss is specified as the power sum of the individual NEXT losses." This is not correct. MDNEXT is the power sum of the individual NEXTs, but "MDNEXT loss" is the inverse of the power sum of the individual inverses of "NEXT losses".

SuggestedRemedy

My preferred solution is change "NEXT loss" to "NEXT" and "MDNEXT loss" to "MDNEXT", and flip the signs.

Response *Response Status* **U**

REJECT.

Multiple disturber power sum near-end crosstalk calculation and associated description in (85-26) is used in base document e.g., 802.3an..10GBASE-T..

Cl **85** *SC* **85.3** *P* **241** *L* **18** # 81

Dawe, Piers Independent

Comment Type **TR** *Comment Status* **R**

The response to D2.1 comment 37 (Exchange of DME frames is unnecessary) shows a misunderstanding by the BRC. Response says "include backward compatability with CX4". CX4 doesn't use and can't understand DME frames, so compatability with CX4 is achieved by Parallel Detection. Response says "Suggested remedy inconsistent with ... 802.3ap electricals": this isn't about electricals but about a protocol. DME frames are used in Backplane Ethernet where there is a choice of DME-aware PMD types. On a front-side port, there isn't. There is 10GBASE-CX4 and 40GBASE-CR4. You don't need DME frames to tell them apart. You have Parallel Detection to detect CX4. So you can use it to detect CR4 also.
The unnecessary burden, apart from the obvious extra complexity of an unnecessary protocol, is that DME frames run at 312.5 MBd, 1/33 of the normal 10G rate, so a normal 10G CDR won't lock to this.

SuggestedRemedy

Add text in Clause 85 saying that 40GBASE-CR4 and 100GBASE-CR10 can use Parallel Detection. This is in line with the backward compatibility with CX4 and baseline "Parallel detection function to detect legacy 10GBASE-CX4 PHYs".
If you wish, advertise FEC ability in the Training frame.

Response *Response Status* **U**

REJECT.

AN uses DME signaling to exchange link partner abilities and to negotiate FEC capability.

The commenter has not provided a sufficiently complete proposal for replacement of DME with parallel detection.

Cl **86A** *SC* **86A.4.1** *P* **428** *L* **27** # 131

Ghiasi, Ali Broadcom

Comment Type **TR** *Comment Status* **R**

With current set of specifications the SerDes transmitter may have very large amount of de-emphasis 3-5 dB resulting in signifincat distortion at TP1a and also see comment 216/218 on D2.1

SuggestedRemedy

The options here are either limit max DDJ to about 0.125 UI or max 3 dB de-emphasis, see ghiasi_03_0909

Response *Response Status* **U**

REJECT.
J2 spec constrains DDJ and eye mask constrains excessive emphasis.
Although ghiasi_03_0909 shows an example module/host combination with a near failing Tx eye mask at TP2, there is insufficient information to determine the corrective action required in the spec to avoid a potential eye-mask issue. Further work is invited.

Cl **86A** *SC* **86A.4.2** *P* **430** *L* **14** # 96

Ghiasi, Ali Broadcom

Comment Type **TR** *Comment Status* **R**

With current set of specifications the SerDes transmitter may have very large amount of de-emphasis 3-5 dB resulting in signifincat distortion at TP1a and also see comment 216/218 on D2.1

SuggestedRemedy

The options here are either limit max DDJ to about 0.125 or max 3 dB de-emphasis, see ghiasi_03_0909

Response *Response Status* **U**

REJECT.
see also response to comment 131

Cl **88** *SC* **88.8.5.3** *P* **356** *L* **12** # 127

Ghiasi, Ali Broadcom

Comment Type **TR** *Comment Status* **A**

The CRU BW for the TDP measurement is defiend to be 10 MHz also see comment 224 and 225 D2.1 can limit the receiver to analog type instead of more efficent lower power digital implementation. The clock and power supply noise do not scale with higher baudrate so there is very little benifit of higher CRU BW. The CRU increased BW has very little benifit on the VCO noise. The 10 MHz burden will remin even in the case of future generations where ASIC/SerDes operate at 25 G!

SuggestedRemedy

Propose to consider CRU BW 7 MHz instead of current 10 MHz. Higher CRU BW has very little benifit on the VCO noise and power supply nosie but significant penalty on the receiver, see ghiasi_02_0909

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

In Table 88-13 correct the formula:
change "2 x 10^5/ f" to "5 x 10^5/ f"

The Task Force voted on whether to:
A - Leave the CRU corner frequency at 10 MHz and correct the formula in Table 88-13
B - Change the CRU corner frequency to 7 MHz in a consistent manner in clause 88

A 9
B 1