Cl **00** *SC* *P* *L* # **48**

Plunkett, TImothy NSWCDD

Comment Type **E** *Comment Status* **A**

There are many places throughout the document where subclauses are markedout and the numbering has not been changed to account for the removedsections. If the numbering of subclauses is automatically taken care ofwhen the change bars are removed, then ignore this comment. Below are listed all of the places I noticed this happening:
45A.2
48.7.3
49.2.13.2.4
50.3.11.1 list items h) and i)
51.8
51.10
52.8.2.1
52.9.10.3
52.9.12
52.9.13 list items 3) and 5)
53.5.5
53.5.9
53.9.10
Figures 53.16 and 53.17

SuggestedRemedy

Insure that renumbering is done correctly after change bars are removed.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This is a problem with the comparison tool, numbering is correct in D3.1 non-change bar version.

Cl **00** *SC* *P* *L* # **252**

Thaler, Pat Agilent

Comment Type **E** *Comment Status* **A**

Terminology consistancy. Clauses 30 and 45 use "XS" when they are referring to the PHY XGXS and DTE XGXS. (Clause 45 occasionally uses XGXS. See table 45-51 which contains both.)

SuggestedRemedy

Consistantly use XGXS.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Define XS in the definitions and abbreviations.

Cl **00** *SC* *P* *L* # **45002**

Turner, Ed

Comment Type **E** *Comment Status* **A**

Add 'XS - Extender sublayer' to the abbreviations list as requested in the resolution to comment number 255. And add a definition for the extender sublayer (XS).

SuggestedRemedy

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **52.1.1.4** *P* **515** *L* **47** # **10**

™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**

Is the "PMD_LOOPBACK.indicate" signal optional or not?

SuggestedRemedy

Option 1. Remove the part of the sentence after the comma on line 47-48.Option 2. Replace the text after the comma with "also in the case PMD_loopback is not implemented".Option 3. Remove loopback. It is probably never going to be implmemented in the PMD, and reserving a physical pin for it seems like a waste.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Remove all text and references to loopback in PMD, for example, PMD_loopback function and service primitive (PMD_LOOPBACK), from Clause 52, 45, 53, 51.

Cl **01** *SC* **1** *P* **2** *L* **9** # **173**

Thompson, Geoff — Nortel

Comment Type **T** *Comment Status* **R**

The deletion of "CSMA/CD as the access method" in the overview of the Standard is unwarranted just because we are adding a speed that does not have a half duplex mode.

SuggestedRemedy

Retain text that acknowledges that CSMA/CD is the access method for this Standard for shared media. (If this comment is judged out of scope for this recirculation it will be submitted as a Technical Required at Sponsor Ballot).

Response *Response Status* **C**

REJECT.

The relevant text was changed as a result of the unanimous resolution of a technical comment during Task Force ballot (comment #1092 against D2.0).

Clauses 1 through 4 in the current draft preserve many references that still acknowledge that CSMA/CD is the access method for this standard for shared media. However, the sense of the Task Force during the TF ballot was that the overview of the standard should be more general and acknowledge the fact that there is more to Ethernet than CSMA/CD.

The commenter is invited to re-submit the comment at Sponsor ballot with a specific remedy.

Cl **30** *SC* *P* *L* # **254**

Thaler, Pat — Agilent

Comment Type **E** *Comment Status* **A**

Terminology consistancy. Clauses 30 and 45 use "XS" when they are referring to the PHY XGXS and DTE XGXS. (Clause 45 occasionally uses XGXS. See table 45-51 which contains both.)

SuggestedRemedy

Consistantly use XGXS.

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.8.1.1.2** *P* *L* # **30001**

NoName

Comment Type **T** *Comment Status* **A**

The use of Latching attributes with a clearing function, such as aSectionStatus, in a system that allows multiple managers is not wise as one manager never knows when they can use the clear function as another manager may be reading the attribute at any time.

SuggestedRemedy

aSectionStatus, aLineStatus, aPathStatus and aFarEndPathStatus should be changed from Latched to Live. The related Clear Actions should be removed.

For example aSectionStatus should be changed to read -

A string of 2 bits corresponding to the Section Status (50.3.2.5). The first bit corresponds to the Loss of Signal flag and maps to the LOS bit in the WIS Section Status register. The second bit corresponds to the Loss of Frame flag and maps to the LOF bit in the WIS Section Status register. If a Clause 45 MDIO Interface to the WIS is present, then this will map to the WIS Status 3 register specified in 45.2.2.6.;

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.8.1.1.24** *P* **71** *L* **47** # **47**

Plunkett, TImothy — NSWCDD

Comment Type **E** *Comment Status* **A**

Why are there two lines that both read"BEHAVIOR DEFINED AS:"

SuggestedRemedy

Remove one of the lines.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* *P* *L* # **255**

Thaler, Pat — Agilent

Comment Type **E** *Comment Status* **A**

Terminology consistancy. Clauses 30 and 45 use "XS" when they are referring to the PHY XGXS and DTE XGXS. (Clause 45 occasionally uses XGXS. See table 45-51 which contains both.)

SuggestedRemedy

Consistantly use XGXS.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The term XS is a generic term for an extender sublayer, without any associated speed, hence it's use for the PHY XS MMD and DTE XS MMD. The speed specific XS for 10Gbps is the XGXS. There is a mixture of terms within Clause 45 because the PHY XS MMD and DTE XS MMD contain 10Gbps specific registers, so those registers are called XGXS registers. The speed independent registers are called XS registers. I will check though the clause to ensure that all 10G specific registers are termed XGXS registers and all speed independent registers are called XS registers.
Add an abbreviation for XS in Clause 1, section 5 using comment number 45002.

Cl **45** *SC* **2.3** *P* *L* # **161**

Gaither, Justin — Xilinx, Rocketchips Div

Comment Type **E** *Comment Status* **A**

Clause 49 made specific effort to remove the "jitter" from the jitter test mode. This clause should maintain the same terminology.

SuggestedRemedy

remove "jitter" from jitter test mode trhoughout the clause.

Response *Response Status* **C**

ACCEPT.
See #250.

Cl **45** *SC* **2.3.6.1** *P* **241** *L* **5** # **162**

Gaither, Justin — Xilinx, Rocketchips Div

Comment Type **T** *Comment Status* **A**

"specified in either Clause 48 or Clause 49." is incorrect, Clause 48 does not mention jitter test mode. Annex 48A does mention multiple required test modes however there are no registers defined to support them. It is understood that these modes can be supported through external stimulus, however if an implementor chooses to support these modes internally, shouldnt we define the control and status registers? Especially since it is likely that an xgmii interface may not be available on some devices, which would be required to support these test modes.

SuggestedRemedy

Add optional control and status registers to support the test modes in annex 48A.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add the following bits : A test pattern enable bit, and two control bits to select between the high, low and mixed frequency patterns. A single capability bit.
Add these bits to both the PCS MMD in the 10GBASE-X registers, the PHY XS MMD in the XGXS registers and the DTE XS MMD in the XGXS registers.

Cl **45** *SC* **45.2.1.1** *P* **201** *L* **18** # **346**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

Having two bits with the same name and function is not very helpful. Also see 45.2.1.1.3.

SuggestedRemedy

Either change the names to indicate what these bits do, or explain why it takes two bits to do the job.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add a sentence to say that having these bits set to a one makes them compatible with the speed selection bits used in Clause 22. Apply this to all speed selection sections in each MMD.

Cl **45** *SC* **45.2.1.1.1** *P* **201** *L* **47** # **266**

Thaler, Pat — Agilent

Comment Type **E** *Comment Status* **A**

This comment applies to clauses covering the reset bit for each layer. "chip" is a casual term. It should be replaced by "package" match the devices in package register.

SuggestedRemedy

Replace chip with package in each reset bit clause.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.7.5** *P* **210** *L* **5-7** # **341**

Justin Chang Quake Technologies

Comment Type **E** *Comment Status* **A**

Section is on receive fault condition. Should replace "transmit" with "receive".

SuggestedRemedy

Replace occurances of "transmit" with "receive".

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2** *P* *L* # **45005**

Turner, Ed

Comment Type **T** *Comment Status* **A**

As per the resolution of comment #53 there is no more need for the WIS jitter test seed register and the WIS jitter test error counter register.

SuggestedRemedy

Delete both registers.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2 and 45.2.3** *P* **216** *L* **40** # **250**

Thaler, Pat Agilent

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

Jitter test or jitter test pattern is inaccurate when referring to the test patterns generated by the WIS and R PCS because they generate two types of test pattern one of which is not used for jitter tests at all and the other is used for jitter and other tests.

SuggestedRemedy

All occurances of ""jitter test"" or ""jitter test pattern"" should be replaced by ""test pattern".

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.14** *P* **230** *L* **18** # **3**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

It is confusing to refer to the register pair as "Far End Line BIP Errors*counter* registers". This use conflicts with the actual counter described in 50.3.11.3, which is loaded into the register pair when 2.55 is read.

SuggestedRemedy

Change to "Far End Line BIP Errors registers".

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.14** *P* **230** *L* **35** # **2**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

The Far End Line BIP Errors counter is defined in 50.3.11.3. A reference here would help the reader.

SuggestedRemedy

Add reference to 50.3.11.3 in this paragraph. For example: "... the Far End Line BIP Errors counter (as described in 50.3.11.3)that is ..."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Any PICS items connected with this counter should also be clarified in Clause 50.

Cl **45** *SC* **45.2.2.15** *P* **230** *L* **45** # **4**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

It is confusing to refer to the register pair as "Line BIP Errors*counter* registers". This use conflicts with the actual counter described in 50.3.11.3, which is loaded into the register pair when 2.57 is read.

SuggestedRemedy

Change to "Line BIP Errors registers".

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.15** *P* **230** *L* **47** # **5**

Figueira, Norival — Nortel Networks

Comment Type **E** *Comment Status* **A**

The Line BIP Errors counter is defined in 50.3.11.3. A reference here would help the reader.

SuggestedRemedy

Add reference to 50.3.11.3 in this paragraph. For example: "... the Line BIP Errors counter (as described in 50.3.11.3) that is..."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Any PICS items connected with this counter should also be clarified in Clause 50.

Cl **45** *SC* **45.2.2.8** *P* **224** *L* **NA** # **238**

Krishnan Ramamurthy — Ample Communication

Comment Type **T** *Comment Status* **R**

WIS supports ERDI-P (Clause 50.3.2.5 Table 50-7). However there is no WIS status bit defined to report this event.

SuggestedRemedy

Provide a bit in WIS Status 3 register to report this event.

Response *Response Status* **C**

REJECT.
This comment has been passed to the WIS track as #50001 for them to review and resolve.
The WIS track rejected the comment. See #50001 for explanation.

Cl **45** *SC* **45.2.3.11** *P* **246** *L* **22** # **264**

Thaler, Pat — Agilent

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

Test mode is not required for a 10GBASE-R PCS which only supports 10GBASE-W operation. Therefore, there should be a statement for all the test mode registers that they are only required when the PCS supports operation without a WIS. Also, if a PCS supports both 10GBASE-R and 10GBASE-W operation, the PCS should not be required to operate the test mode when in 10GBASE-W mode.

SuggestedRemedy

Add a statement to each test mode register such as:This register is only required when the 10GBASE-R capability is supported. If both 10GBASE-R and 10GBASE-W capability are supported, then this register may either ignore writes and return zeros for reads when in 10GBASE-W mode or may function as defiend for 10GBASE-R.

Response *Response Status* **C**

ACCEPT.
Update the PICS with conditionals for the presence of these registers.

Cl **45** *SC* **45.2.3.6.1** *P* **241** *L* **1** # **262**

Thaler, Pat — Agilent

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

There should not be a global jitter test mode bit. There are separate bits to enable transmit and receive test modes for 10GBASE-R in register 3.42.

SuggestedRemedy

Delete bit. If 10GBASE-X needs test mode control, put it into a 10GBASE-X register.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.6.2** *P* **241** *L* # **45001**

Turner, Ed

Comment Type **E** *Comment Status* **A**

The description of PCS type selection is inconsistent with the equivalent PMA/PMD type selection given in 45.2.1.6.1, CB pg 206.

SuggestedRemedy

Change section to read :
The PCS type of the 10G PCS may be selected using bits 1 through 0. The PCS type abilities of the 10G PCS are advertised in bits 2 through 0 of the 10G PCS status 2 register.
A 10G PCS may ignore writes to the PCS type selection bits that select PCS types it has not advertised in the status register.
It is the responsibility of the STA to ensure that mutually acceptable MMD types are applied consistently across all the MMDs on a particular PHY.
The PCS type selection defaults to a supported ablity.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.7.4 and 45.2.3.7.** *P* **242** *L* **32** # **265**

Thaler, Pat — Agilent

Comment Type **E** *Comment Status* **A**

The wording here is not precisely correct. There is no 10GBASE-W PCS. The PCS for both 10GBASE-W and 10GBASE-R is the 10GBASE-R PCS.

SuggestedRemedy

10GBASE-W capable should be described as ""is able to support operation in a 10GBASE-W PHY (that is, supports operation with a WIS)."10GBASE-R capable should be described as "is able to support operation in a 10GBASE-R PHY (that is, supports operation without a WIS)."

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.4.1.2** *P* **249** *L* **53** # **259**

Thaler, Pat Agilent

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

Inconsistancy between Clause 45, 47 and 48 in the definition of loopback for PHY XGXS.Clause 45 says send all 1's to PCS (XAUI),Clause 47 says the XGXS shall meet all mandatory requirements of 48.2 and 48.3.Clause 48.3.3.2 says output to the XGMII shall be static or high impedance.

SuggestedRemedy

Harmonize 45.2.4.1.2 and 48.3.3.2 or in 47 exclude 48.3.3.2.

Response *Response Status* **C**

ACCEPT.
Remove the "When bit .. .. to the PCS" sentence from C45 and just reference out to 47/48,where the behaviour will be defined.

Cl **45** *SC* **45.2.5.1.2** *P* **258** *L* **30** # **253**

Thaler, Pat Agilent

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

Inconsistancy between Clause 45, 47 and 48 in the definition of loopback for PHY XGXS.Clause 45 says PHY XGXS loopback is from XAUI input to XAUI output and the XGMII is driven to all 1s,Clause 47 says the XGXS shall meet all mandatory requirements of 48.2 and 48.3.Clause 48.3.3.2 says loopback from transmitter to receiver which in clause 48 means from XGMII input to XGMII output which is the opposite direction as that specified in clause 45.Furthermore, Clause 45 says to drive all 1's to the transmit output (the XGMII) during loopback. All 1's is a reserved code on the XGMII. Sending this will cause the R PCS to put out continuous Error blocks during loopback. LF would be a better alternative.

SuggestedRemedy

In Clause 47 exclude 48.3.3.2 for PHY XGXS and add text to describe loopback from transmit to receive for PHY XGXS. nclude the requirement that when the PHY XGXS shall send LF on the transmit (XGMII) output when in loopback. In Clause 45 remove description of what is sent to the transmitter during loopback - that should be in Clause 47.

Response *Response Status* **C**

ACCEPT.
1/ Delete the sentence 'When bit .. .. PHY XS'.

2/ Add a sentence to say that in the PHY XS the loopback is reversed and goes from the receive path to the transmit path 45.2.4.1.2. Also modify the picture at the start of the clause with a dotted line from Rx to Tx and add associated text to say 'This is the direction of the optional PHY XS loopback'.

3/ Add a capability bit in to the PHY XS for the loopback function.

4/ 45.2.3.1.2 Loopback (3.0.14): Delete "and Clause 48.3.3". And make the bit only apply to the R PCS.

5/ 45.2.1.1.4 PMA loopback (1.0.0): The last sentence should be modified to read : "For 10Gb/s operation, the loopback functionality is detailed in 48.3.3 and 51.8 and the loopback ability bit is specified in the 10G PMA/PMD Status 2 Register."

6/ P202, line48. Change 'The .. .. Optional.' To 'The loopback functionality is mandatory for the 10GBASE-X port type and optional for all other port types.'

Cl **45** *SC* **45.2.6** *P* **264** *L* **7** # **8**

Turner, Ed — Lattice Semiconductor

Comment Type **T** *Comment Status* **A**

As well as the vendor specific MMD identifier register, the 'device present bits' should also be mandatory for the vendor specific MMD.

SuggestedRemedy

Add a status register at location 8 and specify bits 15 and 14 as the device present bits, as specified for all other MMDs.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.4.1** *P* **266** *L* **22** # **9**

Turner, Ed — Lattice Semiconductor

Comment Type **T** *Comment Status* **A**

There is no longer any mention in the text or table about the MDIO being targetted for 1.2V CMOS systems.

SuggestedRemedy

Add text to line 22 along the lines of what appears in Clause 22 : "The MDIO uses signal levels which are compatible with devices operating at a nominal supply voltage of 1.2V." The note on line 25 covers all other voltage implementations.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **Table 45?9** *P* **206** *L* **1** # **72**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

MDIO power down. Now that we have removed all that stuff that wasn't optics compatible and now that we have gained the useful "devices in package" registers, we can have a sensible, transceiver-oriented, optional power down. Here are a couple of reasons for why this is desirable:
1) Power down enables energy saving in systems which have extra populated but inactive ports.
2) Power down has diagnostic value from a thermal standpoint. The ability to power down a module but leave its physical form still in a blade is a useful tool when developing or troubleshooting systems thermally.

SuggestedRemedy

Add to table, registers for capability to power down, and to control power down. Consider adding registers analogous to the 'present' set to indicate which devices have power down capability (alternatively add text: 'This may also control the power down state of other MMDs in the group declared by registers 1.5 as being in the same package.'). Add text:
A group of devices may be placed into a low-power consumption state by setting bit x.xx to a one. Clearing bit x.xx to zero allows normal operation. The behavior of the PMA/PMD in, and in transition to and from, the power down state is implementation specific and any signals on the data path should not be relied on. While in the power-down state, the MMD group shall as a minimum respond to management transactions necessary to exit the power down state. An MMD is not required to meet the RX_CLK and TX_CLK signal functional requirements when bit x.xx is set to a logic one. The default value of bit x.xx is zero.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Different devices may take some time to power up and an indication of 'readyness' may be required so that the system knows when it is safe to start signalling. One option would be to exit power down by setting the reset bit, rather than clearing the power down bit. The reset bit would remain set until the device is ready for use.

Its inclusion must be approved by the whole TF since it was removed by the whole TF at the last meeting.
In addition, the whole TF must approve power down to be re-instated in the other MMDs.

Add to table, registers for capability to power down, and to control power down. Add text: 'This may also control the power down state of other MMDs in the group declared by registers 1.5 as being in the same package.
Add text:
A device may be placed into a power down state by setting bit x.xx to a one. The power down state is exited by resetting the device. The behavior of the PMA/PMD in, and in transition to and from, the power down state is implementation specific and any interface signals should not be relied on. While in the power-down state, the device shall as a minimum respond to management transactions necessary to exit the power down state. The default value of bit x.xx is zero.

Passed by a vote at the TF.

Cl **45** *SC* **Table45-9** *P* **206** *L* # **71**

Osamu, Ishida NTT

Comment Type **T** *Comment Status* **D**

The re-adopted 'devices in chip' by comment resolution #751 would be more helpful if it could reserve one additional bit for 10 Gigabit Fibre Channel (10GFC) use, apart from the Vendor Specific Bit 1.6.15. The 10GFC will support several 10GFC-specific PMDs, and, even with the 10GbE PMD family, slightly-different clock-rate operation might be required. A single bit identifier that indicates the '10GFC awareness' would be at minimum.

SuggestedRemedy

Please reserve Bit 1.6.14 for 10 Gigabit Fibre Channel (10GFC) use. 10 GFC is ANSI NCITS T11 project 1413-D. 10GbE STA may ignore it on read.

Response *Response Status* **Z**

Registers can be requested through the maintenance process by standards development organisations like the 10GFC.

Cl **46** *SC* **46.3.1.4** *P* **312** *L* **38** # **1**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A**

This section refers to inter-frame spacing. It does not allow changing the preamble length.

SuggestedRemedy

Replace "preamble" with "inter-frame spacing".

Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* *P* *L* # **269**

Lindsay, Tom Stratos Lightwave

Comment Type **E** *Comment Status* **R**

Strength of requirements is sometimes not clear.

SuggestedRemedy

Request that editor carefully evaluate words such as is, shall, should, etc. throughout section.

Response *Response Status* **C**

REJECT. Editor needs specific instructions. Evaluation must be provided by the task force and submitted during the commenting period.

Cl **47** *SC* *P* *L* # **270**

Lindsay, Tom Stratos Lightwave

Comment Type **E** *Comment Status* **A**

ohm should not be lower case.

SuggestedRemedy

Capitalize Ohm in numerous locations.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Editorial license given to editor. If Ohm is correct, then it should also be corrected in cls. 46 and 51. So should volts in 7, 23 and 46 and ampere-second in 14. If the matter is uncertain, use the upper case Greek letter omega.

Cl **47** *SC* **47.1** *P* **226** *L* **1** # **99002**

Jonathan Thatcher World Wide Packets

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

When the Higher Speed Study Group put forth a PAR to 802 and the IEEE standards board for approval to create a standard, we committed that: "10 Gb/s Ethernet technology will be demonstrated during the course of the project, prior to the completion of the sponsor ballot. " This requirement was added to our PAR because, at the time of writing the PAR, there was no evidence that PMD and PMA technology was feasible which simultaneously meet the other four criteria. Feasibility means that technology must be demonstrated with reports and working models; proven technology; reasonable testing and with confidence in reliability. Historically, Ethernet has been successful, in part, because it "leveraged" technology that existed at the time of the writing of the PAR. No such 10 Gigabit PHY technology existed in November 1999. While the time for which this must be completed is still a couple of meeting cycles away, it is not clear that sufficient effort is being made to validate the specifications; measurement procedures; engineering analysis and judgment and to assure that this interface meets the requirement we set for ourselves in time for the May 2001 cutoff for last technical change.

SuggestedRemedy

DEMONSTRATE the technical feasibility of the technology specified in Clause 47 for the XAUI interface, while ensuring the attainment of the other 4 criteria. Or, change the requirements/specifications such that this goal can be achieved.

Response *Response Status* **Z**

ACCEPT IN PRINCIPLE. The commenter's definition of technical feasibility is vague and open to different interpretations. Members of the XAUI sub task group plan to report on technical feasibility of XAUI at the July meeting.

This comment was carried forward from the comment database for IEEE P802.3ae/D3.0. XAUI technical feasibility and interoperability was shown at the July Plenary in Portland, OR. The results can be found at www.ieee802.org/3/ae/public/jul01/dambrosia_1_0701.pdf. The commenter has withdrawn his comment.

Cl **47** *SC* **47.1.2** *P* **331** *L* **22** # **54**

Tim Warland Nortel Networks

Comment Type **E** *Comment Status* **A**

XGMII extender allows distances of approximately 50 cm, implies a fixed length, not an upper bound

SuggestedRemedy

change text to: XGMII extender allows distances up to approximately 50 cm.

Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.2.1** *P* **332** *L* **37** # **260**

Thaler, Pat Agilent

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

Inconsistancy between Clause 45, 47 and 48 in the definition of loopback for DTE XGXS.Clause 45 says DTE XGXS loopback is from XAUI input to XAUI output and the XGMII is driven to all 1s,Clause 47 says the XGXS shall meet all mandatory requirements of 48.2 and 48.3.Clause 48.3.3.2 says loopback from transmitter to receiver which in clause 48 means from XGMII input to XGMII output which is the opposite direction as that specified in clause 45.Furthermore, Clause 45 says to drive all 1's to the transmit output (the XGMII) during loopback. All 1's is a reserved code on the XGMII. Sending this will cause the R PCS to put out continuous Error blocks during loopback. LF would be a better alternative.

SuggestedRemedy

In Clause 47 exclude 48.3.3.2 for PHY XGXS and add text to describe loopback from transmit to receive for PHY XGXS. nclude the requirement that when the PHY XGXS shall send LF on the transmit (XGMII) output when in loopback. In Clause 45 remove description of what is sent to the transmitter during loopback - that should be in Clause 47.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Use the response to comment #261 instead the suggested remedy to this comment.

Cl **47** *SC* **47.2.1** *P* **332** *L* **37** # **257**

Thaler, Pat Agilent

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

Inconsistancy between Clause 45, 47 and 48 in the definition of loopback for DTE XGXS.Clause 45 says send all 1's to PCS (XAUI),Clause 47 says the XGXS shall meet all mandatory requirements of 48.2 and 48.3.Clause 48.3.3.2 says output to the XGMII shall be static or high impedance.

SuggestedRemedy

Harmonize 45.2.4.1.2 and 48.3.3.2 or in 47 exclude 48.3.3.2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Use response to comment #259.

Cl **47** *SC* **47.2.1** *P* **332** *L* **38** # **267**

Thaler, Pat Agilent

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

In 802.3, transmit is always the data stream direction going out the MDI and receive is always the data stream direction going into the MDI. Clause 48 describes the operatation almost entirely in terms of transmit and receive, but the terms are backwards for a DTE XGXS since the XGMII is below the XAUI.

SuggestedRemedy

Add a statement that clarifies the situation such as "Since the PHY XGXS operates with the XGMII interface below the XAUI interface, the transmit requirements of 48.2 and 48.3 apply to the PHY XGXS receive functionality and the receive requrirements apply to the PHY XGSX transmit functionality."

Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.3.3.1** *P* **334** *L* **46** # **172**

Baumer, Howard Broadcom Corp.

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

All reference to any equalization were to be removed. By leaving in the reference to transmit equalization in the output amplitude specification could lead to confussion.

SuggestedRemedy

Remove the reference to transmit equalization. New first sentence for 47.3.3.1 would then read: "Driver differential output amplitude shall be at least 800mV peak-to-peak and less than 1600mV peak-to-peak.I have combined my comment #10 and #11 remedies together.

Response *Response Status* **Z**

REJECT. (Comment type changed to editorial by commentor.) The task force decision was to remove all explicit specification of equalization, not all reference. The additional component of the commentor's suggested remedy relating to minimum amplitude is dealt with in the proposed response to #171 and is an integral part of this proposed response.

Cl **47** *SC* **47.3.3.1** *P* **334** *L* **4654** # **171**

Baumer, Howard — Broadcom Corp.

Comment Type **T** *Comment Status* **R**

There is no minimum output amplitude specified in this text. All specifications where to be described in the text. The only place a minimum output amplitude can be inferred is in "Figure 47-4 Driver template".

SuggestedRemedy

Change the first sentence of 47.3.3.1 to read: "Driver differential output amplitude shall be at least 800mV peak-to-peak and less than 1600mV peak-to-peak.I have combined my comment #10 and #11 remedies together.

Response *Response Status* **C**

REJECT. There is intentionally no minimum amplitude spec at the near end. This has been a long-standing task force desire in order to avoid specifying equalization implementation. The 800mV near-end template is optional if the far-end template is met and was only included to allow simpler compiance testing of drivers without pre-equalization.

Cl **47** *SC* **47.3.3.4** *P* **336** *L* **34** # **163**

Baumer, Howard — Broadcom Corp.

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

Differential return loss specified as as a flat responce of 10dB from 100MHz to 2.5GHz is unrealistic and cannot be met with pratical and reasonable designs and packages. also the common mode return loss specifications exculdes pure differential designs, that is a pure 100ohm differential termination will have a 0dB common mode return loss but is a preferable design since it keeps all currents in the signal lines.

SuggestedRemedy

Specify the driver output differential return loss with a nonflat responce and remove the common mode return loss requirement. New description to read: "Driver output impeadance shall result in a differential return loss better than 10dB from 100MHz to 781.25MHz and reduce 20dB per decade from 781.25MHz to 2.5GHz".The last sentence in this paragraph will then need to read: "The reference impedance for differential return loss measurements is 100ohms."Table 47-1 in subclause 47.3.3 on page 334 will need to be updated with these redefined return loss specifications.

Response *Response Status* **U**

REJECT. The working group requests evidence that the suggested limits can be met in practice and simultaneously allow for full system functionality without alteration of other specification limits.

Cl **47** *SC* **47.3.3.6** *P* **339** *L* **37** # **271**

Lindsay, Tom — Stratos Lightwave

Comment Type **E** *Comment Status* **A**

In the 2 sentences that list TJ at near and far ends, and DJ at near and far ends, the word "and" is used in a way that could be interpreted that both near and far ends require simultaneous compliance. The first sentence takes care of this, but this suggestion should help further.

SuggestedRemedy

Replace "and" with "or" in both sentences.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The suggested remedy is an improvement, but still allows for some confusion (such as simultaneous use of the near-end TJ and far-end DJ, for example). Use the following alternate replacement for the fourth and fifth sentences:

"The jitter requirements at the near end are for a maximum total jitter of 0.35 UI pk-pk and a maximum deterministic component of 0.17 UI pk-pk. The far-end requirments are for a maximum total jitter of 0.55 UI pk-pk and a maximum deterministic component of 0.37 UI pk-pk."

Cl **47** *SC* **47.3.3.6** *P* **339** *L* **37** # **272**

Lindsay, Tom — Stratos Lightwave

Comment Type **E** *Comment Status* **A**

UI values are given, but units are incomplete.

SuggestedRemedy

Add "pk-pk" (or equivalent) after all instances of UI (4 places).

Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.3.3.6** *P* **339** *L* **3839** # **164**

Baumer, Howard — Broadcom Corp.

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

The current transmit jitter specification allows for the near end random jitter to be has high as 8ps rms and the far end random jitter to be has high as 12.6ps rms. (Since the specification allows Dj=0 and Rj=Tj-Dj(actual) Rj can then equal Tj. For near end Rj=0.35UI=112ps pk-pk which is 8ps rms {112/14}. For the far end Rj=0.55UI=176ps pk-pk which is 12.6ps rms.) This puts an undue burdon on the Receiver to be able to handle this large pure random jitter. A maximum random jitter should be specified.

SuggestedRemedy

Add a maximum random jitter specification that is not based on the determinstic jitter and add the constraint that the sum of the Rj & Dj has to be less than the Tj.Second to last sentence (lines 38-39) modified to read: "The maximum peak to peak random jitter, defined as 14 * rms random jitter, shall be less than 0.22UI. The sum of the measured deterministic and measured peak to peak random jitter shall be less than the total jitter".Table 47-1 in subclause 47.3.3 on page 334 will need to be updated with the maximum random jitter.

Response *Response Status* **U**

REJECT. The working group desires further investigation of an appropriate RJ limit. The editor asks that the commentor determine an RJ limit acceptable to the working group and then resubmitted this comment.

Cl **47** *SC* **47.3.4.1** *P* **340** *L* **4950** # **169**

Baumer, Howard — Broadcom Corp.

Comment Type **E** *Comment Status* **R**

The sentence "Note that the input signal might not meet this template when this load is replaced by the actual receiver." is confusing and adds no value to the standard. It should be left to the implementer to make sure that if his/her specific impleimentation changes the signal such that it does not meet the template that his/her implementation will work.

SuggestedRemedy

Remove sentence.

Response *Response Status* **C**

REJECT. (Comment type changed to editorial with approval of commentor.) The working group added this sentence long ago in the belief that it may help implementors avoid a potential pitfall.

Cl **47** *SC* **47.3.4.1** *P* **341** *L* **39** # **55**

Tim Warland — Nortel Networks

Comment Type **T** *Comment Status* **R**

Maximum receiver amplitude is now specified at 2500mV. I don'trecallthis coming out of discussions in St. Louis. It appears from thistext thatyou can meet the driver and receiver characteristics as definedwithin theclause and somehow get a 2dB gain at the receiver. This change has anoticeable impact on (on-going) designs of XAUI devices. Text from the editor's St. Louis Summary dicates the 2500mV is allowed by the way the amplitudes and return losses are specified. It is owever unclear as to how this number was determined.

SuggestedRemedy

Failing a really good justification for making this change, it should be removed.

Response *Response Status* **C**

REJECT. The suggested remedy to comment #174 may address the commentor's concern.

Cl **47** *SC* **47.3.4.2** *P* **342** *L* **3** # **165**

Baumer, Howard — Broadcom Corp.

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

A receiver maximum input amplitude of 2500mV peak-peak is totaly unrealistic. This requirement makes it virtually impossible to design an XAUI input receiver in a 0.13um CMOS. The nominal supply voltage for a 0.13um CMOS process is 1.2V. With a 2500mVppD input requirement the input receiver will have to be able to process a 1250mV signal which is more than the supply! This specification should be put back to 1600mVppd.This change was based on the analysis that both transmiter's and receiver's differential impeadance could be 200ohm based on the 10dB return loss requirement. This assumes the return loss is all due to resistive mismatch.If the Transmitter had an output impedance of 200ohms and a drive strength that resulted in 1600mVppd for a 100ohm load then an output impedance variation down to 50ohms would result in a 3200mVppd for the 100ohm load. Conclusion would have to be that with an output impedance variation from 50-200ohms the max output swing would have to be when the output impedance is low and therefore the 2500mVppd case would not happen.

SuggestedRemedy

Change the 2500mV peak-peak back to 1600mV peak-peak. Also update Table 47-6 to be 1600mVp-p

Response *Response Status* **C**

REJECT. Suggested remedy to #174 addresses the commentor's concern.

Cl **47** *SC* **47.3.4.2** *P* **342** *L* **3** # **174**

Jeff Porter — Motorola

Comment Type **T** *Comment Status* **A**

Change from 3.0 to 3.1 now requires XAUI receivers "shall accept differential voltages of 2500mV peak-peak." The true requirement is that XAUI receiver accept differential voltages supplied by a compliant XAUI driver with no interconnect. Most of the difference between 1600mV driver and 2500mV receiver specification is due to receiver return loss (high receiver input impedance). Since receiver designer/vendor is in control of both receiver tolerance to large input amplitude and receiver input impedance, this represents a design trade-off. Forcing 2500mV tolerance removes the ability to trade off. For example, if receiver impedance is controlled to be very near to 100ohm, maximum differential input signal wil be very close to 1600mV.

SuggestedRemedy

Change to "shall accept differential voltages produced by a compliant transmitter connected without attentuation to the receiver." May go on to caution that differential voltages much larger than 1600mV may need to be tolerated (up to 2500mV) depending on receiver input impedance characteristics (similar to wording about minimum amplitude in this subclause.)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Specific text:

"XAUI receivers shall accept differential input signal amplitudes produced by a compliant transmitter connected without attentuation to the reciever. Note that this may be larger than .."

Also remove the 2500 mV row from Table 47-6.

Cl **47** *SC* **47.3.4.5** *P* **342** *L* **2937** # **166**

Baumer, Howard — Broadcom Corp.

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

There is no specific random jitter specified for the receiver jitter tolerance. This results in the same problem illustrated in my comment #164.

SuggestedRemedy

Add the following sentance to subclause 47.3.4.5 between the sentence on specifying Dj and the sentence specifyint Tj: "The maximum peak to peak random jitter, defined as 14 * rms random jitter, shall be less than 0.22UI."

Response *Response Status* **U**

REJECT. See response to #164.

Cl **47** *SC* **47.3.4.5** *P* **342** *L* **32** # **167**

Baumer, Howard — Broadcom Corp.

Comment Type **E** *Comment Status* **R**

The deterministic jitter is specified to have a minimum jitter not a maximum jitter: "at least 0.37UI". I think this is a typo and just need to be corrected.

SuggestedRemedy

Change the "at least" to "at most"

Response *Response Status* **Z**

REJECT. Comment withdrawn.

Cl **47** *SC* **47.3.4.5** *P* **342** *L* **33** # **273**

Lindsay, Tom — Stratos Lightwave

Comment Type **E** *Comment Status* **A**

Jitter units are incomplete.

SuggestedRemedy

Add "pk-pk" (or equivalent) after UI.

Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.3.4.5** *P* **342** *L* **34** # **274**

Lindsay, Tom — Stratos Lightwave

Comment Type **E** *Comment Status* **A**

The RJ spectrum is defined in a constrained way that may be very difficult to achieve with practical random noise generators; what we really want to do is define a spectral filter with which the jitter is calibrated such that the content is comfortably above the tracking frequency.

(This comment is borderline technical, but I believe that with practical broadband random noise generators, the amount of RJ below 20 MHz is negligible in the grand scheme, and so the impact to pass/fail should be negligible.)

SuggestedRemedy

Change sentence to read: "Random jitter shall be calibrated using a high pass filter with a low frequency corner of 20 MHz and 20 dB/decade rolloff below this."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Instead of including measurement details in the body of the electrical requirements, put the suggested sentence in section 47.4.3.2. and refer to it from 47.3.4.5.

Cl **47** *SC* **47.3.5.2** *P* **344** *L* **2324** # **168**

Baumer, Howard — Broadcom Corp.

Comment Type **T** *Comment Status* **R**

The connector impedance has no frequency limitations.

SuggestedRemedy

Specify the impedance over a frequency like the Characteristic impedance is in 47.3.5.1

Response *Response Status* **Z**

REJECT. Connector impedance is only a recommendation. It is not desirable to specify it in detail.

Cl **47** *SC* **47.3.5.2** *P* **344** *L* **24** # **275**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **R**

I expect that connector impedances will be specified over a frequency range or done with TDR measurements. TDR measurements require a risetime spec.

SuggestedRemedy

Add a sentence at the end: "The impedance should be measured with a TDR risetime of 60 psec." (or whatever the correct value is)

Response *Response Status* **C**

REJECT. Connector impedance is only a recommendation. It is not desirable to specify the measurement methodology for a recommended component parameter.

Cl **47** *SC* **47.4** *P* **344** *L* **30** # **56**

Tim Warland — Nortel Networks

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

The compliance interconnect definition may be well specified from the transmission magnitude response equation, however it is very unlikely a technician can use this equation to validate compliance. In an attempt to improve the completeness of this clause, the editor has reduced the effectiveness of the clause.

SuggestedRemedy

Give the technician something they can work with. Preferable the compliance interconnect definition could be applied to a 50 cm coaxial cable with a 100+/- 1% resistor terminator. Failing that, you could define a 50ohm trace on FR4 with a fixed dielectric constant (say 4.5) with 100 ohm resistor termination.The compliance interconnect definition for verification purposes must be defined in a well-defined, un-disputable manner.

Response *Response Status* **Z**

REJECT. The working group spent several months attempting to define physical transmission lines, but found that the material and manufacturing variations between physical systems are too great at the high frequencies important to XAUI. The working group believes it is easier to validate compliance via a single S-parameter measurement than to control and verify the physical dimensions (e.g., trace width and spacing, pre-preg thickness, etc.) and material properties at multi-GHz (e.g., dielectric constant, loss tangent, etc.) of a PCB. The working group has put much collaborative work into developing the present s-parameter definition and believes it is clear, widely implementable, reproducable, and allows for flexible compliance channel implementation (e.g., coax, filter, PCB, etc.).

Cl **47** *SC* **47.4.2** *P* **345** *L* **30** # **57**

Tim Warland — Nortel Networks

Comment Type **T** *Comment Status* **A**

The text suggests Annex 48B provides an explanation of this technique.The text in Annex 48B does not provide an explanation.

SuggestedRemedy

Not sure what you where trying to reference. Perhaps you could calla specific paragraph. Perhaps the text should say refer to Annex 48Bfor the effect of this technique (since no explanation is provided in 48B).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The explanation is given in 48B.1.3. A specific reference will be added.

Cl **47** *SC* **47.4.2** *P* **345** *L* **32** # **277**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Template measurement level is not clearly defined. Needs to represent Rx operation.

SuggestedRemedy

Insert a sentence just after the sentence ending with "...less than 10^-12.":
"The eye template shall be measured with AC coupling and centered at 0 Volts differential."

Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.4.2** *P* **345** *L* **32-34** # **337**

Mike Jenkins — LSI Logic Corp.

Comment Type **T** *Comment Status* **R**

For both near and far end driver templates, the value of X1 (the x coordinate of the leftmost point on the x-axis) is one half of the specified max total jitter, allowing the worst case jitter to just fit between adjacent template "eyes". The text added in Draft 3.1 requiring that the jitter mean be positioned at 0 UI will force any passing but skewed distribution (as copper jitter generally is) to shift into the template "eye", failing the test.

Deterministic jitter (the component of jitter containing any skew in distribution) is separately limited by spec to keep the jitter mean sufficiently under control to not cause problems for receivers.

Arguments about having the same procedures as for fiber optic components do not seem relevant. This spec is for XAUI electrical specifications only, and the XAUI jitter budget is separate from fiber optic jitter considerations.

In summary, requiring the jitter mean to be positioned at 0 UI is inconsistent with the established copper jitter methodology. This requirement would make the total jitter spec virtually meaningless.

SuggestedRemedy

Remove the line, "The left and right edges of the template are aligned with the mean zero crossing points of the measured data eye, as illustrated in Figure 47-14." Also remove Figure 47-14.

Thank you for your consideration of this issue.

Response *Response Status* **C**

REJECT. The working group is unwilling to let the eye float without constraint since real CDR's do not behave this way.

Cl **47** *SC* **47.4.3** *P* **347** *L* **2** # **276**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Jitter measurement level is not defined. Needs to represent Rx operation, which might not be at the waist of the eye.

SuggestedRemedy

Insert a sentence just before the last sentence: "Jitter shall be measured with AC coupling and at 0 Volts differential."

Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **Table 47-7** *P* **344** *L* **611** # **170**

Baumer, Howard — Broadcom Corp.

Comment Type **T** *Comment Status* **R**

Differential skew has been removed from every place but this table. This can cause confussion into thinking there is a differential skew specification when there is not.

SuggestedRemedy

Remove the differential skew column in Table 47-7

Response *Response Status* **C**

REJECT. The table title, "Informative XAUI .. skew .. budget" should prevent any confusion. When skew spec's were removed, the working group decided to leave this informative data to further demonstrate the practicality of 20" FR4 links and to assist system implementors in matching complementary PCB traces.

Cl **48** *SC* **48.2.4.5.1** *P* **366** *L* **39** # **263**

Thaler, Pat — Agilent

Comment Type **E** *Comment Status* **A** *Rich*

The statement about when sequence ordered sets are sent isn't entirely accurate as it describes the behavior for sending them to XAUI but not the behavior used when sending them to XGMII when a local fault is detected.

SuggestedRemedy

Either replace with the following:"When the 10GBASE-X receive process detects a fault, it sends the LF sequence ordered_set continuously to the XGMII. When the 10GBASE-X transmit process receives sequence ordered_sets, it sends a sequence ordered_set in the collumn that follows the column following the ||A|| ordered_set. When the receive process receives a sequence ordered_set, it sends that sequence ordered_set."or replace "are always sent" with "are always sent on the XAUI interface"

Response *Response Status* **C**

ACCEPT. Replaced "are always sent" with "are always sent on the PMA serviceI interface"

Cl **48** *SC* **48.2.5.2.1** *P* **373** *L* **32** # **268**

Thaler, Pat Agilent

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

Since the TX_CLK signal has been removed, there should be some statement added to the state machine description to indicate that it makes one transition per code group processed.

SuggestedRemedy

Add to the end of the second paragraph:"This state machine makes exactly one transition for each transmit ordered_set that is processed."

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.4** *P* **318** *L* **38** # **48002**

Eric Lynskey

Comment Type **E** *Comment Status* **A**

The two modes "Idle" and "Data" are in the wrong places.

SuggestedRemedy

Replace the first word of bullet a with Data. Replace the first word of bullet b with Idle.

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.3.3** *P* **324** *L* **20** # **48003**

Eric Lynskey

Comment Type **T** *Comment Status* **A**

Loopback is currently mandatory for 10GBASE-X PMA and DTE XGXS and PHY XGXS. It should be made optional for the PHY XGXS.

SuggestedRemedy

Rewrite text to 48.3.3 stating that loopback is mandatory for 10GBASE-X PMA and DTE XGXS and is optional for PHY XGXS.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. PICS also need to be checked.

See resolutions to comment 253 and 261 (which this overturns. The commentor for comment 261 agreed with this new resolution)). Resolution was done in Clause 45 session.

Cl **48** *SC* **48.3.3** *P* **383** *L* **53** # **261**

Thaler, Pat Agilent

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

Inconsistancy between Clause 45, 47 and 48 in the definition of loopback for PHY XGXS.Clause 45 says PHY XGXS loopback is from XAUI input to XAUI output and the XGMII is driven to all 1s,Clause 47 says the XGXS shall meet all mandatory requirements of 48.2 and 48.3.Clause 48.3.3.2 says loopback from transmitter to receiver which in clause 48 means from XGMII input to XGMII output which is the opposite direction as that specified in clause 45.Furthermore, Clause 45 says to drive all 1's to the transmit output (the XGMII) during loopback. All 1's is a reserved code on the XGMII. Sending this will cause the R PCS to put out continuous Error blocks during loopback. LF would be a better alternative.

SuggestedRemedy

In Clause 47 exclude 48.3.3.2 for PHY XGXS and add text to describe loopback from transmit to receive for PHY XGXS. Include the requirement that when the PHY XGXS shall send LF on the transmit (XGMII) output when in loopback. In Clause 45 remove description of what is sent to the transmitter during loopback - that should be in Clause 47.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Resolve loopback inconsistency as follows:
1) Clause 48 defines loopback in 48.3.3 as a PMA function only (48.3 describes the PMA sublayer). Therefore, data is looped from the XAUI output buffer to the corresponding XAUI input buffer.
2) Clause 48 loopback is applicable to only the following:
a) 10GBASE-X PMA, described in 45.2.1.1.4;
b) DTE XGXS, described in 45.2.5.1.2; and
c) PHY XGXS, described in 45.2.4.1.2
3) Clause 48 does not describe loopback at PCS service interface (i.e. the XGMII). 45.2.3.1.2 defines PCS Loopback but refers to 48.3.3, which defines PMA loopback only. Therefore, it is assumed that 10GBASE-X PCS or XGMII loopback as well as XGXS loopback at the XGMII are outside the scope of P802.3ae.
4) Loopback should not constrain the data patterns to it to only those present in a packet stream or to just Local Fault, etc.
5) Loopback mode, 48.3.3, is defined as a test function in 48.3.4. Per 48.3.4: "A typical test function is the ability to transmit invalid code-groups within an otherwise valid PHY bit stream. Certain invalid PHY bit streams may cause a receiver to lose word and/or bit synchronization." Therefore, errors detected while loopback is active should be treated as errors received over a link which is not operational.

This comment is resolved by addressing all inconsitencies between Clauses 45, 47 and 48 with respect to PMA loopback and eliminating any mention of PCS loopback including loopback at the XGMII. Specific resolutions are as follows:

1) 45.2.3.1.2 Loopback (3.0.14): Delete "and Clause 48.3.3". And make the bit only apply to the R PCS.

2) 45.2.1.1.4 PMA loopback (1.0.0): The last sentence should be modified to read:
"For 10Gb/s operation, the loopback functionality is detailed in 48.3.3 and 51.8 and the loopback ability bit is specified in the 10G PMA/PMD Status 2 register."

3) 45.2.4.1.2 [PHY XS Control 1 register] Loopback (4.0.14): The sentence "When bit 4.0.14 is set to a one, the PHY XS shall transmit an all ones data pattern to the PCS." is unduly restrictive, unnecessary and should be deleted.

4) 45.2.5.1.2 [DTE XS Control 1 register] Loopback (5.0.14): The sentence "When bit 5.0.14 is set to a one, the DTE XS shall transmit an all ones data pattern to the PHY XS." is unduly restrictive, unnecessary and should be deleted.

5) 47.2.1 PCS and PMA functionality: No change required

6) 48.3.3 Loopback mode: No change required

7) Clause 45 will state that the PHY XS loopback is backwards

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Cl **48** *SC* **48.3.3** *P* **384** *L* **13** # **48001**

Rich Taborek

Comment Type **E** *Comment Status* **A** *Rich*

"enterpret" S/B "interpret"

SuggestedRemedy

See comment

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.3.3.2** *P* **384** *L* **22** # **258**

Thaler, Pat Agilent

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

Inconsistancy between Clause 45, 47 and 48 in the definition of loopback for DTE XGXS.Clause 45 says send all 1's to PCS (XAUI),Clause 47 says the XGXS shall meet all mandatory requirements of 48.2 and 48.3.Clause 48.3.3.2 says output to the XGMII shall be static or high impedance.

SuggestedRemedy

Harmonize 45.2.4.1.2 and 48.3.3.2 or in 47 exclude 48.3.3.2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. 261 resolves all issues with the exception of that reflected in the last sentence, "Clause 48.3.3.2 says output to the XGMII shall be static or high impedance.". Note that loopback pertains only only to the PMA (i.e. Does not pertain to the XGMII).

Due to the conflict of exercising as much of the signal path as possible and adding circutry to disable the signal path which is, therefore, not exercised, -and- to achieve consistency with the note in theis subclause, the following change is made:

48.3.3.2 Transmitter considerations, is rewritten as:
While in Loopback mode, the transmitter output is not defined.

Cl **48** *SC* **48.3.4** *P* **384** *L* **33** # **45003**

Turner, Ed

Comment Type **E** *Comment Status* **A**

Insert, before 'Jitter ..' : 'Test pattern capability and selection is optional and controlled by MDIO register bits defined in Clause 45.'

SuggestedRemedy

Response *Response Status* **C**

ACCEPT.

Cl **48A** *SC* *P* *L* # **280**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **R** *Rhett*

Both CRPAT and CJPAT "clock" the same pattern identically and simultaneously through each lane. This unnatural operation may falsely improve signal quality on individual lanes.

SuggestedRemedy

Time-stagger the payload portion of the patterns in the lanes. I propose the staggering for CJPAT be such that lanes 0 & 2 remain as they are, but lanes 1 & 3 rotate 140 bytes each. This will retain the special properties of this pattern within each lane.

I suggest CRPAT be rotated 3 bytes (~90 degrees per repetition) per lane, although I have another comment that suggests CRPAT has other potentially serious issues, and this change may cause worse problems.

Response *Response Status* **C**

REJECT. It is not clear that the proposed pattern will produce the desired effect. The proposed solution is also not complete, and does not have convincing justification to make the change. Commentor is encouraged to come up with complete pattern with CRC, to show that this change is justified, and to resubmit at sponsor ballot.

Cl **48A** *SC* *P* **391** *L* **39** # **157**

Gaither, Justin Xilinx, Rocketchips Div

Comment Type **E** *Comment Status* **A** *Rhett*

the word "to" was removed, but it is needed

SuggestedRemedy

put the word "to" back in.

Response *Response Status* **C**

ACCEPT.

Cl **48A** *SC* *P* **392** *L* # **278**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A** *Rhett*

5 patterns are defined in this section, yet only one (CJPAT) is referenced. Of the 4 remaining, the 1st 3 patterns are inconsistent with the intent of this standard to be written at the "system level".

SuggestedRemedy

Option A: Remove sections 48A.1, 48A.2, and 48A.3.

Option B: Add a note ahead of each of them explaining that "This pattern is not intended for compliance testing, but may useful for unspecified diagnostic purposes."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Clarify first sentence in Clause 48A to read:
"This annex defines test patterns which allow the 10GBASE-X PHY described in Clause 48 [to] test either its attached PMD, described in Clause 53, or its XAUI interface, described in Clause 47, for compliance in a system environment, or for unspecified diagnostic purposes."

Cl **48A** *SC* **4** *P* **393** *L* **31** # **155**

Gaither, Justin — Xilinx, Rocketchips Div

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

The packet specifies a /S/ control code, however it does not contain a /T/ control code.

SuggestedRemedy

Add FD to IPG line.

Response *Response Status* **C**

ACCEPT. Add /T/.

Cl **48A** *SC* **48A.3** *P* **392** *L* **38** # **279**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **R** *Rhett*

CRPAT may not meet its objectives of randomness unless disparity is controlled (on each lane) as is done in Fibre Channel.

However, this may not be important, since this pattern is not referenced by other sections of the standard.

SuggestedRemedy

Option A: Delete section 48A.4.

Option B: Build up the pattern like CJPAT where both disparities of the pattern will exist, assuring that one is always correct. This would take a few hours of effort.

Option C: Convince me that disparity is controlled such that the payload portion starts positive.

Option D: Add a statement "The intended spectral density of this pattern may not be achieved unless the ending running disparity of START/PREAMBLE/SFD is controlled to be positive.

If option B, C, or D is chosen, then also add a note explaining that "this pattern is not intended for compliance testing, but it may useful for unspecified diagnostic purposes."

Response *Response Status* **C**

REJECT. CRPAT "is intended to provide broad spectral content .. that can be used for the measurement of jitter". The disparity of the pattern doesn't significantly affect the spectral content of the pattern, and doesn't appear to help "its objectives of randomness." Therefore the initial running disparity of the pattern does not need to be controlled.

Cl **48A** *SC* **48A.5** *P* **393** *L* **39** # **281**

Lindsay, Tom — Stratos Lightwave

Comment Type **E** *Comment Status* **A** *Rhett*

Since this pattern is to be used for transmitter and receiver testing, the wording on 1st line should be generalized.

SuggestedRemedy

The continuous jitter test pattern is intended to expose a receiver's CDR...

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Replace original text:
"The Continuous jitter test pattern is intended for receiver jitter by exposing a receiver's CDR to large instantaneous phase jumps."
with:
"The Continuous jitter test pattern is intended to expose a receiver's CDR to large instantaneous phase jumps."

Cl **48A** *SC* **5** *P* **395** *L* **16** # **156**

Gaither, Justin — Xilinx, Rocketchips Div

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

The packet specifies a /S/ control code, however it does not contain a /T/ control code.

SuggestedRemedy

Add FD to IPG line.

Response *Response Status* **C**

ACCEPT. Add /T/.

Cl **49** *SC* **2.2** *P* **409** *L* **20** # **158**

Gaither, Justin — Xilinx, Rocketchips Div

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

The standard state: "When the receive channel is in test pattern mode, the BER monitor process is diabled." This is not necessary, and it would be benefitial to have the BER monitor running. By monitoring the sync header, it may help diagnose High pattern errors versus degraded line quality.

SuggestedRemedy

Remove this statement. Also change Figure 49-19 to allow the ber monitor to operate while r_jitter_test is active. Other areas to modify are page 420 line 25.

Response *Response Status* **C**

REJECT. The statement " By monitoring the sync header, it may help diagnose High pattern errors versus degraded line quality." is not accurate. One of the factors caused by stressful patterns is error in the PLL phase. This error can cause bit errors anywhere in the bit stream including in the sync header. Also, the pattern related jitter caused by stressful patterns can also fall in the sync header transitions. Therefore, comparing sync header errors to overall errors does not help in diagnosing the source of the errors.

Cl **49** *SC* **49.2.13.6** *P* **424** *L* **45** # **249**

Thaler, Pat — Agilent

Comment Type **T** *Comment Status* **A**

Definition of ber_cnt is not absolutely accurate as only the first 16 errors in a window will be counted.

SuggestedRemedy

Replace with: Count up to a maximum of 16 of the number of invalid sync headers within the current 125 us period.

Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.14.2** *P* **428** *L* **51** # **248**

Thaler, Pat — Agilent

Comment Type **T** *Comment Status* **R** *error*

As currently defined, the ber_count will only increment for a maximum of 16 bad sync headers each 125 us window because it only increments when BER_BAD_SH is entered.

SuggestedRemedy

Should the definition be changed to have it increment when block_lock is true and a bad sync header is detected?

Response *Response Status* **C**

REJECT. Because this is only a 6-bit counter, limiting the count rate to 16 counts per 125 us keeps ensures that a single burst error will not max out the counter.

Cl **49** *SC* **49.2.8** *P* **418** *L* **29** # **50**

Tim Warland — Nortel Networks

Comment Type **E** *Comment Status* **A** *Tim Warland*

Figure 49-14 Jitter Pattern PRBS Generator contains two blocks labelled S30.

SuggestedRemedy

Change the first occurance of S30 to S29.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. You are correct that there is an error in the figure but the figure is not part of D3.1. Unfortunately, the only indication int the change bar draft that a figure has been deleted from 3.1 is that the reference to the figure is deleted. If you look at the unchange barred draft of 3.1 you will see that that figure is not present and the error you point out is one from 3.0. No change required.

Cl **49** *SC* **49.2.8** *P* **418** *L* **39** # **347**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

Wording can be less prone to misinterpretation if it says: "for receiver and certain transmitter tests."
Yes, this really is a nit.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.8** *P* **418** *L* **41** # **154**

Gaither, Justin — Xilinx, Rocketchips Div

Comment Type **T** *Comment Status* **A**

"When square wave pattern is selected, the PCS will send a repeating pattern of n 1's followed by n 0's where n may be any number between 4 and 11"Is n programmable? or implementation dependent? We should not leave this open.

SuggestedRemedy

Specify the value of n.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. n is implementation dependent because the PHY people only needed a square wave and the exact frequency was not critical.

Should we add "The value of n is an implementation chioce."?

Cl **49** *SC* **49.2.8** *P* **418** *L* **42** # **348**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

Make it explicit if "n" can be between 4 and 11 means (4 <= n <=11) or (4 < n < 11).

SuggestedRemedy

See comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add "inclusive" after "11"

Cl **49** *SC* **Figure 49-22** *P* **430** *L* **8** # **256**

Thaler, Pat — Agilent

Comment Type **E** *Comment Status* **A**

Righthand transition from TX_INIT isn't possitioned correctly.

SuggestedRemedy

Make it start from the TX_INIT box.

Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **Figure 49-23** *P* **431** *L* **33** # **7**

Vogel, Dave — Intel

Comment Type **T** *Comment Status* **A**

There seems to be a missing parenthesis in the equation that transitions the Receive state machine from state RX_D to RX_E. The equation currently reads:
R_TYPE(rx_coded) = T *
R_TYPE_NEXT = (E + D + T)) +
R_TYPE(rx_coded) = (E + C + S)

SuggestedRemedy

Given the behavior of the state machine, I think the intent was to include a parenthesis at the very beginning of the equation:
(R_TYPE(rx_coded) = T *
R_TYPE_NEXT = (E + D + T)) +
R_TYPE(rx_coded) = (E + C + S)

Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.1** *P* **366** *L* **12-16** # **50002**

Chang, Justin

Comment Type **T** *Comment Status* **A**

Modify Clause 50 to conform with the resolution of comment #49 (Clause 51).
(The first portion of Clause 50 needs to be modified to make the disclaimer language stronger.)

SuggestedRemedy

Modify the sentence starting with "The WIS does not render a 10GBASE-W PHY compliant with either SONET or SDH . . ." on the first page of Clause 50 to read:

"The WIS does not render a 10GBASE-W PHY compliant with either SONET or SDH at any rate or format. A 10GBASE-W interface is not intended to interoperate directly with interfaces that comply with SONET or SDH standards, or other synchronous networks. Operation over electrically multiplexed payloads of a transmission network is outside the scope of this standard."

Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.2** *P* **447** *L* **29** # **342**

Justin Chang — Quake Technologies

Comment Type **E** *Comment Status* **A**

Instead of "SIGNAL_DETECT" use "SIGNAL_OK" per resolution to comment #742 using alexander_2_0501.pdf

SuggestedRemedy

Replace "SIGNAL_DETECT" with "SIGNAL_OK" on this line and all other appropriate sections (i.e. 50.2.4.x, page 449) within clause 52.

Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.3.10** *P* **465** *L* **44-52** # **338**

Rahn, Juergen — Lucent Technologies

Comment Type **T** *Comment Status* **R**

According to the explanatory note, the 00FF pattern is used to ensure that remote entities do not interprete this test data as valid information. However, it is more common to use an "AIS-L" signal for this purpose. Also, most ASICs implementing the WIS and currently available in the market do not support sending the 00FF pattern. An additional effect of this would be, that this signal may lead to undefined and miss leading alarms in a possible transport network. This transport network that can either be a plane Sonet transport network, but also a traditional WDM network with Sonet non-intrusive monitoring or transport via an OTN. In all this cases the consequence on such patterns are not defined and the alarms that will be generated are likely to be miss interpreted. For instance it can be interpreted that a wrong signal is connected. In case a proper AIS is inserted however the transport network will react in the standardized way and no alarms (or even protection switches as worst case scenario) will be activated (which should not be done when a client equipment is in test mode).

SuggestedRemedy

Change "00FF" pattern to "AIS-L" pattern as defined in ANSI T1.416-1999 section 7.4.1

Response *Response Status* **C**

REJECT.

Reasons:

1. During loopback, the link is broken anyway. Transmitting a 00FF pattern will cause a loss-of-frame (LOF) condition at the far end. What is wrong with this?

2. The 00FF pattern must be supported by the WIS in order to implement the (mandatory) test pattern generator. Therefore, the argument that existing WIS ASICs don't support the 00FF pattern is invalid.

3. Clause 50 takes pains to point out that the WIS signal is not directly compatible with SONET NEs, only with another WIS. Therefore a piece of intermediate equipment (informally referred to as an ELTE) must be interposed before the WIS signal is transported over the carrier network. There is hence no interoperability issue here.

4. As the 00FF pattern is not something that any known equipment will accept as a valid signal, there is no possibility that it will "interpret" this pattern as anything other than a link failure. There should not be any issue with alarms and/or protection switching in this case.

5. Loopback is an administratively configured condition. Therefore, there is no reason why there should be any "misleading" alarms.

6. AIS-L will require a separate Transmit process. This is an excessive burden on the implementer.

Cl **50** *SC* **50.3.2.2** *P* **456** *L* **1** # **51**

Tim Warland — Nortel Networks

Comment Type **E** *Comment Status* **R**

Table 50-3 and 50-4 contain almost identical information. Not sure what the author's intention is. Concerned this will create confusion.

SuggestedRemedy

Delete table 50-3

Response *Response Status* **C**

REJECT.

Table 50-3 shows the supported Section Overhead and Table 50-4 shows the supported near-end and far-end defects. While the editor does admit that the prescription for his glasses may be out of date, he nevertheless cannot detect any resemblance between the two tables.

Perhaps the commenter has been misled by FrameMaker (i.e., duplication in the change bar version of D3.1)?

Cl **50** *SC* **50.3.2.3** *P* **457** *L* **22** # **52**

Tim Warland — Nortel Networks

Comment Type **E** *Comment Status* **R**

Table 50-5 and 50-6 contain almost identical information. Not sure what the author's intention is. Concerned this will create confusion.

SuggestedRemedy

Delete table 50-5

Response *Response Status* **C**

REJECT.

Table 50-6 doesn't exist .. I'm sooo confuuuused!

This is probably another one of those change-bar artifacts.

Cl **50** *SC* **50.3.2.5** *P* *L* # **50001**

Alexander, Tom

Comment Type **T** *Comment Status* **R** *amamurthy comment to Cl 45*

Clause 45 received a comment (#238) regarding ERDI-P.

The comment is:

"The WIS supports ERDI-P (Clause 50.3.2.5 Table 50-7). However, there is no WIS status bit defined to report this event."

SuggestedRemedy

Suggested remedy from #238:

"Provide a bit in WIS Status 3 register to report this event."

Response *Response Status* **C**

REJECT.

The 3-bit ERDI-P signal conveys a number of possible defects detected by the far end, of which only three are supported by the WIS: PLM-P, AIS-P, LOP-P. Rather than try to represent ERDI-P as a single field in the MDIO register space, the decision was made at the last meeting to split out the three possible defects into three separate status flags in the MDIO register space. Therefore, bits 2.33.0, 2.33.1 and 2.33.2 of the WIS Status 3 register already represent all the supported ERDI-P codings. There is no need to add another register bit or field.

Cl **50** *SC* **50.3.8** *P* **463** *L* **33** # **53**

Tim Warland Nortel Networks

Comment Type **T** *Comment Status* **A**

The WIS jitter pattern generator and checker has been redefined by the Serial Jitter Ad Hoc.

SuggestedRemedy

Incorporate the recommendations from the WIS serial jitter ad hoc.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The draft text for the new WIS test pattern generator/checker is included as part of warland_1_0701.pdf. The editor is given license to modify the draft text and diagrams as required to match the current Clause 50 format, resolve references and perform general clean-up, WITHOUT CHANGING THE TECHNICAL CONTENT of warland_1_0701.pdf. The contents of warland_1_0701.pdf shall be placed in 50.3.8.

The method of measuring bit errors shall be to use the current B1, B2 and B3 SONET parity checking mechanisms in the WIS Receive process. No additional logic shall be added to the error checker for counting errors. This shall be added to warland_1_0701.pdf when it is imported into Clause 50.

The jitter test pattern seed register and jitter test errors counter are not required by warland_1_0701.pdf and should therefore be deleted from Clause 50. A comment will be added for Clause 45 to delete these registers as well.

Cl **50** *SC* **50.3.8** *P* **463** *L* **34** # **251**

Thaler, Pat Agilent

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

Jitter test or jitter test pattern is inaccurate when referring to the test patterns generated by the WIS and R PCS because they generate two types of test pattern one of which is not used for jitter tests at all and the other is used for jitter and other tests.

SuggestedRemedy

All occurances of ""jitter test"" or ""jitter test pattern"" should be replaced by ""test pattern"".

Response *Response Status* **C**

ACCEPT.

Instances of "jitter pattern" should also be replaced with "test pattern", and "jitter . . . functionality" should be replaced with "test pattern . . . functionality".

Cl **50** *SC* **50.6** *P* **463, 479, 48** *L* **46, 38, 18** # **339**

Rahn, Juergen Lucent Technologies

Comment Type **T** *Comment Status* **R**

Clause 49.2.8 specifies that a test pattern generator does not apply to a PCS which only supports connection to the WIS.
Clause 49.2.12 specifies that a test pattern receiver does not apply to a PCS which only supports connection to the WIS.

This "option wording" is not reflected in Clause 50.3.8
Moreover, this is also not reflected as being an option in the PICS for the WIS:
50.6 PICS (50.6.4.2 item WT8 line 38)
50.6 PICS (50.6.4.3 item WR8 line 18)

SuggestedRemedy

Include this as being optional in Clause 50.3.8, Clause 50.6.4.2 and Clause 50.6.4.3

Response *Response Status* **C**

REJECT.

If the intent of the commenter is to require that Clause 50 must state that Clause 49 test pattern functionality is not applicable when a WIS is present, then the comment is rejected on the grounds that Clause 50 cannot supersede or specify functionality that is already specified in Clause 49.

If the intent of the commenter is to require that the Clause 50 test pattern functionality be made optional, then the comment is rejected on the grounds that the test pattern functionality has always been a required item, and further is mandatory for interoperability, and hence cannot be made optional.

It should be noted that Clause 49 specifies that the test pattern functionality is only inapplicable when a WIS is present, and is mandatory when a WIS is not present. There is nothing in Clause 49 that implies that the test pattern functionality is in any way optional when a WIS is NOT present. (When a WIS is present, there is no need for a PCS to generate test patterns as it is not connected to the PMA any more.)

Cl **50** *SC* **Table 50-6** *P* **457** *L* **5** # **6**

Figueira, Norival — Nortel Networks

Comment Type **T** *Comment Status* **A**

In 50.3.2.3 we have that "For the fields where the 'Coding' column ofTable 50-6 contains a specific value or 'see text', this document shall supersede the corresponding values in Table 1, ... in the ANSI document".The indication of the coding values for A1 and A2 as superseding T1.416-1999 was never intended.

SuggestedRemedy

Change the 'Coding' column of A1 and A2 in Table 50-6 to 'per T1.416" andadd the following note: "Note- The bit representations of the octet values assigned to A1 and A2 are 11110110 (F6 hexadecimal) and 00101000 (28 hexadecimal), respectively.These values are provided here for informational purposes only. ANSI T1.416-1999 shall take precedence in case of any discrepancy."

Response *Response Status* **C**

ACCEPT.

Cl **51** *SC* *P* *L* # **334**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **R**

I do not understand what technical reason drives the outputs and inputs to require the clocks at opposite phases from eachother. It should be very easy to deliver a complementary signal for a driver output, or latch on either edge of an input clock.

SuggestedRemedy

Make input and output clock-to-data requirements have the same phase relationships.

Response *Response Status* **C**

REJECT. It was determined in past working sessions that following SFI-4 spec for clock-data relationship at the PMA and the PMA client is best spec'd this way for clarity to existing parts that may be used for this interface.

Cl **51** *SC* **1.1.2.2** *P* **4** *L* **18** # **73**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

PMA electricals. Let's work down from the strategy. As agreed in July 2000 we motioned to adopt http://www.ieee802.org/3/ae/public/jul00/robinson_1_0700.pdf 'XBI Optional PMA Service Interface for Serial PMD's'. My aim with the comment #743 which was upgraded to TR was to avoid putting obstacles in the way of people who wated to use pre-exiting OIF style ICs and transceivers, and to avoid creating yet another proliferation of similar but not quite compatible standards which adds costs and delay to the industry generally. There seem to be three ways forwards:
1. Line up exactly with http://www.oiforum.com/public/documents/OIF-SFI4-01.0.pdf SFI-4. I'm sure this was the intention but it is very hard to achieve because 802.3 standards cover a different information set to OIF's; SFI-4 doesn't have a PMA_LOS (now called PMA_SI). The other informational signal, Sync_Err seems to have the opposite polarity in D3.1 to the 200/300 pin MSAs (SFI-4 is kind of vague about polarity) and a different, not quite compatible signal type (LVCMOS vs. LV-TTL). We could change the polarity of Sync_Err, change to LV-TTL and/or write an essay on how to interwork LVCMOS and LVTTL: how one way round in one sense may not work,... This also restricts innovation: digital interfaces are evolving more frequently than we would want to revise this standard.
2. Don't try to rework something that's already done. Standardise the XSBI, which is optional, as a service interface not a compliance interface. This seems radical and it throws away some text carefully developed by the Clause 51 team, but it has several huge benefits:
Less text to write and maintain;No more arguments about near trivial low-speed pins; Leaves only one body in jurisdiction of the XSBI electricals, a huge advantage if we are looking for interoperability.
3. Standardise the XSBI as part service interface (the auxiliary pins - like the PMD interfaces) and part compliance interface (the datapath). The advantage is no more arguments about the low-speed pins which are then treated simlarly to clauses 38, 52, 53. The disadvantage is that it's an unusual thing to do. Option 3 seems to have no advantage over option 2 because the XSBI data path specification should be perfectly aligned between SFI-4 and 802.3ae anyway.

SuggestedRemedy

Change XSBI from compliance interface to service interface. This is a duplicate of a comment against Clause 51.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This comment is re-directed to Clause 51. Same comment as #123.

Cl **51** *SC* **4** *P* **492** *L* # **160**

Gaither, Justin
Xilinx, Rocketchips Div

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

The addition of xsbi_tx and xsbi_rx has overly complicated the standard, and added more confusion than what it was trying to solve. Further the table 51-2 and 51-3 do not correlate to Annex 44A where it depicts the XSBI interface. It is unclear where the boundaries between tx_data_group and xsbi_tx lie. If xsbi_tx and xsbi_rx are the physical interface, they should be referenced in other clauses(49 and 50). If I build a PCS according to Clause 49, it will not match a PMA designed according to Clause 51.

SuggestedRemedy

Remove references to xsbi_tx and xsbi_rx, or revert back to previous descriptions.

Response *Response Status* **C**

REJECT. The added tables (51-2, 52-3) is used to specifically highlight and resolve the issue between traditional Ethernet (LAN) bit ordering (least significant bit first) and the SFI-4 (WAN) bit ordering (most significant bit first).

Cl **51** *SC* **4.1** *P* **497** *L* **1** # **159**

Gaither, Justin
Xilinx, Rocketchips Div

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

PMA_SI should correlate to Clause 49 Signal_OK.

SuggestedRemedy

Change PMA_SI to Signal_OK to match Clause 49.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Signal_OK is clearly and properly defined as a service primitive in section 51.2.3.1 It is consistant with clause 49. The use of the name PMA_SI<P> is for the physical signal labeling as defined in section 51.4.1 Will modify description of PMA_SI to indicate clearer linkage to PMA_SIGNAL.indicate(SIGNAL_OK).

Cl **51** *SC* **51** *P* **487** *L* **1** # **123**

Dawe, Piers
Agilent

Comment Type **T** *Comment Status* **A**

PMA electricals. Let's work down from the strategy. As agreed in July 2000 we motioned to adopt http://www.ieee802.org/3/ae/public/jul00/robinson_1_0700.pdf 'XBI Optional PMA Service Interface for Serial PMD's'. My aim with the comment #743 which was upgraded to TR was to avoid putting obstacles in the way of people who wated to use pre-exiting OIF style ICs and transceivers, and to avoid creating yet another proliferation of similar but not quite compatible standards which adds costs and delay to the industry generally. There seem to be three ways forwards:

1. Line up exactly with http://www.oiforum.com/public/documents/OIF-SFI4-01.0.pdf SFI-4. I'm sure this was the intention but it is very hard to achieve because 802.3 standards cover a different information set to OIF's; SFI-4 doesn't have a PMA_LOS (now called PMA_SI). The other informational signal, Sync_Err seems to have the opposite polarity in D3.1 to the 200/300 pin MSAs (SFI-4 is kind of vague about polarity) and a different, not quite compatible signal type (LVCMOS vs. LV-TTL). We could change the polarity of Sync_Err, change to LV-TTL and/or find a compatible LVCMOS standard and write an essay on how to interwork LVCMOS and LV-TTL: how one way round in one sense may not work,... This also restricts innovation: digital interfaces are evolving more frequently than we would want to revise this standard.
2. Don't try to rework something that's already done. Standardise the XSBI, which is optional, as a service interface not a compliance interface. This seems radical and it throws away some text carefully developed by the Clause 51 team, but it has several huge benefits: Less text to write and maintain;No more arguments about near trivial low-speed pins; Leaves only one body in jurisdiction of the XSBI electricals, a huge advantage if we are looking for interoperability.
3. Standardise the XSBI as part service interface (the auxiliary pins - like the PMD interfaces) and part compliance interface (the datapath). The advantage is no more arguments about the low-speed pins which are then treated simlarly to clauses 38, 52, 53. The disadvantage is that it's an unusual thing to do. Option 3 seems to have no advantage over option 2 because the XSBI data path specification should be perfectly aligned between SFI-4 and 802.3ae anyway.

SuggestedRemedy

Change XSBI from compliance interface to service interface.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Modify I/O types for PMA_SI and Sync_Err according to comment #59.

Cl **51** *SC* **51.1** *P* **386** *L* **1** # **99004**

Jonathan Thatcher — World Wide Packets

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

When the Higher Speed Study Group put forth a PAR to 802 and the IEEE standards board for approval to create a standard, we committed that: "10 Gb/s Ethernet technology will be demonstrated during the course of the project, prior to the completion of the sponsor ballot. " This requirement was added to our PAR because, at the time of writing the PAR, there was no evidence that PMD and PMA technology was feasible which simultaneously meet the other four criteria. Feasibility means that technology must be demonstrated with reports and working models; proven technology; reasonable testing and with confidence in reliability. Historically, Ethernet has been successful, in part, because it "leveraged" technology that existed at the time of the writing of the PAR. No such 10 Gigabit PHY technology existed in November 1999. While the time for which this must be completed is still a couple of meeting cycles away, it is not clear that sufficient effort is being made to validate the specifications; measurement procedures; engineering analysis and judgment and to assure that the PMA meets the requirement we set for ourselves in time for the May 2001 cutoff for last technical change.

SuggestedRemedy

DEMONSTRATE the technical feasibility of the technology specified in Clause 51 for each PMD type, 10GBASE-SR/LR/ER/SW/LW/EW, while ensuring the attainment of the other 4 criteria. Or, change the requirements/specifications such that this goal can be achieved.

Response *Response Status* **U**

REJECT. Technical feasibility demonstrated already in other organizations and products.

Cl **51** *SC* **51.4** *P* *L* # **51002**

Justin Chang

Comment Type **E** *Comment Status* **A**

Tables 51-2 and 51-3 are not clearly tied to Figure 49-2 and 49-3. Need to add information to clarify this.

SuggestedRemedy

Create new drawing, similar to figure 49-2, showing the XSBI's bit mapping in relationship to the PMA and PMA client interface.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl **51** *SC* **51.4.1** *P* **497** *L* **13** # **59**

Tim Warland — Nortel Networks

Comment Type **T** *Comment Status* **A**

While LVCMOS appears to be a good choice for the PMA, the requirement for LVCMOS inputs on a PMA client severely limits the ability to connect PMA clients to an SFI-4, 300 pin MSA, or 200 pin MSA compliant transponder. TR Comment 743 from draft 3.0 recommends not specifying a signal type (leaving to the discretion of Multi-Source Agreements (MSA)).

SuggestedRemedy

If it is necessary to specify this signal type, the recommendation would be " This signal is compliant with EIA/JESD8-B Interface Standards for Nominal 3V/3.3V Supply Digital Integrated Circuits." This does not explicitly call out LVCMOS or LVTTL, however both are defined within the document. This maximizes the implementation.

Response *Response Status* **C**

ACCEPT.

Cl **51** *SC* **51.4.1 "2** *P* **392** *L* **512** # **99005**

Dawe Piers — Agilent

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

The draft says that PMA_LOS<P> "is a LVCMOS output." This is inappropriate here because:1. This definition is not in SFI-4;2. It is outside of what 802.3 usually does: for example" clauses 38 and 52 define data interface formats but not auxiliary ones such as signal detect;3. It restricts innovation: digital interfaces are evolving more frequently than we would want to revise this standard;4. It makes work for you you would have to find an LVCMOS standard debate and refer to it;5. The MSAs are better placed to do this (tedious) work " so leaving out the detail won't leave a lack of direction in the real world.All this applies to Sync_Err<P> too.

SuggestedRemedy

Delete BOTH sentences "This signal is a LVCMOS output."

Response *Response Status* **Z**

REJECT. Previous ballot cycle had a comment to put an interface type on the PMA LOS and Sync_Err signals. LVCMOS was selected as the best choice going forward. It is compatible with the LVTTL as defined in SFI-4.

27, 5, 15 by 802.3 voters motion pass (comment rejected)

Cl **51** *SC* **51.6.1.2** *P* **501** *L* **28** # **60**

Tim Warland Nortel Networks

Comment Type **T** *Comment Status* **R**

Transmit source clock specification is un-necessarily constrianed. The requirement of 802.3ae is to provide a line rate of 10.3125 +/-100ppm or 9.95328 +/- 20 ppm. Further it is a requirement that the XSBI clock is 1/64 of the line rate. However it does not necessarily hold that the XSBI clock rate would have the same tolerance. The tolerance for the transmit source clock is an implementation issue required to provide the final line rate tolerance

SuggestedRemedy

Delete the tolerance from table 51-8.Leave the tolerance to Clause 52.

Response *Response Status* **C**

REJECT. Agree that the XSBI clock rate tolerance does not tie directly to the line rate BUT there is a need to specify clock tolerance for the interface clock.

Cl **51** *SC* **51.8.1** *P* **505** *L* **18** # **61**

Tim Warland Nortel Networks

Comment Type **T** *Comment Status* **R**

Receive source clock specification is un-necessarily constrianed. The requirement of 802.3ae is to accept a line rate of 10.3125 +/-100ppm or 9.95328 +/- 20 ppm. Further it is a requirement that the XSBI clock is 1/64 of the line rate. However it does not necessarily hold that the XSBI clock rate would have the same tolerance. The tolerance for the receive clock is an implementation issue required to provide the final line rate tolerance

SuggestedRemedy

Delete the tolerance from table 51-12Leave the tolerance to Clause 52.

Response *Response Status* **C**

REJECT. Agree that the XSBI clock rate tolerance does not tie directly to the line rate BUT there is a need to specify clock tolerance for the interface clock.

Cl **51** *SC* **51.8.1** *P* **505** *L* **9** # **62**

Tim Warland Nortel Networks

Comment Type **E** *Comment Status* **A**

XSBI RXClk specification minimum clock duty cycle specification is vague

SuggestedRemedy

Add the following (from page 313 line 7) "Transitions from nominal clock to recovered clock or from recovered clock to nominal clock shall not decrease the time between adjacent edges of RxClk.

Response *Response Status* **C**

ACCEPT.

Cl **51** *SC* **Table 51-8** *P* **505** *L* **30** # **49**

Bynum, Roy WorldCom

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

The presentations at the May interim meeting to justify the change from +/-100PPM to +/-20PPM was then new feature of the 10GBaseW to be a client of the synchronous ITU-T OTN Digital Wrapper. Experience with early Packet Over SONET/SDH interfaces that only had +/-20PPM clock support and not full synchronization support indicates that not having full synchronization support produces additional errors within the transmission system.

SuggestedRemedy

Add full support for Section 6 of T1X1.416-1999 in Clause 50 or remove the intention of supporting 10GBaseW as a client of the ITU-T OTN Digital Wrapper by putting the clock tolerance back to +/-100PPM

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Will add new text for clause 50 and 51 as follows:

For Clause 50, modify the sentence starting with "The WIS does not render a 10GBASE-W PHY compliant with either SONET or SDH . . ." on the first page of Clause 50 to read:

"The WIS does not render a 10GBASE-W PHY compliant with either SONET or SDH at any rate or format. A 10GBASE-W interface is not intended to interoperate directly with interfaces that comply with SONET or SDH standards, or other synchronous networks. Operation over electrically multiplexed payloads of a transmission network is outside the scope of this standard."

For Clause 51, add to the table containing the +/- 20 ppm tolerance a note stating:

"The+/- 20ppm clock tolerance is not intended to interoperate directly with interfaces that comply with SONET or SDH standards, or other synchronous networks. Operation over electrically multiplexed payloads of a transmission network is outside the scope of this standard."

The editor is directed to create an appropriate comment against Clause 50 as per the above resolution.

Cl **52** *SC* *P* *L* # **315**

Lindsay, Tom — Stratos Lightwave

Comment Type **E** *Comment Status* **A**

In only casual checking, I have found several incorrect references to tables and other subclauses. I have commented on all the ones I have found, but I have not performed any type of exhaustive search.

SuggestedRemedy

Editor must perform exhaustive search and check of references to tables, figures and other subclauses.

Response *Response Status* **C**

ACCEPT. Editor to perform global searches for table, figure, clause, and subclause references and update as required.

Note to editor: Also check clause and subclause numbers! Numbering should automatically update so that all numbers are sequential. There are gaps in the current subclause numbering that need to be corrected.

Cl **52** *SC* *P* *L* # **333**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Jitter measurement level is not defined. Needs to represent Rx operation, which might not be at the waist of the eye.

SuggestedRemedy

In clause 52.9.10.1 (52.9.12), add a sentence "Jitter shall be measured (calibrated) at the average value of the overall optical waveform. This can be accomplished by with AC coupling to ground and measuring at ground."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Put after Figure 52-21 .

Cl **52** *SC* *P* *L* # **26**

™hlen, Peter — Optillion

Comment Type **T** *Comment Status* **D**

Comment #445 on D2.1 was voted "Accept", but has not been included in D3.1 (or D3.0): The same pattern should be used to measure the vertical eye opening and the stressed sensitivity (presently the PRBS 2^23-1). If this is not done, you calibrate your measurement apparatus with one signal and use it with another. Whichever pattern is more stressful will depend on the transmitter and the receiver that are used in the test.

SuggestedRemedy

Replace "as measured while running the ...." with "as measured with a repeating PRBS 2^23-1 pattern". (the accepted comment) It is probably more appropriate to reference the test pattern that we are probably going to use for other tests, i.e. the jitter test pattern.

Response *Response Status* **Z**

Cl **52** *SC* *P* *L* # **317**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

I recall that during resolution of draft 3.0 comments, we agreed to fully combine Rx jitter tolerance and Rx sensitivity testing. However, sections 52.9.11 and 52.9.12 read as though they are still separate.

SuggestedRemedy

Combine sections. Combination should include:
1. correct patterns for xR and xW (per SJTP ad hoc)
2. Figures 52-14 & 52-16 (52-16 = generator, stress, E/O & attenuator blocks in 52-14)
3. OMA & vertical stress (Figure 52-15, values per...)
5. jitter bathtub stress (per 52.8.2.2)
6. sine jitter sweep (per 52.8.2.3)
7. data rates for xR and xW.
8. no extra DCD...
(referenced clauses, Figures, etc. are per non-change-bar version)

Sequence of calibration is
1. OMA and vertical stress
2. jitter bathtub stress
3. sine jitter sweep

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change 52.9.13 into 52.9.11.5 cb. Send to Serial PMD ad hoc for further work (add calibration sequence, etc.).

Cl **52** *SC* **52.1** *P* **402** *L* **1** # **99001**

Jonathan Thatcher World Wide Packets

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

When the Higher Speed Study Group put forth a PAR to 802 and the IEEE standards board for approval to create a standard, we committed that: "10 Gb/s Ethernet technology will be demonstrated during the course of the project, prior to the completion of the sponsor ballot. " This requirement was added to our PAR because, at the time of writing the PAR, there was no evidence that PMD and PMA technology was feasible which simultaneously meet the other four criteria. Feasibility means that technology must be demonstrated with reports and working models; proven technology; reasonable testing and with confidence in reliability. Historically, Ethernet has been successful, in part, because it "leveraged" technology that existed at the time of the writing of the PAR. No such 10 Gigabit PHY technology existed in November 1999. While the time for which this must be completed is still a couple of meeting cycles away, it is not clear that sufficient effort is being made to validate the specifications; measurement procedures; engineering analysis and judgment and to assure that the PMDs individually meet the requirement we set for ourselves in time for the May 2001 cutoff for last technical change.

SuggestedRemedy

DEMONSTRATE the technical feasibility of the technology specified in Clause 52 for each PMD type, 10GBASE-SR/LR/ER/SW/LW/EW, individually while ensuring the attainment of the other 4 criteria. Or, change the requirements/specifications such that this goal can be achieved.

Response *Response Status* **U**

REJECT. This comment does not suggest any remedy or change to the text.

The Serial PMD ad hoc may choose at its discretion to put together a plan to demonstrate technical feasibility and develop criteria as appropriate.

Cl **52** *SC* **52.1** *P* **512** *L* **1** # **152**

Grow, Robert Intel

Comment Type **TR** *Comment Status* **R** *technical feasibility*

D3.0 comment #850 is both valid and pertinent. Technical feasibility of the interfaces defined in this clause has not been demonstrated.

SuggestedRemedy

Each PMD type must be demonstrated as technically feasible per our commitment in the five criteria.

Response *Response Status* **U**

REJECT. No change to the text is suggested by remedy. Ad hoc formed to address technical feasibility.

Cl **52** *SC* **52.1.1** *P* **513** *L* **26** # **181**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Figure 52-1 title should not say that Serial PMD is in the ISOprotocol stack. It's an OSI protocol stack and it's more to the point toshow the Serial PMD location within 10GBASE-X.

SuggestedRemedy

Change title to Serial PMD locations within 10GBASE-X.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change title to "Relationship of 10GBASE-R/W Serial PMDs".

Cl **52** *SC* **52.1.1** *P* **514** *L* **18** # **178**

Rich Taborek Intel

Comment Type **T** *Comment Status* **A**

It is incorrect to say that "...blocks are SONET framed by theWIS and scrambled again."

SuggestedRemedy

Change test to: "...blocks are framed encoded by the WISas described in Clause 50."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change text to: "...blocks are framed and scrambled by the WIS as described in Clause 50."

Cl **52** *SC* **52.1.1** *P* **514** *L* **26** # **343**

Justin Chang Quake Technologies

Comment Type **T** *Comment Status* **R**

Need to include primitive for PMD_LOOPBACK.indicate in your list of service primitives.

SuggestedRemedy

Put in PMD_LOOPBACK.indicate in the list of primitives.

Response *Response Status* **C**

REJECT. The reference already exists in 52.1.1.4.

Cl **52** *SC* **52.1.1.1.1** *P* **514** *L* **36** # **182**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

"sequence of encoded characters." S/B "stream of bits." Makesimilar global changes throughout this area of the clause.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Replace "sequence of encoded characters" to "stream of bits" in subclause 52.1.1.1.1 and 52.1.1.2.1

Also replace "encoded characters" with "stream of bits" in subclause 52.1.1.1.2, 52.1.1.2.2, and 52.1.1.1.3.

Also replace "encoded characters" with "serialized data" in 52.1.1.2.

Cl **52** *SC* **52.1.1.3.1** *P* **515** *L* **29** # **183**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

"rx_bit" S/B "PMD_UNITDATA.indicate(rx_bit)".

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT. Accept text as written in comment.

Cl **52** *SC* **52.1.1.3.1** *P* **515** *L* **32** # **184**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

"rx_bit" S/B "PMD_UNITDATA.indicate(rx_bit)" in Note.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT. Accept text as written in comment.

Cl **52** *SC* **52.1.1.4.1** *P* **515** *L* **52** # **185**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Missing ".indicate" following "PMD_LOOPBACK(LOOPBACK)"

SuggestedRemedy

Add ".indicate"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Accept change as described in comment.

Also change "The LOOPBACK" on page 516, line 1 to "PMD_LOOPBACK.indicate(LOOPBACK)".

Also change "LOOPBACK" on page 516, line 6 to "PMD_loopback".

Cl **52** *SC* **52.10 Table 52-38** *P* **565** *L* **10** # **52002**

DiMinico, Chris

Comment Type **T** *Comment Status* **A**

Channel insertion loss should be normative.

SuggestedRemedy

Add reference and "shall" to descriptive text. This was the original intent of the document.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Changes listed below:

Clause 52.14, Line 44
Change the title of the subclause from “characteristics of fiber optic cabling” to “characteristics of fiber optic cabling (channel)”

Clause 52.14, line 47
Change table 52-39 to Table 52-38.

Clause 52.14.1, line 51:

The fiber optic cable requirements shall meet the requirements of Table 52-39. These requirements are satisfied by IEC 60793-2 for fiber types A1a (50/125 µm multimode), A1b (62.5/125 µm multimode), and B1 B1.1 (dispersion un-shifted single mode) and B1.3 (low water peak single mode) with the exceptions noted in Table 52-39.

Table 52-38, Line 1
Change title from “Channel characteristics (informative)” to “Fiber optic cabling (channel) characteristics”

Table 52-38, Lines 5 – 7
Boldface the text in the second and third rows, which reference the wavelength and modal bandwidth at which the channel characteristics apply.

Table 52-38, Line 5
Change description from “Wavelength” to “Nominal wavelength”. Also change footnote.

Table 52-38, Line 9
Change description from “Operating distance” to “Operating distance (max)”.

Table 52-38, Line 11
Change the description from “Channel insertion loss” to “Channel insertion loss (max)”
Change the following channel insertion loss values:
1.61 to 2.45
1.63 to 2.44
1.75 to 2.38
1.81 to 2.38

6.5 dB fot 1310 change to 7.0 for channel insertion loss (as per #131)

Table 52-38, Line 12
Change description from “Dispersion” to “Dispersion (max)”

Table 52-38 Line 12
Add a new row “DGD_max” as appears in line 32 of Table 52-39.

Table 52-39, Line 32
Delete “DGD_max” row.

Clause 52.14.2.1, Line 13
Change “Table 52-39” to “Table 52-38.

Cl **52** *SC* **52.10.2** *P* **563** *L* **22** # **235**

Rich Taborek Intel

Comment Type **E** *Comment Status* **R**

"...has not been aligned..." S/B "...have not been aligned..."

SuggestedRemedy

See comment

Response *Response Status* **C**

REJECT. Text is correct as is.

Cl **52** *SC* **52.11.1** *P* **564** *L* **3** # **118**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**

'A system integrating a 10GBASE-SR/LR/ER/SW/LW/EW' what? (By the way, this begs the question: why apply the EMI criterion to the PMD and not the whoel system or, for example, XAUI where EMI is an acknowledged issue in its design? Is this a leftover from PMDs with wires? Maybe this subclause is in completely the wrong place.)

SuggestedRemedy

Insert 'PMD' or 'PHY' after .../EW.

Response *Response Status* **C**

ACCEPT. Editor's note: Due to resolution of comment #186, text will read "A system integrating a 10GBASE-R or 10GBASE-W PMD shall .."

Cl **52** *SC* **52.14.2.1** *P* **566** *L* **14** # **36**

™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**

Somehow the specification on connetor loss was lost going to D2.0... I can't remember why. It could have something to do with the change in speciufication methodology for 1550 nm. Anyway I think need some upper bound on connector insertion loss. Before the section got deleted it was at 2 dB and I think the original number in the proposals aimed at 7 dB total loss.

SuggestedRemedy

Reinsert the deleted paragraph with the 2 dB connector insertion loss for single mode fiber. Possibly, change the connector insertion loss to a better value than 2 dB. If different connector loss allocation is needed for different cable types, indicate this.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #131.

Cl **52** *SC* **52.14.2.2** *P* **566** *L* **19** # **124**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **R**

We should add an informative note in the standard explaining why our connector reflection spec is -26 dB rather than aligned with telecom's -27 dB. The reason is for backwards compatibility with 1G Ethernet.

SuggestedRemedy

Add sentence explaining that our connector reflection spec is -26 dB rather than aligned with telecom's -27 dB to achieve backwards compatibility (re-use of installed plant) with 1G Ethernet.

Response *Response Status* **C**

REJECT. The comment appears to be valid, but the proposed resolution includes a vague reference to "telecom's -27dB" spec that cannot be used in the standard. A justification for the 26 dB return loss might be helpful, but doesn't appear to be necessary.

The commenter is invited to resubmit a comment with a more detailed proposed comment resolution.

Cl **52** *SC* **52.14.3** *P* **566** *L* **26** # **236**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

List style errors

SuggestedRemedy

List S/B lettered and follow single level indentationrules per style guide. Additionally, replace the punctuation or add asemicolon after every item in this list with the exception of the lastitem.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.14.3** *P* **566** *L* **33** # **237**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

List style errors

SuggestedRemedy

List S/B lettered and follow single level indentationrules per style guide. Additionally, replace the punctuation or add asemicolon after every item in this list with the exception of the lastitem.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.15** *P* **1** *L* # **355**

Jonathan Thatcher World Wide Packets

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

The PICS are not in a completed state. These are not ready for sponsor ballot.

SuggestedRemedy

Complete the work; have these reviewed in detail at the July meeting so that we have no comments during the next recirculation.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.15** *P* **567** *L* **1** # **177**

Rich Taborek Intel

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

PICS is incomplete making it difficult to assess compliance withthe standard.

SuggestedRemedy

Complete PICS

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.15.3** *P* **568** *L* **44** # **120**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

By precedent of Cl.38, there is no need to call out TP2,3 in this table (Cl.38 calls out just TP1,4). I suppose the existence of T2,3 is obvious and/or necessary for other mandatory features.

SuggestedRemedy

Delete two rows referring to TP2, TP3.

Response *Response Status* **C**

ACCEPT. OK.

Cl **52** *SC* **52.15.3** *P* **568** *L* **45** # **37**
™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**
Can TP2 not be exposed?

SuggestedRemedy
Delete the "No" in the support box.

Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Row removed.

Cl **52** *SC* **52.15.3** *P* **568** *L* **49** # **38**
™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**
Can TP2 not be exposed?

SuggestedRemedy
Delete the "No" in the support box.

Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Row removed.

Cl **52** *SC* **52.15.4.1** *P* **569** *L* **14** # **121**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
Wrong reference.

SuggestedRemedy
Change 52.2 to 52.1.1.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.15.4.1** *P* **569** *L* **16** # **122**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
Missing word.

SuggestedRemedy
Insert 'and' between 'PMA' and 'management'.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.15.4.1** *P* **569** *L* **31** # **39**
™hlen, Peter Optillion

Comment Type **T** *Comment Status* **R**
It is the loopback indicator, not loopback itself that is mandatory.

SuggestedRemedy
Add "indicator" after "Loopback".

Response *Response Status* **C**
REJECT. Gone.

Cl **52** *SC* **52.15.4.10** *P* **573** *L* **32** # **43**
™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**
The rise/fall times are not needed for all PMDs.

SuggestedRemedy
Add a "N/A [ ]" check box.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.15.4.10** *P* **573** *L* **42** # **44**
™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**
Dispersion penalty is not needed for all PMDs.

SuggestedRemedy
Add a "N/A [ ]" check box.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.15.4.2** *P* **569** *L* **42** # **40**
™hlen, Peter Optillion

Comment Type **TR** *Comment Status* **A** *pics*
PMD_transmit_disable_0 is an optional function.

SuggestedRemedy
Add a "No [ ]" checkbox for PMD_transmit_disable_0.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.15.4.2** *P* **569** *L* **45** # **41**

™hlen, Peter Optillion

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

PMD transmit_local_fault is an optinal function.

SuggestedRemedy

Add a "No [ ]" checkbox.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.15.4.7-8** *P* **52** *L* # **42**

™hlen, Peter Optillion

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

The attenuation of the channel (line 11 & 32) can not be here. It need to go into 52.15.4.11 where it belongs.

SuggestedRemedy

Move the attenuation specification to 52.15.4.11.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Move attenuator management section into fiber optic cabling section in main text, introduce appropriate bracketting text: "For a 10GBASE-ER/EW link.. .." the following section and retitle it to make it explicitly only for the ER/EW" This will also have the effect of moving the PICS section to where Peter wants it.. ..

Add a note to ER/EW PMD to see new section for link attenuation requirements.

Cl **52** *SC* **52.2** *P* **516** *L* **15** # **349**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A**

According to clause 51 and 44 (see Table 44.1); the 512 bt includes both the PMD and the PMA.

SuggestedRemedy

Use same language as found in clause 51.3.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Use "PMA and PMD".

Cl **52** *SC* **52.4.4** *P* **518** *L* **50** # **186**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Shorten 10GBASE-SR/LR/LW/SW/ER/EW to 10GBASE-S/L/E. ChangeGlobally.

SuggestedRemedy

See comment. Change globally.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Global search and replace "10GBASE-SR/LR/LW/SW/ER/EW" with "10GBASE-R and 10GBASE-W".

Also globally search and replace "10GBASE-SR/LR/ER" with "10GBASE-R".

Also globally search and replace "10GBASE-SW/LW/EW" with "10GBASE-W".

Also globally search and replace "10GBASE-SR/SW" with "10GBASE-S".

Also globally search and replace "10GBASE-LR/LW" with "10GBASE-L".

Also globally search and replace "10GBASE-ER/EW" with "10GBASE-E".

Also globally search and replace "type W" with "10GBASE-W".

Also globally search and replace "type R" with "10GBASE-R".

Also globally search and replace "SR/SW" (stand-alone, not part of any abbreviation) with "10GBASE-S".

Also globally search and replace "LR/LW" (stand-alone, not part of any abbreviation with "10GBASE-L".

Also glogally search and replace "ER/EW" (stand-alone, not part of any abbreviation with "10GBASE-E".

Cl **52** *SC* **52.4.4** *P* **519** *L* **21** # **179**

Rich Taborek Intel

Comment Type **T** *Comment Status* **R**

"Various" S/B "Any". Otherwise specify all allowableimplementations.

SuggestedRemedy

See comment.

Response *Response Status* **C**

REJECT. Keep it the same. "Various" does not restrict implementations.

Cl **52** *SC* **52.4.5** *P* **519** *L* **29** # **187**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
Average Launch Power should not be capitalized.

SuggestedRemedy
See comment.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.4.5** *P* **519** *L* **35** # **188**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
Delete the words "Clause 45" to be consistent with similar references in this clause. Global change in this area of the Clause.

SuggestedRemedy
See comment. Change Globally.

Response *Response Status* **C**
ACCEPT IN PRINCIPLE. In subclause 52.4.5, 52.4.6, 52.4.7 and 52.4.8 replace "a Clause 45 MDIO interface is supported" with "the MDIO interface is implemented". Change is applicable to these subclauses only--not globally.

Cl **52** *SC* **52.4.5** *P* **519** *L* **36** # **189**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
reference S/B 45.2.1.8.4

SuggestedRemedy
See comment.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.4.6** *P* **519** *L* **46** # **190**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
Add "bit" after "fault"

SuggestedRemedy
See comment.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.4.7** *P* **519** *L* **49** # **191**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
Replace "(optional)" with "function" in title

SuggestedRemedy
See comment.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.4.7** *P* **520** *L* **1** # **180**
Rich Taborek Intel

Comment Type **T** *Comment Status* **A**
PMD_receive_local_fault may be caused by error events other thanSignal_Detect=FAIL.

SuggestedRemedy
For accurate fault isolation purposes Signal_Detect=FAILshould not be set in MDIO registers unles this specific conditionexists. This should be made clear in this subclause.

Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Remove sentence.

For: 8
Against: 0
Abstain: 11

Cl **52** *SC* **52.4.7** *P* **520** *L* **4** # **192**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
"function" S/B "bit"

SuggestedRemedy
See comment.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.4.7** *P* **520** *L* **5** # **193**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
Reference S/B 45.2.1.7.5

SuggestedRemedy
See comment.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.4.8** *P* **520** *L* **10** # **196**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
Reference S/B 45.2.1.7.6

SuggestedRemedy
See comment.

Response *Response Status* **C**
ACCEPT IN PRINCIPLE. The reference should be "45.2.1.1.2".

Cl **52** *SC* **52.4.8** *P* **520** *L* **10** # **195**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
Add "bit" after "_loopback"

SuggestedRemedy
See comment.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.4.8** *P* **520** *L* **14** # **75**
Dawe, Piers Agilent

Comment Type **TR** *Comment Status* **A** *signal detect*
Decoupling SD & PMD loopback as agreed.

SuggestedRemedy
Delete ', and SIGNAL_DETECT shall be set to OK'

Response *Response Status* **C**
ACCEPT. Missed that one.

Cl **52** *SC* **52.4.8** *P* **520** *L* **7** # **194**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
Replace "(optional)" with "function" in title

SuggestedRemedy
See comment.

Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Add function before (optional) in the title.

Cl **52** *SC* **52.5** *P* **520** *L* **16** # **197**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
Shorten 10GBASE-SR/SW to 10GBASE-S. Change Globally.

SuggestedRemedy
See comment. Change Globally.

Response *Response Status* **C**
ACCEPT. See resolution to comment #186.

Cl **52** *SC* **52.5** *P* **520** *L* **21** # **198**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
"transceiver" is not defined and represents an implementation.Change Globally.

SuggestedRemedy
Replace with "PMD". Change Globally.

Response *Response Status* **C**
ACCEPT. Globally search and replace "transceiver" with "PMD" (including hyphenated word on page 520 line 19-20).

Cl **52** *SC* **52.5** *P* **520** *L* **23** # **199**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
"Minimum" S/B "operating"

SuggestedRemedy
See comment.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.5.1** *P* **429** *L* **24** # **65**

Pepeljugoski, Petar IBM

Comment Type **E** *Comment Status* **R**

The paragraph referrences center wavelength, while Table 52.7 references Wavelength (range).

SuggestedRemedy

Make change in either place, so the terminology is consistent.

Response *Response Status* **C**

REJECT. The subject sentence references Table 52-10, which specifies "center wavelength". No change needed.

Cl **52** *SC* **52.5.1** *P* **521** *L* **32** # **63**

Paul Kolesar Lucent

Comment Type **T** *Comment Status* **A**

The footnote regarding Encircled Flux in Table 52-9 is incompletely specified, as it does not define the multimode fiber type to be used for the test. The language is also inappropriate for normative specification.

SuggestedRemedy

Modify the present footnote to read:
The encircled flux at 19 um shall be greater than or equal to 86% and the encircled flux at 4.5 um shall be less than or equal to 30% when measured into Type A1a (50/125 um multimode) fiber per TIA-455-203.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.5.1** *P* **522** *L* **1** # **200**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Table 52-10. Table title S/B lower case except forabbreviations.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT. Change title to "10GBASE-S optical modulation amplitude (min) (dBm) as a function of center wavelength and spectral width".

Cl **52** *SC* **52.5.1** *P* **522** *L* **8** # **201**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Change "-<" to proper greater than or equal to character usingSymbol font. Change globally.

SuggestedRemedy

See comment. Change globally.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Symbol usage is awkward, but correct. Table titles indicate ranges (ie, 0.2 <= spectral width < 0.3).

However, check that there is a space on both sides of the hyphen to improve readability.

Also, correct error on table 52-10, column 3 heading, change "1.0 - <0.2" to "0.1 - <0.2".

Cl **52** *SC* **52.5.1** *P* **523** *L* **3** # **64**

Paul Kolesar Lucent

Comment Type **T** *Comment Status* **R**

The footnote regarding Encircled Flux in Table 52-11 is incompletely specified, as it does not define the multimode fiber type to be used for the test. The language is also inappropriate for normative specification.

SuggestedRemedy

Modify the present footnote to read:
The encircled flux at 19 æm shall be greater than or equal to 86% andthe encircled flux at 4.5m shall be less than or equal to 30% when measured into type A1a (50/125 æm multimode) fiber per TIA-455-203.

Response *Response Status* **C**

REJECT. Withdrawn.

Cl **52** *SC* **52.5.1** *P* **523** *L* **6** # **202**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Table 52-12. Table title should be lower case except forabbreviations.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT. Change title to "10GBASE-S RMS spectral width (max) (nm) as a function of center wavelength and optical modulation amplitude".

Cl **52** *SC* **52.5.1, Table 52.7** *P* **429** *L* **36** # **66**

Pepeljugoski, Petar IBM

Comment Type **TR** *Comment Status* **R** *rise time*

The rise time of 35ps in Table 52.7 results in ISI penalty larger than 3.6 dB. It is unclear why the number was changed to 35 ps from 31.5 ps in the original proposal.

SuggestedRemedy

Revert to 31.5 ps.

Response *Response Status* **C**

REJECT. Change lengths, leave DCD alone. Change occurs across clause.

160/ 26
200/ 33
400/ 66
500/ 82 m

Cl **52** *SC* **52.5.1, Table 52.8** *P* **430** *L* **530** # **67**

Pepeljugoski, Petar IBM

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

Table 52-8 and the paragraph following it do not give flexibility to fully utilize the trade-off between the center wavelength, RMS linewidth and OMA due to the large granularity (0.1 nm) in the table).

SuggestedRemedy

Allow interpolation to be used for RMS linewidth, OMA or center wavelength within each region in Table 52-8.

Response *Response Status* **C**

REJECT.
Although the commenter is correct. The change was made based on previous comments indicating that following curves and interpolating allowed too much room for error. Suggest adding 0.05nm steps up to 4nm thereby removing the 5nm spectral width which requires an unrealistically large power.

Yes: 7
No: 0
Abstain: 15

Cl **52** *SC* **52.5.2** *P* **526** *L* **4** # **285**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Not clear.

SuggestedRemedy

Modify the last sentence of the 1st paragraph to say "For receiver signal calibration, the sampling instant is defined to be at the eye-center."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Related comment #288

Cl **52** *SC* **52.5.2 and 52.6.2** *P* **526** *L* **4** # **128**

Dudek, Mike Cielo Communications

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

The TR234 from draft 3.0 was not fully implemented (only on 1550nm.) (Due to this being defined as a system level test the CDR mistiming is being double counted in the stressed receiver sensitivity.

SuggestedRemedy

In the first paragraph of each subclause remove the last sentence "The sampling instant is defined to occur at the eye center."In table 52-15 Change the stressed receive sensitivity from 0.179(-7.48) to 0.196(-7.08)
In table 52-23 Change the stressed receive sensitivity from 0.0857(-10.68) to 0.094(-10.28)
Add a footnote to both tables "The stressed sensitivity values in the table are for system level BER measurements which include the effects of CDR circuits. It is recommended that at least 0.4dB additional margin be allocated if component level measurements are made without the effect of CDR circuits.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Stressed receiver sensitivity may be affected by other comments.

Cl **52** *SC* **52.5.2, Table 52-9** *P* **431** *L* **36** # **68**

Pepeljugoski, Petar IBM

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

The stressed receive sensitivity is a condition for the signal at the input of the receiver. As such, the 3.6 dB of eye closure in Table 52-9 is incorrect, since it represents the eye closure at the analog output of the receiver.

SuggestedRemedy

Change the eye closure to a number obtained by using infinite bandwidth for the receiver in the spreadsheet model.

Response *Response Status* **C**

REJECT. The text says that stressed test signal is to be measured through the standardized receiver bandwidth.

Cl **52** *SC* **52.5.3** *P* **535** *L* **3** # **241**

Tim Warland — Nortel Networks

Comment Type **T** *Comment Status* **A**

Clock Tolerance for the 10GBase-LR/LW receiver should be 100ppm. It was only transmit which was adjusted to +/- 20ppm

SuggestedRemedy

Revert Table 52-23 to Table 52-22 from Draft 3.0

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.6** *P* **433** *L* **41** # **368**

Juergen Rahn — Lucent Technologies

Comment Type **T** *Comment Status* **A**

In Table 52-12 a maximum average transmitter power of +1dBm is specified which corresponds to the receiver overload. This is an open issue from previous meetings and still under debate. The value has been chosen to allow a relaxed transmitter power specification. However the allowed corridor of transmitter-side power values is much larger now than the initial target of 5dB. This means the maximum power value together with the overload can and should be decreased as receiver devices fulfilling this are also not available and possibly more difficult to make, what could result on increased cost. A value of -1 dBm is used in ITU receiver specifications and units fulfilling this are available.

SuggestedRemedy

Change the maximum average transmitter side power as well as the receiver overload requirement to -1 dBm .

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Changed to 0.5 dBm by #130 and sent to Serial PMD ad hoc for final resolution.

Cl **52** *SC* **52.6** *P* **433, 435** *L* # **364**

Juergen Rahn — Lucent Technologies

Comment Type **T** *Comment Status* **R**

Tables 52-12, table 52-14 and tables 52-15 are not clear understandable and probably inconsistent. The power budget in the 1310 nm interface according to table calculate the following way.

13100nm

---

transmitter OMA min -4,6 dBm
(lowest value from table)

---

receiver sensitivity (OMA) -10,68 dBm
+ receiver test signal penalty 1,78 dB
Total) penalty free signal) sensitivity (OMA) -12,46 dBm

---

attenuation budget 7,86 dB
here are 7,04dB defined
Doing this the 7.04 dB required as attenuation budget is only achievable by using the receiver eye mask penalty for attenuation budget. This is not clear stated and may be mis- understood.

SuggestedRemedy

Clarify the power-budget and penalties that the numbers of Transmitter power and sensitivity and link attenuation are understandable and ad up to zero.

Response *Response Status* **C**

REJECT. Send to Serial PMD ad hoc.

Cl **52** *SC* **52.6** *P* **435** *L* **15** # **366**

Juergen Rahn Lucent Technologies

Comment Type **T** *Comment Status* **R**

In Table 52-14 sensitivity is indicated that is more demanding than offered by units available. Calculating from the sensitivity of (in OMA)-12,46dBm coming from stressed sensitivity + eye penalty requirement in OMA . Translated into average power sensitivity of(being optimistic) the following values are resulting. Here -12,46dBm OMA will give -15,46 dBm (average power sensitivity) at ideal ER , or -11,96 dBm (average power sensitivity) at ER of 4 dB which is defined as minimum. As in this case the transmitter power is not increased in line to dispersion penalty this has to be considered at the receiver as well. This will add 1 dB more. So the total average power sensitivity is -12.96 dBm at 4 dB ER or -14,26dBm at 6dB ER. This is more than 2 dB harder as ITU and represents something like a BOL typical value that you get for such components. For an interface spec we however require EOL worst case! For my understanding this is not realistic today and if done will be expensive.

SuggestedRemedy

Change the attenuation requirement to 5,5 dB for 10 km incl. splices and connectors in line to the attenuation model that has been agreed by network operators during ITU discussion on link budgets.

Response *Response Status* **C**

REJECT. Agreed to stay at 7 dB after discussion. Comment #131

Y: 5
N: 0
A: 5

Cl **52** *SC* **52.6** *P* **435** *L* **9** # **367**

Juergen Rahn Lucent Technologies

Comment Type **T** *Comment Status* **A**

In Table 52-14 an overload of +1dBm is specified. This is an open issue from previous meetings and still under debate. The value that is the same as the maximum transmitter power has been chosen to allow a relaxed transmitter power specification. However the allowed corridor of transmitter-side power values is much larger now than the initial target of 5dB. This means the maximum power value together with the overload can and should be decreased as receiver devices fulfilling this are also not available and possibly more difficult to make, what could increased cost. A value of -1 dBm is used in ITU receiver specifications and units fulfilling this are available.

SuggestedRemedy

Change the receiver overload requirement to -1 dBm as well as the maximum average transmitter side power.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Changed to 0.5 dBm by#130 and sent to Serial PMD ad hoc for final resolution.

Cl **52** *SC* **52.6** *P* **526** *L* **39** # **203**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Shorten 10GBASE-LR/LW to 10GBASE-S. Change Globally.

SuggestedRemedy

See comment. Change Globally.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See resolution to comment #186.

Cl **52** *SC* **52.6** *P* **527** *L* **3** # **239**

Tim Warland Nortel Networks

Comment Type **T** *Comment Status* **A**

Clock Tolerance for the 10GBase-SR/SW receiver should be 100ppm. IT was only transmit which was adjusted to +/- 20ppm

SuggestedRemedy

Revert Table 52-14 to Table 52-14 from Draft 3.0

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.6** *P* **527** *L* **3** # **240**

Tim Warland Nortel Networks

Comment Type **T** *Comment Status* **A**

I thought we voted in St. Louis to provide a maximum for damage specification for the 10GBase-SR/SW and 10GBase-LR/LW.

SuggestedRemedy

Add maximum for damage spec to receivers.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Dealt with elsewhere through addition of 1 dB to max tx/rx power.

Cl **52** *SC* **52.6.1** *P* **533** *L* **4** # **204**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Table 52-20. Either add a header to the 2nd part of this tableor put it all on one page.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT. Note to editor: FrameMaker option allows headings to be automatically added to table if it is split across pages.

Cl **52** *SC* **52.6.2** *P* **534** *L* **28** # **288**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Not clear.

SuggestedRemedy

Modify the last sentence of the 1st paragraph to say "For receiver signal calibration, the sampling instant is defined to be at the eye-center."

Note, this comment also applies to page 539, line 4, clause 52.7.3.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Related comment #285

Cl **52** *SC* **52.6.2, Table 52-14** *P* **433** *L* # **69**

Pepeljugoski, Petar — IBM

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

The eye closure of 1.78 dB is incorrect. it represents the eye closure at the output of the analog section of the receiver, instead at the input of the receiver.

SuggestedRemedy

Change it to 1.10 dB as per spreadsheet model (calculated with infinite receiver bandwidth).

Response *Response Status* **C**

REJECT. The text says that stressed test signal is to be measured through the standardized receiver bandwidth.

Cl **52** *SC* **52.6.3** *P* **536** *L* **1** # **245**

Tim Warland — Nortel Networks

Comment Type **T** *Comment Status* **A**

Footnote provides "an OMA of >0.477mW in Table 52-21" However table 52-21 is in dBm.

SuggestedRemedy

Change footnote to "an OMA of >-3.2 dBm in Table 52-21"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #131 for correct value.

Cl **52** *SC* **52.6.3** *P* **536** *L* **1** # **246**

Tim Warland — Nortel Networks

Comment Type **T** *Comment Status* **A**

Given that the Transmit link power budget and penalties combine with an OMA of -3.2dBm to give a worst case transmit OMA of -13.2dBm. The stressed receive sensitivity combines with the eye closure penalty to produce a min rx sensitivity of -12.46dBm. Unless I'm missing something, the minimum transmit signal is 0.75dBm below the min Rx sensitivity.

SuggestedRemedy

Ensure minimum receiver sensitivity worst case is better than the worst case transmit OMA.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #131.

Cl **52** *SC* **52.6.3** *P* **536** *L* **1** # **12**

™hlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

Specify the spectral width used for calculation.

SuggestedRemedy

Add the proper spectral width and change power as necessary.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #131.

Cl **52** *SC* **52.7** *P* **437** *L* **48** # **365**

Juergen Rahn Lucent Technologies

Comment Type **T** *Comment Status* **R**

In Table 52-18 a sensitivity is indicated that is more demanding than offered by units available. Calculating from the sensitivity of -14.4 dBm coming from stressed sensitivity and eye penalty requirement in OMA compare it to available transponders you can translate it into average power sensitivity of(being optimistic) : - 14.4 dBm OMA will give -17.4 dBm ideal ER sensitivity or -16 dBm (average power sensitivity) at ER of 8.2 dB as used in ITU. This is 2 dB harder as ITU and represents the BOL typical value that you get for such components. For an interface spec we however require EOL worst case! For my understanding this is not realistic today and if done will be expensive.

SuggestedRemedy

Change the attenuation requirement to 11 dB for 40km incl. splices and connectors in line to the attenuation model that has been agreed by network operators during ITU discussion on link budgets.

Response *Response Status* **C**

REJECT. Worst case cable attenuation for 40 km requires 12 dB cable loss + 1 dB connector and splice loss. If anything, we need a larger insertion loss.

The committee requests that the commenter resubmit this comment with technical justification (statistical) for the use of 0.25 dB/km attenuation coefficient assuming 1 dB of connector/splice loss.

We have reviewed G.652 and see no justification for this value (0.25 dB/km).

Y: 4
N; 1
A: 1

Cl **52** *SC* **52.7** *P* **437, 438** *L* # **363**

Juergen Rahn Lucent Technologies

Comment Type **T** *Comment Status* **R**

Tables 52-17, table 52-18 and tables 52-19 are not clear understandable and probably inconsistent. The power budget in the 1550 nm interface according to table calculate the following way.

transmitter OMA min -1.39 dBm
receiver sensitivity (OMA) -11.40 dBm + receiver test signal penalty 3.0 dB
Total)penalty free signal) sensitivity in OMA -14.4 dBm
attenuation budget 13.01 dB

Doing this the 13 dB required as attenuation budget is only achievable by using the receiver eye mask penalty for attenuation budget. This is not clear stated and may be mis- understood.

SuggestedRemedy

Clarify the power-budget and penalties that the numbers of Transmitter power and sensitivity and link attenuation are understandable and ad up to zero.

Response *Response Status* **C**

REJECT. Send to Serial PMD ad hoc.

Cl **52** *SC* **52.7** *P* **536** *L* **7** # **205**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Shorten 10GBASE-ER/EW to 10GBASE-E. Change Globally.

SuggestedRemedy

See comment. Change Globally.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See resolution to comment #186.

Cl **52** *SC* **52.7.1** *P* **536** *L* # **45**

™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**

This section is not in the right place.

SuggestedRemedy

Move it to 52.14.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #42.

Cl **52** *SC* **52.7.1** *P* **536** *L* **26** # **291**

Lindsay, Tom — Stratos Lightwave

Comment Type **E** *Comment Status* **R**

1st line uses the word "attenuation"; I think that "loss" is better. I think of attenuation as loss per distance.

SuggestedRemedy

Replace "attenuation" with "loss".

Response *Response Status* **C**

REJECT. Attenuation is not loss per distance (for example, attenuation is dB, attenuation per distance is dB/km).

Cl **52** *SC* **52.7.3** *P* **540** *L* **3** # **242**

Tim Warland — Nortel Networks

Comment Type **T** *Comment Status* **A**

Clock Tolerance for the 10GBase-ER/EW receiver should be 100ppm. It was only transmit which was adjusted to +/- 20ppm

SuggestedRemedy

Revert Table 52-29 to Table 52-28 from Draft 3.0

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.7.3, Table 52-18** *P* **437** *L* **50** # **70**

Pepeljugoski, Petar — IBM

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

The eye closure penalty of 3.0 dB is incorrect. It should represent the signal at the input of the receiver, not at its analog output.

SuggestedRemedy

Change the number to 2.2 dB. (Note. More work is needed here, since the model is not accurate in handling the 1550 nm links).

Response *Response Status* **C**

REJECT. The text says that stressed test signal is to be measured through the standardized receiver bandwidth.

Cl **52** *SC* **52.7.4** *P* **540** *L* **50** # **247**

Tim Warland — Nortel Networks

Comment Type **E** *Comment Status* **A**

Footnote says "... specifications by testing the transmitter specification by testing the transceiver with..."

SuggestedRemedy

Not sure what you wanted to say, maybe you should delete the "by testing the transceiver".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Replace "..into the transmitter specifications by testing the transmitter specifications by testing the .." with "..into the transmitter specifications by testing the ..".

Cl **52** *SC* **52.8** *P* **439** *L* **28,29,30,3** # **370**

Juergen Rahn — Lucent Technologies

Comment Type **T** *Comment Status* **R**

In Table 52-20 are jitter values stated that have been used to calculate the bathtub curve. The 1310nm interface value for calculating the total jitter generation and tolerance has been changed to 0.3 UI in contrast to the values given for the other interfaces. As the functional base for this value is the same for all the interfaces this should be aligned on a reasonable value ensuring feasibility of units.

SuggestedRemedy

Align the DJ value used for calculating the total jitter of the other interfaces at 0.3 UI also. Correct the bathtub accordingly.

Response *Response Status* **C**

REJECT. See #99.

Cl **52** *SC* **52.8** *P* **439** *L* **28,29,30,3** # **369**

Juergen Rahn — Lucent Technologies

Comment Type **T** *Comment Status* **A**

In Table 52-20 are jitter values stated that have been used to calculate the bathtub curve. While the jitter generation and tolerance in line to the bathtub is the real requirement the values that have been used to calculate this are partly not completely consistent with other parameters in the standard. This means when fulfilling the total jitter (bathtub requirement) the portion of DJ and RJ components and their sources can be chosen differently and gives freedom for implementation. This should be clarified in the text.

SuggestedRemedy

Give clear indication that the RJ and DJ in table 52-20 are the values that have been used to generate the total jitter requirement (as illustrated in the bathtub curve) and not necessary the values present at the interface.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add sentence "The DJ and RJ values do not need to be individually met, the required mask is defined by the formulas above .".

Cl **52** *SC* **52.8** *P* **541** *L* **7** # **176**

Rich Taborek Intel

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

Jitter specifications are inconsistent with P802.3ae PAR and 5Criteria. Technical feasibility investigation is showing that existingtransponder modules employed in SONET applications do not meet Clause 52jitter specifications, specifically at the receiver. This isinconsistent with the Scope and Purpose of the P802.3ae PAR.Specifically, the Scope of the PAR says: "In addition to the traditionalLAN space, add parameters and mechanisms that enable deployment ofEthernet over the Wide Area Network operating at a data rate compatiblewith OC-192c and SDH VC-4-64c payload rate.]" The Purpose says: "Thepurpose of this project is to extend the 802.3 protocol to an operatingspeed of 10 Gb/s and to expand the Ethernet application space to includeWide Area Network links in order to provide a significant increase inbandwidth while maintaining maximum compatibility with the installedbase of 802.3 interfaces, previous investment in research anddevelopment, and principles of network operation and management.Inconsistency with the 5 criteria is evident with respect to TechnicalFeasibility in that existing SONET transponders do not seem to meetP802.3ae Clause 52 jitter specifications. It is noteworthy that thetarget application, the MAN/metro, should warrant jitter specificationsthat are less stringent than those of SONET since MAN/metro applicationsare less demanding than SONET WAN applications for which SONET jitterspecifications were developed.Further inconsistency with the 5 criteria is evident with respect toEconomic Feasibility which states that: "A target cost increase of 3X of1000BASE- X with a ten-fold ncrease in available bandwidth in the fullduplex operating mode will result in an improvement in the cost-performance ratio by a factor of 3." Jitter specifications that requirethe development of components with superior jitter performance to thoseof SONET clearly do not support the legacy aggressive Ethernet costtargets.

SuggestedRemedy

Set Clause 52 jitter specifications to exactly thatwhich will allow existing SONET PMA and PMD components to be used withSONET or, better yet, relaxed SONET specifications to satisfy theMAN/metro applications targeted by the Clause 52 PMDs. Resolve anyconfusion and inconsistency between frequency (SONET-style) and time(MJS-style) domain jitter test methodology.

Response *Response Status* **U**

REJECT. There are no specific changes recommended to accomplish the required changes. If this is just a relaxing of the parameters changes should be proposed to make this happen.

Cl **52** *SC* **52.8.1** *P* **541** *L* **11** # **98**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Most of this is procedure not specification.

SuggestedRemedy

Move the description, equations and Fig 52-11 to 52.9.10.1 and/or 52.9.10.5. Table 52-31. Keep Table 52-31 here with about one sentence introducing it.

Response *Response Status* **C**

REJECT. This section is mostly specification.

Cl **52** *SC* **52.8.1** *P* **541** *L* **13** # **13**

™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**

Bathtub curves are used at several places without explanation of what it is.

SuggestedRemedy

Introduce the conceppt at the end of the 1st paragraph of 52.8.1:
"The plot of BER as a function of sampling time is called a BER bathtub curve."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Choose:
"The plot of BER as a function of sampling time is called a bathtub curve."

Editor to make sure everything is same.

Cl **52** *SC* **52.8.1** *P* **542** *L* **31** # **308**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **R**

I thought during draft 3.0 resolution, we had agreed to require the golden PLL on all jitter measurements because it will be practically necessary for system testing and will provide a more unified test environment.

It should not be assumed that use of a golden PLL will always reduce measured jitter. Depending on how the test patterns evolve, the golden PLL may increase measured jitter (this is the basis of CJPAT for 8B10B signals).

SuggestedRemedy

Add a paragraph stating "A golden PLL shall be used for measurement of the transmit jitter. It shall have a low frequency corner of less than or equal to 4 MHz and..." (complete paragraph with same words as all but last sentence in last paragraph in section 52.8.2.2).

Response *Response Status* **Z**

REJECT. Withdrawn.

Cl **52** *SC* **52.8.1** *P* **542** *L* **7** # **99**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

LR/LW DJ parameter 'W' is out of step. These figures mostly represent jitter at TP3 so assuming all receivers use the same CDRs, should be almost the same for S, L and E. We made the change to provoke discussion: changing it back will still tend to encourage discussion but at least makes the draft self-consistent. Until I see more reports from CDRs I think 0.35 is a reasonable guesstimate.

SuggestedRemedy

Until we have evidence to base a change in W on, revert to W=0.35 so all receivers have the same jitter requirements.

Response *Response Status* **C**

REJECT. Leave as is (0.30 UI)

Cl **52** *SC* **52.8.1.1** *P* **542** *L* **34** # **114**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Whole of 52.8.1.1 has been replaced by 52.9.10.4

SuggestedRemedy

Delete subclause 52.8.1.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Need to fix references.

Cl **52** *SC* **52.8.1.1** *P* **542** *L* **36** # **206**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Shorten 10GBASE-LR/LW/ER/EW to 10GBASE-L/E. Change Globally.

SuggestedRemedy

See comment. Change Globally.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See resolution to comment #186.

Cl **52** *SC* **52.8.1.1** *P* **542** *L* **39** # **207**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Clearly identify the "and" condition between list items a and b.

SuggestedRemedy

Add "; and" after list item a.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.8.1.2** *P* **542** *L* **48** # **175**

Ben Brown AMCC

Comment Type **T** *Comment Status* **A**

Need to add the 4 seeds & data inputs from the Serial JitterTest Pattern ad-hoc

SuggestedRemedy

Add the following after the existing sentence:
"The data input mode shall be programmed to select the all zerodata input. The 2 seeds shall be programmed to the followingvalues:
Seed A [57:0] = 0x3C8B44DCAB6804F
Seed B [57:0] = 0x3129CCCCF3B9C73"
I believe the intention is to only include 2 seeds in the draft.We're trying to get testing done on more than 2 seeds and thebest way to do this is to include them in the draft. To do thiswithout breaking the spirit of the draft, add an editor's noteto this section, to be removed before the final draft is published,that adds the 2 additional seeds:
"Editor's note: To allow for increased testing of other candidateLAN patterns, please include the following 2 seeds and data-inputoptions in your testing:
Seed C (uses all zero data input) [57:0] = 0x3CA21447ACD4A8A
Seed D (uses LF data input) [57:0] = 0x34906BB85A38884"

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.8.1.2** *P* **542** *L* **48** # **100**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Test pattern definition has moved.

SuggestedRemedy

Change 49.2.8 to 52.9.1

Response *Response Status* **C**

ACCEPT. Change paragraph reference as described.

Also page 542, line 48 replace "test pattern used to test transmitter" with "test pattern used to test the transmitter".

Cl **52** *SC* **52.8.1.2** *P* **542** *L* **52** # **208**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Specify XXXX or rewrite to not mention it. This note ismeaningless to me as is.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.8.2** *P* **542** *L* **52** # **350**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A**

This footnote was a placeholder from long ago. The issue needs to be resolved and the note removed.

SuggestedRemedy

Remove note and fix anything left hanging.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.8.2** *P* **543** *L* **40** # **14**

™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**

The references point to the wrong sections. The

SuggestedRemedy

Remove "52.7.2.1". Correct sections are "52.8.2.2 though 52.8.2.4"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Sections are in non-cb version:

section 52.8.2.1 through 52.8.2.3 and 52.9.1 (test pattern)

Cl **52** *SC* **52.8.2** *P* **543** *L* **41** # **135**

Dudek, Mike Cielo Communications

Comment Type **E** *Comment Status* **A**

Incorrect cross-reference

SuggestedRemedy

Change 52.7.2.1 through 52.8.2.4 to 52.8.2 and 52.9.1

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.8.2.2** *P* **544** *L* **4** # **102**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

0.2 dB may be underestimating the penalty of 0.05 UI SJ added to all the other jitters: 'last straw'.

SuggestedRemedy

Perhaps change 0.2 dB to 0.5 dB.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Agreement 7/9 to replace 0.05 DJ with 0.05 SJ eliminates motive of the power adjustment.

Editor's note: Mike Dudek to help with required text changes.

Cl **52** *SC* **52.8.2.2** *P* **544** *L* **4** # **16**

™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**

There is only one stressed conformance test (and sensitivity) for the receiver and the 0.2 dB added is no longer necessary.

SuggestedRemedy

Remove "less than .... range". If necessary, change the stressed sensitivity values in tables 14,23,29 with 0.2 dB. I think we did the change to the tbales last time, but I can't remember for sure.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Agreement 7/9 to replace 0.05 DJ with 0.05 SJ eliminates motive of the 0.2 dB adjustment. Reviewer does not recall changing table values last meeting, but general check of all table values per model is required anyway.

Cl **52** *SC* **52.8.2.2** *P* **544** *L* **6** # **318**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

I believe the Rx test should include both stressed Rx OMA and vertical eye closure.

SuggestedRemedy

Add a sentence to the end "Vertical eye closure shall be as specified in these same tables."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. In cb version, in 52.8.2, change reference to 52.9.11 to (52.9.11 to 52.9.13).

Cl **52** *SC* **52.8.2.3** *P* **544** *L* **10** # **15**

™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**

Sinusoidal jitter in RX test.Adding 0.05 UI of sinusoidal jitter _in_addition_ to the jitter mask will force the deserializer to cope with 0.05 UI more jitter than it would ever see from a compliant transciever.

SuggestedRemedy

Change "without" to "with" on p. 544:10.p. 545:49: Change "added to" to "included in".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The serial PMD Ad Hoc agreed to replace the SJ with DJ

Cl **52** *SC* **52.8.2.3** *P* **544** *L* **36** # **292**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

The BER mask equations for tolerance are currently defined between 1e-4 and 1e-12. These equations are approximations and likely to depart from actual signal properties at higher error rates. Specifically, I believe that with the test patterns being developed, it will be difficult to generate the upper shoulders without excessive amounts of pk-pk DDJ and still follow the slopes to lower error rates.

The upper BER value should be <<1/pattern length. Therefore, I recommend requiring tolerance curve compliance between 1e-6 and 1e-12.

This is not an issue for transmitter testing.

SuggestedRemedy

Change to BER range of 10^-12<BER<10^-6.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.8.2.3** *P* **545** *L* **24** # **307**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

I thought during draft 3.0 resolution, we had agreed to require the golden PLL on all jitter measurements because it will be practically necessary for system testing and will provide a more unified test environment.

It should not be assumed that use of a golden PLL will always reduce measured jitter. Depending on how the test patterns evolve, the golden PLL may increase measured jitter (this is the basis of CJPAT for 8B10B signals).

SuggestedRemedy

In the last paragraph of this section, reword the 2nd sentence "A golden PLL shall be used for verification of the input jitter. It shall have a low frequency..." (complete sentence as is).

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.8.2.3** *P* **545** *L* **25** # **293**

Lindsay, Tom Stratos Lightwave

Comment Type **E** *Comment Status* **A**

The "H" in MHz should be capitalized.

SuggestedRemedy

In 2nd paragraph below Figure 52-12, change Mhz to MHz.

Editor should run Search and Replace for other possible instances.

Response *Response Status* **C**

ACCEPT. Also global search and replace "Mhz" with "MHz".

Cl **52** *SC* **52.8.2.4** *P* **545** *L* **50** # **210**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Table 52-34. Put table all on one page.

SuggestedRemedy

Set "Orphan Rows" parameter in FrameMaker TableDesigner to 99. Set "Start" parameter to Float.

Response *Response Status* **C**

ACCEPT. Repaginate as suggested. Also check entire clause for correct pagination. Related comment #209.

Cl **52** *SC* **52.8.2.4** *P* **545** *L* **50** # **209**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Table 52-34. Put table all on one page.

SuggestedRemedy

Set "Orphan Rows" parameter in FrameMaker TableDesigner to 99. Set "Start" parameter to Float.

Response *Response Status* **C**

ACCEPT. Repaginate as suggested. Also check entire clause for correct pagination. Related comment #210.

Cl **52** *SC* **52.9** *P* *L* # **295**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Sections begins by defining test patterns and says that they will be used for most tests. However, many tests refer to other patterns. Generally, not clear at all.

SuggestedRemedy

For each test section, refer clearly to the appropriate test pattern. This should apply to all xR and xW variants.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The first paragraph of 52.9.1 is aiming to explain the approach to tests and test pattern for 10 GbE . Remane 52.9.1 to "Test patterns". Clarify what pattern types we have defined in 52.9.1 and clearly refer to the correct pattern in each section describing the tests. Supply table with test pattern versus section in test pattern section.

Editor's note: Piers Dawe to supply this table.

Cl **52** *SC* **52.9.1** *P* *L* # **296**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **R**

This question may be for clause 49, but will the square wave test pattern be described in a way that it can be produced with a seed and repeating input pattern for the scrambler?

SuggestedRemedy

If the answer is yes, then add the appropriate details in section 52.9.1.

Otherwise, give some mention on how it is developed (test mode, etc.).

Response *Response Status* **C**

REJECT. No seed.

Cl **52** *SC* **52.9.1** *P* **547** *L* **1** # **211**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Shorten 10GBASE-SR/LR/ER to 10GBASE-R. Change Globally.

SuggestedRemedy

See comment. Change Globally.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See resolution to comment #186.

Cl **52** *SC* **52.9.1** *P* **547** *L* **10** # **243**

Tim Warland Nortel Networks

Comment Type **T** *Comment Status* **A**

"Each section contains the master transition every 66 bits" Appears to be a runt paragraph

SuggestedRemedy

I think you mean to say each section contains a sync header transition every 66 bits.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.1** *P* **547** *L* **15** # **244**

Tim Warland Nortel Networks

Comment Type **T** *Comment Status* **A**

Seed values have been defined by the Serial Jitter Ad Hoc.

SuggestedRemedy

Add seed values as defined by the SJTP ad hoc. These patterns should be verified for their usefulness.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See # 175

Cl **52** *SC* **52.9.1** *P* **547** *L* **16** # **351**

Jonathan Thatcher World Wide Packets

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

Table 52-35 and a number of other places in clause 52 have TBDs; "(binary 01?10?)"; "50.x.x.x." etc. There can be no place-holders in the document going into sponsor ballot. All references and specifications must be resolved.

SuggestedRemedy

Finish.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Need all appropriate text.

For 52.9.1, need Pattern Generator ad hoc to fill in text. Use ben_brown_0701.pdf for hex values and description.

Replace XXXX on p542 cb version with 52.14 (old rev 3.1 section number).

Cl **52** *SC* **52.9.1** *P* **547** *L* **2** # **101**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Trial measurement with a most preliminary test pattern indicated that the pattern may be too short for adequate test coverage.

SuggestedRemedy

Response *Response Status* **C**

REJECT. No change to the text is suggested. Should look at other patterns.

Cl **52** *SC* **52.9.1** *P* **547** *L* **2** # **104**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**

A description of the range of square waves (4 to 11 identical bits) which a PCS/WIS/PMA might generate should be found somewhere (is it in Cl 49?)

SuggestedRemedy

Here or in Cl 49, add text describing the range of square waves (4 to 11 identical bits) available for certain compliance tests.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See Clause 49 resolution to comments #154 and #348.

Cl **52** *SC* **52.9.1** *P* **547** *L* **2** # **103**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

A table of when each pattern is acceptable would be useful.

SuggestedRemedy

Add table showing which of patterns 1,2, square is acceptable for each test.Columns are: Name of test, Pattern, Subclause where test described.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Piers to provide table.

Cl **52** *SC* **52.9.1** *P* **547** *L* **39** # **213**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Shorten 10GBASE-SW/LW/EW to 10GBASE-W. Change Globally.

SuggestedRemedy

See comment. Change Globally.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See resolution to comment #186.

Cl **52** *SC* **52.9.1** *P* **547** *L* **9** # **212**

Rich Taborek Intel

Comment Type **T** *Comment Status* **A**

I believe that "section" S/B "segment". Additionally, thissentence should probably be combined with the preceding one.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.10** *P* **554** *L* # **20**

™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**

Per comments #873 & #499 against D3.0, the PLL is needed. The text implies that the reasons are to make measurements easier, and has some "if":s. The PLL is needed, not used for making measurements easier.

SuggestedRemedy

p. 544:20. Replace "If a" with "The", and make neccesary changes to rest if the sentence to make the grammar correct.p. 544:24. Remove "Since it is .... as described above".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Further editorial wordsmithing may be needed.

Cl **52** *SC* **52.9.10** *P* **555** *L* # **21**

™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**

Section 52.9.10.2 is almost a duplicate of the last paragraph of 52.9.10.4.

SuggestedRemedy

Move section 52.9.10.2 to the end of 52.9.10.4 and merge text as necessary.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

CB version, all sections.
Remove section 52.9.10.2 after taking the first sentence and moving it to before line 17 previous page section 52.9.10.1 (paragraph starting with "For 10GBASE-SR/SW the receiver shall have a fourth-order Bessel Thompson..".). Editor to make sure it flows.

Cl **52** *SC* **52.9.10.1** *P* **554** *L* **18** # **310**

Lindsay, Tom Stratos Lightwave

Comment Type **E** *Comment Status* **A**

4th paragraph refers to 52.8.7, which does not exist.

SuggestedRemedy

Change to 52.9.7.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.10.1** *P* **554** *L* **18** # **111**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**

It's the difference in delay that matters in a transversal filter.

SuggestedRemedy

Change 'paths and a delay' to 'paths with a differential delay'.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.10.1** *P* **554** *L* **20** # **312**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

I thought during draft 3.0 resolution, we had agreed to require the golden PLL on all jitter measurements because it will be practically necessary for system testing and will provide a more unified test environment.

SuggestedRemedy

Modify the 1st sentence of the 5th paragraph to read "A golden PLL shall be used in the jitter measurement. It shall have a low frequency..."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #20.

Cl **52** *SC* **52.9.10.1** *P* **554** *L* **2028** # **112**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**

Do we need the word "corner" and the sentence about corner frequency? Isn't this standard theory of first order filters? The PLL is a low pass jitter filter so isn't it a high frequency corner?

SuggestedRemedy

Suggest replace 'low frequency corner' with 'bandwidth' (assume meaning of 'bandwidth' is known and delete the sentence 'The corner ... ' line 28. Also p545 line 26.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. "Bandwidth" doesn't appear to clarify the sentence. The sentence on line 28 beginning with "The corner" is standard PLL theory, but helps clarify the intent of the measurement.

Replace "low frequency corner" with "corner frequency".

Cl **52** *SC* **52.9.10.1** *P* **554** *L* **21** # **313**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

5th paragraph refers to clause 52.8.9.4 which does not exist.

SuggestedRemedy

Delete 2nd sentence of paragraph.

Then, delete 1st and 2nd sentences of the 6th paragraph. Combine the rest of the 6th paragraph with the remaining sentence of the 5th paragraph.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.10.1** *P* **554** *L* **26** # **136**

Dudek, Mike — Cielo Communications

Comment Type **E** *Comment Status* **A**

Typo

SuggestedRemedy

Change "as described" to "is described"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See resolution to comment #313.

Cl **52** *SC* **52.9.10.1** *P* **554** *L* **26** # **225**

Rich Taborek — Intel

Comment Type **E** *Comment Status* **A**

"as described above." S/B "are described above."

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See resolution to comment #313.

Cl **52** *SC* **52.9.10.1** *P* **554** *L* **26** # **353**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

"The specifications for the Golden PLL as described above." should be something like "The specifications for the Golden PLL are as described above."

SuggestedRemedy

See comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See resolution to comment #313.

Cl **52** *SC* **52.9.10.1** *P* **555** *L* **22** # **321**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

As this is a system level spec, and Tx/Rx crosstalk can affect system performance, sensitivity, jitter, and mask testing should require data traffic flowing in the opposite direction.

SuggestedRemedy

Add a sentence at the end of the subclause "During transmitter jitter testing, asynchronous data shall be flowing into the optical receiver of the system under test. This data shall be consistent with normal signal properties and content."

(We could get very specific on describing the signal...).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This is section 52.9.10.1 cb.

Add a sentence at the end of the subclause:

"The measurements in this section shall be satisfied with asynchronous data flowing into the optical receiver of the system under test. This data shall be consistent with normal signal properties and content."

Cl **52** *SC* **52.9.10.2** *P* **555** *L* **24** # **311**

Lindsay, Tom — Stratos Lightwave

Comment Type **E** *Comment Status* **R**

Subclause is unnecessary.

SuggestedRemedy

Move the 1st sentence of 52.9.10.2 to become the 1st sentence of the 4th paragraph of subclause 52.9.10.1.

Delete the rest of 52.9.10.2.

Response *Response Status* **C**

REJECT. Although this paragraph is short, it references issues unique to 850 nm devices. A separate subclause seems to help to identify these issues.

Cl **52** *SC* **52.9.10.4** *P* **555** *L* **43** # **314**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

2nd paragraph (long one) has several problems:
a. refers to min and max dispersion columns, yet only min column exists.
b. refers to table 52-21 (non-change-bar), which clearly is the wrong table.
c. one may be able to figure out what the back reflection values are, but they are far from clearly shown in the referenced tables (52-7,52-12,52-17, non-change-bar version).

SuggestedRemedy

Confusing, remedies not obvious to me. Needs to be reviewed and corrected by author.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 113 for resolution to A. B should have been table 52-37 cb (52-24 ncb). C needs editorial work to fix.

Cl **52** *SC* **52.9.10.4** *P* **555** *L* **44** # **137**

Dudek, Mike — Cielo Communications

Comment Type **E** *Comment Status* **A**

typo

SuggestedRemedy

Change "and as least" to "and at least"

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.10.4** *P* **556** *L* **25** # **138**

Dudek, Mike — Cielo Communications

Comment Type **E** *Comment Status* **A**

Incorrect reference

SuggestedRemedy

Change 52-24 to 52-39

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change "52-24" to "52-37".

Cl **52** *SC* **52.9.10.5** *P* **556** *L* **38** # **316**

Lindsay, Tom — Stratos Lightwave

Comment Type **E** *Comment Status* **R**

I thought during draft 3.0 resolution, we had agreed to require the golden PLL on all jitter measurements because it will be practically necessary for system testing and will provide a more unified test environment.

I also do not understand the last sentence of the 2nd paragraph of this subclause.

SuggestedRemedy

Remove 2nd paragraph of this subclause.

Response *Response Status* **C**

REJECT. Although the last sentence of the paragraph is confusing, it appears that the intent of the paragraph is to require the golden PLL as the commenter requests. No change appears necessary.

The commenter is invited to resubmit a comment to clarify the last sentence (or entire paragraph).

Cl **52** *SC* **52.9.10.5** *P* **556** *L* **41** # **22**

™hlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

The golden PLL is not reuqired to do clock division!

SuggestedRemedy

Remove the last sentence of on line 41.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.11** *P* *L* # **323**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

As this is a system level spec, and Tx/Rx crosstalk can affect system performance, sensitivity, jitter, and mask testing should require data traffic flowing in the opposite direction.

SuggestedRemedy

Per another comment, I hope that that Rx testing is combined into a single subclause, number TBD. Somewhere in that subclause, add a sentence "During receiver testing, asynchronous data shall be flowing from the optical transmitter of the system under test. This data shall be consistent with normal signal properties and content."

(We could get very specific on describing the signal...).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. As per #321.

Add text:
"The measurements in this section shall be satisfied with asynchronous data flowing out of the optical transmitter of the system under test. This data shall be consistent with normal signal properties and content."

Cl **52** *SC* **52.9.11** *P* **557** *L* # **24**

™hlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

Since we merged the jitter and stressed sensitivity test for the receiver the title and naming convention is misleading. I think we should call it "Stressed receiver conformance test" or a better suggestion. "Receiver jitter tolerance conformance test" is too specific.

SuggestedRemedy

Change the test name in the titles and figure captions in 52.9.11 to "stressed receiver conformance test".Also applies to p. 544:4.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.11.1** *P* **557** *L* **8** # **28**

™hlen, Peter — Optillion

Comment Type **E** *Comment Status* **A**

See remedy.

SuggestedRemedy

Remove "stressed receiver".

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.11.13** *P* **558** *L* **28** # **226**

Rich Taborek — Intel

Comment Type **E** *Comment Status* **A**

Add a comma between the words "measurement excessive".

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.11.2** *P* **557** *L* **18** # **320**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

I thought during draft 3.0 resolution, we had agreed to require the golden PLL on all jitter measurements because it will be practically necessary for system testing and will provide a more unified test environment.

SuggestedRemedy

Remove the 4th sentence of 1st paragraph. Also, change wording of last sentence to "A golden PLL meeting the requirements of 52.8.2.2 shall be used."

(Note - 52.8.2.2 is the clause # in the non-change-bar version).

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.11.2** *P* **557** *L* **18** # **139**

Dudek, Mike — Cielo Communications

Comment Type **T** *Comment Status* **A**

For calibrating the test signal for the stressed receiver sensitivity test it is necessary to use a Golden PLL unless the source jitter below 4MHz is negligible otherwise the source will have too little noise above 4MHz.

SuggestedRemedy

Change the last two sentences of the paragraph to"The "Golden PLL" is required to eliminate low frequency jitter from the measurement set up. The "Golden PLL" shall meet the requirements of section 52.8.2.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #320.

Cl **52** *SC* **52.9.11.4** *P* **558** *L* **4041** # **140**

Dudek, Mike — Cielo Communications

Comment Type **E** *Comment Status* **A**

Incorrect cross references

SuggestedRemedy

Change 52.7.2.2 and 52.7.2.4 to 52.8.2.2 and 52.8.2.2

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. On line 40 replace "52.7.2.2" with "52.8.2.2". On line 42 replace "52.7.2.4" with "52.8.2.4".

Cl **52** *SC* **52.9.13** *P* **558** *L* # **29**

™hlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

This is not the section describing the actual test. It describes how to generate the conditioned test signal. Some wordings need change. There are 2 old comments about this, who were both accepted in principle.

SuggestedRemedy

p. 558:50. Replace "This test validates" with "The conformance test signal is used to validate".
p. 559:1-2. REplace line 1-2 with "The conformance test signal shall meet the following requirements:"

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.13** *P* **558** *L* **52** # **227**

Rich Taborek — Intel

Comment Type **E** *Comment Status* **A**

Punctuation errors.

SuggestedRemedy

All semicolons S/B commas.

Response *Response Status* **C**

ACCEPT. Clarification for editor: Sentence should read "..waveforms including DCD, DDJ, RJ, power, simulated channel penalties, and a swept frequency..".

Cl **52** *SC* **52.9.13** *P* **559** *L* **11** # **141**

Dudek, Mike — Cielo Communications

Comment Type **T** *Comment Status* **A**

The specifications have not been fully changed in accordance with comment 242 on draft 3.0. The pattern specified is not a good choice as it may not produce the worst ISI and could cause PLL's to lose lock.

SuggestedRemedy

Change 6) "6ps of DCD" to "greater or equal to 6ps of DCD"Change 7) to "The vertical eye opening with ISI (AO) is measured using the test pattern defined in 52.9.1

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change 6) "6ps of DCD" to "greater or equal to 6ps of DCD"Change 7) to "The vertical eye closure penalty is measured using the] test pattern 2 defined in 52.9.1"

Cl **52** *SC* **52.9.13** *P* **559** *L* **12** # **25**

™hlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

Comment #511 against D3.0 not implemented.

SuggestedRemedy

Replace"with ISI (A0). as" with "penalty requirements"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #141.

Cl **52** *SC* **52.9.13** *P* **559** *L* **4** # **228**

Rich Taborek — Intel

Comment Type **E** *Comment Status* **A**

List style errors

SuggestedRemedy

List S/B lettered and follow single level indentationrules per style guide. Additionally, replace the punctuation or add asemicolon after every item in this list with the exception of the lastitem.

Response *Response Status* **C**

ACCEPT. Clarifications for editor:

1/ Replace numbers with letters "a)", "b)", etc.
2/ Check indentation (s/b single level indentation)
3/ Replace period at the end of line 6 and 13 with a semicolon, add semicolons to the end of lines 7 and 9, and add a period to the end of line 14.

Cl **52** *SC* **52.9.13** *P* **559** *L* **4** # **27**
™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**
We will not use the PRBS-31 pattern.

SuggestedRemedy
Remove "PRBS 2^31-1" on line 4. Replace "49.X.X" with correct reference.

Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Use "test pattern 2 as defined in 52.9.1"

Cl **52** *SC* **52.9.13** *P* **559** *L* **46** # **229**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
Punctuation errors

SuggestedRemedy
Add commas preceding and following the words: "prior to the addition of the sinusoidal jitter".

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.9.13** *P* **559** *L* **9** # **30**
™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**
Item (4) points to the wrong section.

SuggestedRemedy
Change to 52.8.2.3.

Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Add new point to list: "The signal strength requirements of 52.8.2.2". Change item 4 reference to 52.8.2.3.

Cl **52** *SC* **52.9.14** *P* **561** *L* **37** # **232**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
Punctuation errors.

SuggestedRemedy
Replace the punctuation or add a semicolon after everyitem in this list with the exception of the last item.

Response *Response Status* **C**
ACCEPT. Clarification for editor: Replace periods with semicolons to the ends of lines 42, 48, 50 and 52. Add period to the end of page 562 line 3.

Cl **52** *SC* **52.9.14** *P* **561** *L* **37** # **231**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
Delete the words "a through f" as redundant and potentiallyproblematic in case that the number of items in the list is changed.

SuggestedRemedy
See comment.

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.9.14** *P* **561** *L* **48** # **143**
Dudek, Mike Cielo Communications

Comment Type **T** *Comment Status* **A**
We have changed to a system test including the CDR. It is not possible to located the center of the eye.

SuggestedRemedy
Delete "Locate the center of the eye with the BERT"

Response *Response Status* **C**
ACCEPT.

Cl **52** *SC* **52.9.14** *P* **561** *L* **7** # **31**
™hlen, Peter Optillion

Comment Type **T** *Comment Status* **R**
"Should" not strong enough.

SuggestedRemedy
Replace "should" with "need to".

Response *Response Status* **C**
REJECT. Need to is no stronger than should.

Cl **52** *SC* **52.9.14** *P* **561** *L* **8** # **230**
Rich Taborek Intel

Comment Type **E** *Comment Status* **A**
Delete this redundant sentence. The operative word "may" makesthis sentence redundant.

SuggestedRemedy
See comment.

Response *Response Status* **C**
ACCEPT. "May" in first line makes the sentence redundant.

Cl **52** *SC* **52.9.14** *P* **561** *L* **9** # **32**

™hlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

We need some text about which combination methods are applicable since there are combination methods that will not work.

SuggestedRemedy

Add "which maintain the integraity of the RF and data signal" after "methods" on line 9.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add "which maintain the integrity of the RF and data signal" after "methods" on line 9.

Cl **52** *SC* **52.9.14** *P* **562** *L* **36** # **305**

Lindsay, Tom — Stratos Lightwave

Comment Type **E** *Comment Status* **A**

Item 3 above Figure 52-31 (change-bar version) says that vertical eye closure is defined in 52.9.7. This is not the case.

SuggestedRemedy

Refer to 52.9.13 (change-bar version).

Response *Response Status* **C**

ACCEPT. Change "52.9.7" to "52.9.13".

Cl **52** *SC* **52.9.15** *P* **562** *L* # **290**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

This section must be consistent with Table 52-17 (non-change-bar version), which refers to TDP, which stands for transmitter and dispersion penalty.

SuggestedRemedy

Rename test clause to include "transmitter and dispersion penalty". Also, modify 1st line in a corresponding manner. Finally, modify "DP" in step 4 to be "TDP", 2 places.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.15** *P* **562** *L* **12** # **354**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

The formula is still mixed up in style.

SuggestedRemedy

Fix

Response *Response Status* **C**

ACCEPT. Insert "the following:" after "larger than". Then break equation out of embedded text (on a separate line), and use FrameMaker equation tool to clean up and put into correct format, and put the remaining text beginning "where x is.." after the equation.

Cl **52** *SC* **52.9.15** *P* **562** *L* **21** # **233**

Rich Taborek — Intel

Comment Type **E** *Comment Status* **A**

List style errors

SuggestedRemedy

List S/B lettered and follow single level indentationrules per style guide. Additionally, replace the punctuation or add asemicolon after every item in this list with the exception of the lastitem.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.15** *P* **562** *L* **24** # **117**

Dawe, Piers — Agilent

Comment Type **E** *Comment Status* **A**

Dispersion penalty should have been renamed to transmitter and dispersion penalty.

SuggestedRemedy

Replace 'dispersion penalty' with 'transmitter and dispersion penalty', and replace 'DP' with 'TDP' (3 occasions).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "dispersion penalty" with "transmitter and dispersion penalty" on line 5 (subclause title), line 7, line 19, line 24, line 25, and line 44. Also make this change on page 538 line 19.

Replace "DP" with "TDP" on lines 24 and 25 (3 occurences).

Cl **52** *SC* **52.9.15** *P* **562** *L* **34** # **234**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

List style errors

SuggestedRemedy

List S/B lettered and follow single level indentationrules per style guide. Additionally, replace the punctuation or add asemicolon after every item in this list with the exception of the lastitem.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.15** *P* **562** *L* **5** # **144**

Dudek, Mike Cielo Communications

Comment Type **T** *Comment Status* **A**

It was agreed at the last meeting that "Dispersion Penalty" is not an adequate description

SuggestedRemedy

Change "Dispersion penalty" and "DP"to "Transmitter and Dispersion penalty" and "TDP" in the title, on line 19, and in lines 23 and 24

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.15** *P* **562** *L* **9** # **145**

Dudek, Mike Cielo Communications

Comment Type **T** *Comment Status* **A**

For system testing it would be easier to use the internally generated pattern

SuggestedRemedy

Add "or the pattern defined in 52.9.1" to the end of the first paragraph of this subclause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change text to: "test pattern 1 or 2."

Cl **52** *SC* **52.9.15** *P* **563** *L* **2** # **34**

™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**

The definition of the sampling point should be the same as in the rest of the text.

SuggestedRemedy

Change "The decision threshold of the golden receiver shall be at the average signal level."to "The sampling instant is defined to occur at the eye center."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Reviewer believes that sampling instant refers to location in time, whereas other text refers to location in amplitude. Reviewer believes BOTH requirements should be stated.

Text changes to:
"The sampling instant and decision threshold amplitude are defined to occur at the eye center and at the average signal level, respectively."

Cl **52** *SC* **52.9.15** *P* **563** *L* **2** # **306**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Last sentence is not clear.

SuggestedRemedy

Suggest "The sensitivity of the golden receiver should be at least as good as the receiver specifications given in Table 52-18.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.3** *P* **547** *L* **51** # **17**

™hlen, Peter Optillion

Comment Type **T** *Comment Status* **A**

There are a lot of other patterns than the 2^23-1 PRBS that are appropriate for average power measurements. Copy wording from the center wavelength measurement.

SuggestedRemedy

Exchange "a PRBS sequence of 2^23-1" with "an appropriate PRBS or a valid 10GBASE-SR/LR/ER/SW/LW/EW signal, OC-192 signal, STM-64 signal or another representative test pattern."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Use: "test pattern 1 or an appropriate PRBS or a valid 10GBASE-SR/ LR/ ER/ SW/ LW/ EW signal, OC- 192 signal, STM- 64 signal or another representative test pattern" and wherever else this wording is used.

Cl **52** *SC* **52.9.4** *P* **548** *L* **10** # **215**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Correct note to indicate proper 10GBASE-R square wave frequencyas: "Note: this pattern generates a 1.25 GHz (10GBASE-W) or 1.29 GHz (10GBASE-R) square wave."

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT. Related comment #298.

Cl **52** *SC* **52.9.4** *P* **548** *L* **10** # **298**

Lindsay, Tom Stratos Lightwave

Comment Type **E** *Comment Status* **A**

Frequency of square is given only for WAN variant.

SuggestedRemedy

Modify note to say "Note: this pattern generates a 1.25 GHz square wave for 10GBASE-W, or 1.29 GHz square wave for 10GBASE-R.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See resolution to comment #215.

Cl **52** *SC* **52.9.4** *P* **548** *L* **40** # **105**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **R**

What does asymmetric mean here?

SuggestedRemedy

Spell it out. I guess an example of an asymmetric eye is one with DCD.

Response *Response Status* **C**

REJECT. "Asymmetric" seems very clear--it's not symmetric. The sentence refers to the effects of an asymmetric eye, not to the causes of the asymmetry.

Commenter is invited to resubmit the comment with a fuller clarification.

Cl **52** *SC* **52.9.4** *P* **548** *L* **6** # **214**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Clarify, correct and eliminate redundant information byrewriting this paragraph as: "This measurement may be made with the node transmitting a data pattern consisting of a repeating sequence of four zeros followed by four ones (i.e....11110000111100001111000011110000...)".

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT. Change text as indicated in comment.

Cl **52** *SC* **52.9.5** *P* **548** *L* # **18**

™hlen, Peter Optillion

Comment Type **E** *Comment Status* **A**

Use subscipts instead of P1 and P0.

SuggestedRemedy

See comment. Lines: 32, 34, 36, 39.

Response *Response Status* **C**

ACCEPT. Use subscripts for "0" and "1".

Cl **52** *SC* **52.9.5** *P* **548** *L* **23** # **216**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Clearly identify the "and" condition between list items a and b.

SuggestedRemedy

Replace the semicolon at the end of a) with "; and".

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.5** *P* **548** *L* **29** # **217**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Replace the period after the word "amplitude" with a semicolon.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Replace the period with a colon.

Cl **52** *SC* **52.9.5** *P* **548** *L* **31** # **218**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Replace the punctuation or add a semicolon after every item inthis list with the exception of the last item.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT. Clarification for editor: replace period with semicolon on line 31, and add semicolon to end of lines 33 and 35.

Cl **52** *SC* **52.9.5** *P* **548** *L* **38** # **297**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Test method refers to alternate method for measurement based on extinction ratio. While this may be reasonable for a good transmitter, this method clearly does not give the same answer for calibration of a stressed eye for Rx testing.

In general, they are not equivalent.

SuggestedRemedy

Remove paragraph on extinction ratio equivalence.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This method is correct. Change sentence starting "It should be noted…" to sentence: "It should be noted that an asymmetric optical eye and/or use of any pattern other than the recommended square wave will make this relation less accurate."

Cl **52** *SC* **52.9.6** *P* **550** *L* **33** # **106**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **R**

This whole section is much more wordy and detailed than the general style of this draft. Needs pruning!

SuggestedRemedy

Response *Response Status* **C**

REJECT. Comment has merit, but no specific remedy is suggested.
Commenter is invited to resubmit the comment with suggestions for specific text changes.

Cl **52** *SC* **52.9.6.1** *P* **550** *L* **41** # **299**

Lindsay, Tom Stratos Lightwave

Comment Type **E** *Comment Status* **A**

Period is in wrong place.

SuggestedRemedy

Fix period at end of 1st and 2nd to last sentences of subclause.

Response *Response Status* **C**

ACCEPT. Delete extra space before period on line 41, and add space after period on line 49.

Cl **52** *SC* **52.9.6.1** *P* **550** *L* **48** # **107**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

The sentence 'A low pass filter is used between the photodetector and the power meter to limit the noise measured to the passband appropriate to the data rate of interest' is more appropriate to a block code, not here.

SuggestedRemedy

Delete the sentence. Delete the 'Low Pass filter' in the diagram. Te diagram shows a blocking capacitor anyway and we can still keep the words about 1 MHz on the next page.

Response *Response Status* **C**

REJECT. Withdrawn.

Cl **52** *SC* **52.9.6.1** *P* **551** *L* **15** # **108**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

The sentence 'The frequency response of the O/E converter shall be higher than the cut-off frequency of the low pass filter.' should have been deleted when the next paragraph got changed from a 'filter' definition to a 'measurement apparatus' definition.

SuggestedRemedy

Delete the sentence.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.6.1** *P* **551** *L* **20** # **109**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R**

We changed the measurement bandwidth from 7.5 to 10 GHz wondering whether the bandwidth is hard-wired in the apparatus or in software. Now I have received a complaint that for some, it is hard wired. There is an argument for saying that if a receiver has better than minimum bandwidth it will suffer less ISI than a minimum bandwidth receiver and can afford to see more noise.

SuggestedRemedy

Consider changing 10 back to 7.5.

Response *Response Status* **C**

REJECT. Isn't the catch that we want to get the relaxation oscillation peak within the measurement bandwidth?

Cl **52** *SC* **52.9.6.2** *P* **551** *L* **29** # **301**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **R**

FC-PI describes using a scope as an option to using an RF power meter. Scopes are more common and this may help out more users.

SuggestedRemedy

Review FC-PI, Annex A.4.3, and include if appropriate.

Response *Response Status* **Z**

REJECT. Withdrawn

Cl **52** *SC* **52.9.6.2** *P* **551** *L* **3** # **352**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A**

The reference to Table 52-9 implies that the table has a optical return loss specification. It doesn't. The only specification in the table is for the return loss tied to the RIN measurement.

SuggestedRemedy

Make the reference explicit (either in the table or via text indicating relationship).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change table references to receive charateristics except for ER/EW where we refer to Table 52-38 cb.. Change dominate to dominant too.

Cl **52** *SC* **52.9.6.3** *P* **551** *L* # **19**

™hlen, Peter — Optillion

Comment Type **E** *Comment Status* **A**

Use subscripts instead of PN & PM.

SuggestedRemedy

See commment.

Response *Response Status* **C**

ACCEPT. Use subscripts for "N" and "M" in references to PN and PM on lines 41, 42, 45, 52, 54,

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Cl **52** *SC* **52.9.6.3** *P* **551** *L* **35** # **220**

Rich Taborek — Intel

Comment Type **E** *Comment Status* **A**

Replace the punctuation or add a semicolon after every item inthis list with the exception of the last item.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT. Clarification for editor: Replace period with semicolon at the end of lines 36, 38, 39, 41, and 42.

Cl **52** *SC* **52.9.6.3** *P* **551** *L* **35** # **219**

Rich Taborek — Intel

Comment Type **E** *Comment Status* **A**

Need to introduce the list properly.

SuggestedRemedy

Add the following sentence after the title to introducethe list: "Use the following procedure to test relative intensity noiseoptical modulation:"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add the following sentence at the beginning of the paragraph/list: "Use the following procedure to test relative intensity noise optical modulation amplitude:"

Cl **52** *SC* **52.9.6.3** *P* **551** *L* **43** # **110**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Recipe does not match following equations, which I think are right.

SuggestedRemedy

Change 'detector current and electrical noise' to 'electrical signal power and noise power'.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.9.6.3** *P* **551** *L* **45** # **221**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Put equation in the proper format per the IEEE style guide.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Use FrameMaker equation tool to clean up equation and put it in proper format.

Cl **52** *SC* **52.9.6.3** *P* **551** *L* **52** # **222**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Delete extraordinarily large space preceding equal sign. Globalchange.

SuggestedRemedy

See comment. Global change.

Response *Response Status* **C**

ACCEPT. Clarification for editor: Delete spaces before "=" sign on page 551 lines 52 and 54, and page 552 line 1. Do not perform global search and replace.

Cl **52** *SC* **52.9.7** *P* **552** *L* **12** # **224**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

"type W" and "type R" are not defined. Replace with "10GBASE-W"and "10GBASE-R", respectively. Global change.

SuggestedRemedy

See comment. Global change.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See resolution to comment #186.

Cl **52** *SC* **52.9.7** *P* **552** *L* **14** # **302**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Last sentence of 1st paragraph is in conflict with intent to replace response time specs with mask requirements.

SuggestedRemedy

Remove reference to response time in this sentence, if appropriate.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change sentence to "The transmit mask does not define the jitter specification."

Cl **52** *SC* **52.9.7** *P* **552** *L* **18** # **335**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

To trigger a scope for an eyemask, clock recovery is required. Perform this with a golden PLL for consistency with jitter methods.

SuggestedRemedy

Add a paragraph "A golden PLL shall be used to trigger the scope for mask measurements. It shall have a low frequency corner of less than or equal to 4 MHz and a slope of 20 dB/decade."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add a paragraph "A golden PLL should be used to trigger the scope for mask measurements. It should have a low frequency corner of less than or equal to 4 MHz and a slope of 20 dB/decade."

Cl **52** *SC* **52.9.7** *P* **552** *L* **7** # **223**

Rich Taborek Intel

Comment Type **E** *Comment Status* **A**

Delete wording in title in parentheses (as well as theparentheses. The text is clear. Global change.

SuggestedRemedy

See comment. Global change.

Response *Response Status* **C**

ACCEPT. Clarification for editor: Delete "(transmit eye)" on page 552 line 7. Do not perform global seach and replace.

Cl **52** *SC* **52.9.7** *P* **553** *L* **24** # **322**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

As this is a system level spec, and Tx/Rx crosstalk can affect system performance, sensitivity, jitter, and mask testing should require data traffic flowing in the opposite direction.

SuggestedRemedy

Add a sentence at the end of the subclause "During transmitter mask testing, asynchronous data shall be flowing into the optical receiver of the system under test. This data shall be consistent with normal signal properties and content."

(We could get very specific on describing the signal...).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. As per #321.

Add a sentence at the end of the subclause:

"The measurements in this section should be satisfied with asynchronous data flowing into the optical receiver of the system under test. This data should be consistent with normal signal properties and content."

Cl **52** *SC* **52.9.8** *P* **553** *L* **26** # **303**

Lindsay, Tom — Stratos Lightwave

Comment Type **E** *Comment Status* **A**

With the intent of replacing response time specs and testing with mask specs and testing, this section may not be required.

SuggestedRemedy

If appropriate, remove subclause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Handled by another comment.

Cl **52** *SC* **52.9.9** *P* **553** *L* **43** # **23**

™hlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

Since the stressed sensitivity has merged with the jitter test, which is now not only a jitter test, we need some more explanatory text. The sensitivity is a critical figure of receivers, and just deleting this paragraph (which we could do without breaking anything in the standard) would confuse all readers not present at late night comment resolution sessions.

SuggestedRemedy

Suggested new text:
"The receiver sensitivity for an ideal input signal is not normative although the number is supplied for information in the receiver specification.Instead receivers are tested with a conditioned input signal where both vertical eye closure and jitter has been artificially added according to 52.9.13. When tested according to 52.9.11 the stressed sensitivity shall meet the specifications in Table 52?14 for 10GBASE-SR/SW, in Table 52?23 for 10GBASE-LR/LW, and in Table 52?29 for 10GBASE-ER/EW."Wordsmithing welcome!

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Merger of stressed sensitivity and jitter tolerance testing would benefit from introduction and general clean-up. Wordsmithing required for overall section and beyond the scope of this proposed response.

Suggested new text:
"The receiver sensitivity which is defined for an ideal input signal is informative. Receivers are tested with a conditioned input signal where both vertical eye closure and jitter have been added according to 52.9.13. When tested according to 52.9.11 the stressed sensitivity shall meet the specifications in Table 52?14 for 10GBASE-SR/SW, in Table 52?23 for 10GBASE-LR/LW, and in Table 52?29 for 10GBASE-ER/EW."

Cl **52** *SC* **52.9.9** *P* **553** *L* **43** # **309**

Lindsay, Tom — Stratos Lightwave

Comment Type **E** *Comment Status* **A**

This receiver section is placed between transmitter tests and should be moved.

SuggestedRemedy

Move this paragraph to after 52.9.10.

Response *Response Status* **C**

ACCEPT. Clarification for editor: Move the entire subclause with title to follow the existing subclause 52.9.10.

Cl **52** *SC* **6** *P* **436** *L* **24 - 24** # **46**

Michael J. Hackert — Corning

Comment Type **E** *Comment Status* **R**

these lines appear to have supposed to be deleted and are not a complete sentence. Either rewrite them so that they are proper English or delete them.

SuggestedRemedy

Delete these lines.

Response *Response Status* **C**

REJECT. The sentence fragment is an artifact of poor pagination (sentence starts several pages prior to these lines). Repaginate as required, but don't modify the sentence.

Cl **52** *SC* **Figure 52-10** *P* **537** *L* **10** # **132**

Dudek, Mike — Cielo Communications

Comment Type **E** *Comment Status* **A**

Clarification of the figure would help

SuggestedRemedy

Change vertical scale title to "attenuator" or "attenuation of attenuator"

Response *Response Status* **C**

ACCEPT. Change vertical scale from "Attenuation" to "Attenuator".

Cl **52** *SC* **Figure 52-14** *P* **557** *L* **37** # **319**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Signal characterization blocks could be more accurate.

SuggestedRemedy

Modify O/E, PLL, and BERT blocks to the same detail and accuracy as in Figure 52-13 (non-change-bar version).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Remove test pattern for both figures, have optical TP3 input going into Signal Characterization block with pointer back to figure 52-13 which will have a dotted labelled box around the Golden PLLL and Golden Rx and BERT.

Cl **52** *SC* **Figure 52-17** *P* **549** *L* # **300**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **R**

Figure assumes pattern rate trigger. Although appropriate in GBE clause 38, which was written more as a component standard, this trigger is generally not available in a system test and clock recovery will be required - might as well assume a bit rate trigger.

SuggestedRemedy

Redraw the figure as an eye pattern showing cursors along the topline and baseline, as in Figure 52-15.

Response *Response Status* **Z**

REJECT. Withdrawn

Cl **52** *SC* **Figure 52-29** *P* **561** *L* **25** # **33**

™hlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

The figure does not reflect the changes made to the text.

SuggestedRemedy

Change the figure to illustrate the method described in the text.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change involves combining signals optically.

Delete RF power combiner. Add an extra laser, and add an optical power combiner. Pattern generator output goes to second laser and combined where figure says "Fiber".

Cl **52** *SC* **Figure 52-29** *P* **561** *L* **29** # **142**

Dudek, Mike — Cielo Communications

Comment Type **T** *Comment Status* **A**

The text was changed per an approved comment however the figure was not changed.

SuggestedRemedy

Change figure 52-29 to agree with the text.in a) below the figure Delete "RF power combiner" Change to "and laser sources. The digital optical source....."

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **Figure 52-29** *P* **561** *L* **31** # **304**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

This is drawn for a component test.

SuggestedRemedy

Remove BERT and clock input, replace with BER monitor. Refer to FC-PI, Annex A.7.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Remove clock, combine BERT and DUT into one big box labelled "System Under Test".

Cl **52** *SC* **Figure 52-39** *P* **561** *L* **26** # **116**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Figure needs revision to align with test principles in paragraph above.

SuggestedRemedy

Revise figure 52-29 to align with test principles in paragraph above. Also text below needs revision.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Handled by another comment.

Cl **52** *SC* **Table 52.8** *P* **520** *L* **26** # **127**

Dudek, Mike — Cielo Communications

Comment Type **E** *Comment Status* **A**

Incorrect grammar in title

SuggestedRemedy

Change "for over" to "for"

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **Table 52-10** *P* **522** *L* **1** # **80**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Check SR/SW Tx triple trade off table.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Table and figure do not agree. Change authorized to coordinate table and figure as per link model.

Cl **52** *SC* **Table 52-13** *P* **526** *L* **23** # **286**
Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Stressed Rx sensitivity should have been increased by +0.4 dB from draft 3.0 comment resolution, and a footnote should have been added per Table 52-18.

SuggestedRemedy

Implement changes per comment.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **Table 52-14** *P* **527** *L* **11** # **77**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Check SR/SW Rx sensitivity value. May need to allow for jitter penalty.

SuggestedRemedy

Response *Response Status* **C**

REJECT. No numbers. Sent to Serial PMD ad hoc for resolution.

Cl **52** *SC* **Table 52-14** *P* **527** *L* **15** # **78**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Check SR/SW stressed Rx sensitivity value. May need to allow for jitter penalty.

SuggestedRemedy

Response *Response Status* **C**

REJECT. No numbers. Sent to Serial PMD ad hoc for resolution.

Cl **52** *SC* **Table 52-14** *P* **527** *L* **17** # **79**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Check SR/SW vertical eye closure penalty value.

SuggestedRemedy

Response *Response Status* **C**

REJECT. No specific remedy suggested. Not clear what value should be or even how value should be derived. This applies to all variants. Ad hoc topic.

Cl **52** *SC* **Table 52-16** *P* **528** *L* **11** # **81**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Check SR/SW link power penalties.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Fix numbers.

Editor's note: Serial PMD ad hoc will provide replacement values.

Cl **52** *SC* **Table 52-16** *P* **528** *L* **11** # **82**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Unallocated margin is out of date.

SuggestedRemedy

Unallocated margin should now read 0.23 dB in all columns: the rest has been allocated in the row above.

Response *Response Status* **C**

REJECT. Unallocated margin is gone.

Cl **52** *SC* **Table 52-16** *P* **528** *L* **13** # **287**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **D**

Table row labeled "Additional insertion loss allowed" and corresponding footnote make no sense. There is no room in the budget for these values unless something else gives.

SuggestedRemedy

Option A: Clearly explain what this row and footnote are for.

Option B: Delete the row and footnote.

Response *Response Status* **Z**

PROPOSED REJECT. Withdrawn.

Cl **52** *SC* **Table 52-16** *P* **528** *L* **14** # **129**

Dudek, Mike — Cielo Communications

Comment Type **T** *Comment Status* **A**

Comment 79 on draft 3.0 was not fully implemented

SuggestedRemedy

Change all the Unallocated margin in power budgets to 0.23dB

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Remove unallocated margin row in clause 52. Rename power penalties row to "Allocation for penalties". Change title of all tables that contain the words "10GBASE-X worst case link power budget and penalties" to "10GBASE-X link power budgets". (Implement comment #79 on D3.0)

Allocation for penalties = BUDGET - losses.

Cl **52** *SC* **Table 52-17** *P* **538** *L* **19** # **133**

Dudek, Mike — Cielo Communications

Comment Type **T** *Comment Status* **A**

Dispersion penalty is an incorrect term

SuggestedRemedy

Chabge "Dispersion penalty" to "transmitter and dispersion penalty" as agreed at the last meeting.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **Table 52-18** *P* *L* # **340**

Ferrant, Jean Loup — Alcatel

Comment Type **T** *Comment Status* **R**

In Table 52-18, the clock tolerance should be 20 ppm for 10GBASE-LW and 100 ppm for 10GBASE-LR.

SuggestedRemedy

fix

Response *Response Status* **C**

REJECT. Referring to wrong table.

Cl **52** *SC* **Table 52-21** *P* **533** *L* **29** # **11**

™hlen, Peter — Optillion

Comment Type **E** *Comment Status* **A**

See remedy.

SuggestedRemedy

Add "RMS" before "Spectral width (nm)" for clarity. Make the same change for 850 nm in table 52-10.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **Table 52-21** *P* **534** *L* **1** # **89**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R**

Check LR/LW Tx triple trade off table.

SuggestedRemedy

Response *Response Status* **C**

REJECT. No change to the text is suggested. However suggest that this activity should be performed by the serial ad hoc.

Cl **52** *SC* **Table 52-23** *P* **535** *L* **14** # **84**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Reconcile wavelength range with Table 52-21 (triple trade off).

SuggestedRemedy

Response *Response Status* **C**

ACCEPT. Table 52-19 also should be consistent. Choose 1260nm for all these places.

Y: 14
N: 0
A: 5

Cl **52** *SC* **Table 52-23** *P* **535** *L* **15** # **85**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Check Average receive power (max).

SuggestedRemedy

Set Average receive power (max). at 5 dB above highest min. mean Tx power for 6 dB extinction ratio.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #130.

Cl **52** *SC* **Table 52-23** *P* **535** *L* **16** # **126**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Didn't we mean to we add a damage limit? See D3.0 comments #300, 301: ACCEPT IN PRINCIPLE. Rather than another line in the table, we would prefer to add words in a footnote to the table to say that the damage spec and overload spec are the same.

SuggestedRemedy

Add footnote about damage limit.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See comment #125.

Cl **52** *SC* **Table 52-23** *P* **535** *L* **16** # **83**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Didn't we mean to we add a damage limit? See D3.0 comments #300, 301: ACCEPT IN PRINCIPLE. Rather than another line in the table, we would prefer to add words in a footnote to the table to say that the damage spec and overload spec are the same.

SuggestedRemedy

Add footnote about damage limit.

Response *Response Status* **C**

REJECT. Duplicate of #126, see #126 for response.

Cl **52** *SC* **Table 52-23** *P* **535** *L* **17** # **86**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Check LR/LW Rx sensitivity value. May need to allow for jitter penalty.

SuggestedRemedy

Response *Response Status* **C**

REJECT. Need a remedy though. Ad hoc to examine and recommend new values.

Cl **52** *SC* **Table 52-23** *P* **535** *L* **21** # **289**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **R**

Stressed Rx sensitivity should have been increased by +0.4 dB from draft 3.0 comment resolution, and a footnote should have been added per Table 52-18.

Also, double check value (it is 1 dB different than from draft 3.0). Is this correct?

SuggestedRemedy

Implement per comment. Is value correct?

Response *Response Status* **C**

REJECT. Current value is correct. See #286 for 0.4 dB addition and final value.

Cl **52** *SC* **Table 52-23** *P* **535** *L* **21** # **87**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Check LR/LW stressed Rx sensitivity value: thought very demanding by some. May need to allow for jitter penalty.

SuggestedRemedy

Response *Response Status* **C**

REJECT. Sent to Serial PMD ad hoc for resolution.

Cl **52** *SC* **Table 52-23** *P* **535** *L* **23** # **88**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Check LR/LW vertical eye closure penalty value.

SuggestedRemedy

Response *Response Status* **C**

REJECT. No change to the text is suggested. However suggest that this activity should be performed by the serial ad hoc.

Cl **52** *SC* **Table 52-24** *P* **535** *L* **47** # **131**

Dudek, Mike Cielo Communications

Comment Type **T** *Comment Status* **A**

The channel insertion loss is inconsistent with table 52-38. and the note on the conditions used for calculation is no longer valid.

SuggestedRemedy

Change Link power budget from 10 dB to 9.44dB.Change Channel Insertion loss from 7.04dB to 6.67dB
Change Link power penalties from 2.46dB to 2.27dB
Change footnote to read "The specification for a Tx wavelength of 1265nm with a spectral width of 0.2nm in table 52-21 is used to calculate link power budget,channel insertion loss, link power penalties and unallocated margin in this table.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Need to add spectral width used to calculate values shown. Values may need to be recalculated and box used to calculate table clearly specified (could change).

6.5 changes to 7.0 in table 52-38 (cb) for 1310 nm 10 km insertion loss. Footnote under same table "Channel insertion loss is calculated using cable length, maximum attenuation and two connections at 0.75 dB each for MMF, and 1.0 dB each for SMF"

Change Link power budget from 10 dB to 9.94dB.Change Channel Insertion loss from 7.04dB to 7.17dB
Change Link power penalties from 2.46dB to 2.27dB
Change footnote to read "The specification for a Tx wavelength of 1265nm with a spectral width of 0.2nm in table 52-21 is used to calculate link power budget, channel insertion loss and link power penalties in this table."

To 52.14.2.1 cb add paragraph:
The maximum link distances for single mode fiber are calculated based on an allocation of 2.0 dB total connection and splice loss at 1310 nm.

All values of OMA in table 52-21 are increased by 0.5 dB and also in the figure that plots this.

Cl **52** *SC* **Table 52-24** *P* **535** *L* **48** # **90**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Check LR/LW link power penalties. Need to allow for reflection noise and, to be decided, jitter penalty.

SuggestedRemedy

Response *Response Status* **C**

REJECT. Sent to Serial PMD ad hoc for resolution.

Cl **52** *SC* **Table 52-24** *P* **535** *L* **49** # **91**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Revise LR/LW unallocated margin following changes to link power penalties etc.

SuggestedRemedy

Response *Response Status* **C**

REJECT. No unallocated margin.

Cl **52** *SC* **Table 52-27** *P* **538** *L* **19** # **92**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**

Dispersion penalty has already been renamed to transmitter and dispersion penalty (as in footnote below).

SuggestedRemedy

Replace 'Dispersion penalty' with 'Transmitter and dispersion penalty'

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **Table 52-27** *P* **538** *L* **26** # **93**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Return loss of -21 dB was to represent 3 reflections at -26 dB each. Should we have added fields not powers?

SuggestedRemedy

Check if -21 is the right number. By another comment, this requirement should align with ORL to be added to cabling table 52-39.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This group chooses 21 dB.

Cl **52** *SC* **Table 52-29** *P* **540** *L* **12** # **94**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Check ER/EW Rx sensitivity value.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change value to (current value + 1 dBm). (reduces unallocated margin to 0.8 dB) - value = -15.39 dBm.

Cl **52** *SC* **Table 52-29** *P* **540** *L* **16** # **95**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Check ER/EW stressed Rx sensitivity value.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Checked, it's good.

Cl **52** *SC* **Table 52-29** *P* **540** *L* **4** # **52001**
Kabal, David

Comment Type **E** *Comment Status* **A**

Two EW's in table heading.

SuggestedRemedy

First is EW, second is ER.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **Table 52-30** *P* **540** *L* **47** # **96**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Check ER/EW link power penalties. May need to allow for jitter penalty, to be decided.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Need numbers. Send to Serial PMD ad hoc for verification. (need to look at Rx sensitivity)

Cl **52** *SC* **Table 52-30** *P* **540** *L* **49** # **97**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Check ER/EW unallocated margin.

SuggestedRemedy

Response *Response Status* **C**

REJECT. It's gone.

Cl **52** *SC* **Table 52-30** *P* **541** *L* **1** # **134**

Dudek, Mike — Cielo Communications

Comment Type **E** *Comment Status* **A**

The footnote should be clarified.

SuggestedRemedy

Change footnote to "A wavelngth of 1565nm and 3dB tranmitter and dispersion penalty (TDP)is used to calculate channel insertion loss, link power penalties, and unallocated margin."

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **Table 52-34** *P* **546** *L* **8** # **115**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Serial PMD ad hoc members are uneasy about adding this much extra SJ for test purposes.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See comment #15.

Cl **52** *SC* **Table 52-37** *P* **556** *L* **3** # **113**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

This table is hard to understand and needs revision per comment resolution last time.

SuggestedRemedy

Split column 2 (dispersion) of table into 'Minimum' and 'Maximum'. Allocate points i) and ii) appropriately.

Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **Table 52-38** *P* **565** *L* **10** # **119**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Check channel insertion losses. I think 1310 loss was meant to be 7 though 6.5 is a good number too. Needs more specific detail about assumed connector loss which varies between LR/LW and ER/EW.

SuggestedRemedy

Check channel insertion losses. Add row to table: Losses allowed for connectors.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #131.

Cl **52** *SC* **Table 52-38** *P* **565** *L* **11** # **294**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **R**

Some of the channel insertion values don't match the model for nominal wavelengths. Most differences are trivial, but the difference at 1310 nm is 0.45 dB.

This is based on 10GEPBud2_4_1.xls.

SuggestedRemedy

Should be:
1.60, 1.62, 1.74, 1.80, 2.55(ok), 6.95, 13.1. I am not sure about the last (1550) value.

Response *Response Status* **C**

REJECT. Withdrawn. Dealt with elsewhere.

Cl **52** *SC* **Table 52-39** *P* **565** *L* **30** # **35**

™hlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

The "0.4 or 0.5" is still quite confusing. I can see the need for to numbers only if the connector loss allocation is different for the different cases.

SuggestedRemedy

Two options:
1. If the connector loss allocation is the same for the 0.4 and the 0.5 we don't really need the 0.4 in the box. Explain that there are 2(?) different _cable_ standards using the same fiber which both can be used.
2. If the connector loss allocation is different for the 0.4 and 0.5 dB/km cable type, we need to differentiate between them. Split the column (we might want to change the order of row 1-2. Describe the different cable types explicitly and the associated connector insertion loss.
3. Specify the total attenuation of the 1310nm channel as it is done in the 1550nm case.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Keep footnote for 0.5. Add footnote for 0.4:

"For the single mode case, the 0.4 dB/km attenuation for optical fiber cables is defined in ITU-T G.652"

Cl **52** *SC* **Table 52-39** *P* **565** *L* **44** # **74**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Adding ORL for 1550 nm. Consensus of PMD ad hoc call was that we should add an Optical Return Loss spec for cabling for 1550 PMDs. This is to protect the trsnmitter from excessive back reflection caused e.g. by multiple discrete reflections which each are individually within spec. Proposed remedy would be a relaxation of 3 dB vs. telecomms practice (-24 dB).

SuggestedRemedy

Add new row 'Optical Return Loss' to Table 52-39. All entries to be N/A except 1550 nm, -21 dB proposed.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Table should be 52-38 cb (channel characteristics) not 52-39 (fiber optic cabling). Change is accepted.

Cl **52** *SC* **Table 52-8** *P* **520** *L* **31** # **76**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Some fiber/length values give nominal ISI >3.6 dB which was thought unacceptable for 1GE.

SuggestedRemedy

Either: change SR/SW rise time (or equivalently, eye mask) to 31.5 ps, or: reduce operating ranges for older fiber types.(new ranges would be???)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Same resolution as #66

Cl **52** *SC* **Table 52-9** *P* **521** *L* **13** # **150**

Dudek, Mike — Cielo Communications

Comment Type **T** *Comment Status* **A**

It appears that it is possible to control the risetimes with the eye mask allowing trade-off's between risetime and Dj (including DCD)

SuggestedRemedy

Remove the risetime specification from the table.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #66 (note, this was reassigned to Clause 52 from 00).

If the rise/fall time specification is removed, what value do we use for the link model calculations? Discussion.

Cl **52** *SC* **Table 52-9** *P* **521** *L* **16** # **125**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Didn't we mean to we add a damage limit? See D3.0 comments #300, 301: ACCEPT IN PRINCIPLE. Rather than another line in the table, we would prefer to add words in a footnote to the table to say that the damage spec and overload spec are the same.

SuggestedRemedy

Add footnote about damage limit.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add footnote for SR/SW and LR/LW PMDs in receive specification to "The receiver shall be able to tolerate continuous exposure to an optical input signal having a power level equal to the Average Receive Power (max) plus at least 1 dB".

Cl **52** *SC* **Table52-19, 52-23** *P* **530** *L* **13** # **130**

Dudek, Mike — Cielo Communications

Comment Type **T** *Comment Status* **A**

The allowance for variation in transmitter output power is larger than necessary creating an unnecessarily high receiver overload requirement.

SuggestedRemedy

Change the Average Launch power (max) in table 52-19 and the Average Receive Power (max) in table 52-23 from +1dBm to 0dBm.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Use 0.5 dBm.

Y: 7
N: 0
A: 17

Note: Goes back to Serial ad hoc.

Cl **53** *SC* *P* *L* # **332**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Jitter measurement level is not defined. Needs to represent Rx operation, which might not be at the waist of the eye.

SuggestedRemedy

In clauses 53.9.9.1 (and 53.9.10.1), add a sentence "Jitter shall be measured (calibrated) at the average value of the overall optical waveform. This can be accomplished by with AC coupling to ground and measuring at ground."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add this sentence to 53.9.9.1
"Jitter shall be measured at the average value of the overall optical waveform. This can be accomplished by AC coupling."

Add this sentence to 53.9.10.1
"Jitter shall be calibrated at the average value of the overall optical waveform. This can be accomplished by AC coupling."

Cl **53** *SC* *P* *L* # **327**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

All jitter and mask measurements and/or calibrations should be done with a golden PLL or high-pass filter. Also, since both use 8B10B, same rate, 4-lanes, etc. the frequency response of that filter should match XAUI requirements to enable common test methods and IC blocks.

SuggestedRemedy

1. Add a paragraph to the end of clause 53.8.4 "A golden PLL shall be used for measurement of the transmit jitter. It shall have a low frequency corner of less than or equal to 1.875 MHz and a slope of 20 dB/decade."
2. In the last paragraph of clause 53.8.5.3, reword the 2nd sentence "A golden PLL shall be used for verification of the input jitter. It shall have a low frequency corner of greater than or equal to 1.875 MHz and..." (complete sentence as is).
3. In clause 53.9.9.1, reword the 3rd sentence of the 2nd paragraph "A golden PLL shall be used for clock recovery."
4. In clause 53.9.10.1, remove the 2nd to last sentence of the 2nd paragraph. Also, change the wording of the last sentence to "A golden PLL meeting the requirements of 53.8.5.3 shall be used."
5. In section 53.9.6, add paragraph "A golden PLL shall be used to trigger the scope for mask measurements. It shall have a low frequency corner of less than or equal to 1.875 MHz and a slope of 20 dB/decade."
6. Be sure that Table 53-15 and Figure 53-7 reflect the 1.875 MHz corner frequency.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* *P* *L* # **331**

Lindsay, Tom — Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Clause 52 is heading towards removing rise/fall time specifications and relying on only using mask specifications. This is something clause 53 may want to track and consider.

SuggestedRemedy

Track and consider clause 52 work on eliminating rise/fall specifications.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* *P* *L* # **325**

Lindsay, Tom — Stratos Lightwave

Comment Type **E** *Comment Status* **A**

Besides jitter sections, much of clause 53 methods are identical to clause 52 methods from draft 3.0. Clause 52 methods may have changed and may change in the future.

SuggestedRemedy

1. Clause 53.9.4 should reference clause 52.9.5.
2. Clause 53.9.5 should reference clause 52.9.6.
3. Review other references to clause 52 to be sure they are correct (I did not do an exhaustive review).
4. Generally, suggest that clause 53 review clause 52 status and change accordingly.

(Note - the clause #'s used here are from the non-change-bar version).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Clause 53 is tracking Clause 52 and its changes.

Cl **53** *SC* *P* *L* # **329**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

As this is a system level spec, and crosstalk can affect system performance, sensitivity, jitter, and mask testing should require data traffic flowing in the opposite direction and on all lanes.

SuggestedRemedy

Somewhere in each section 53.9.6, 53.9.9, and 53.9.10, add a sentence "During testing, data shall be flowing in all 8 lanes of the system under test. Data flowing opposite to the direction being tested shall be asynchronous, and shall be consistent with normal signal properties and content."

(We could get very specific on describing the signal...).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Clause 53 will adopt the methodology of clause 52 with regard to the state of the receiver with the transmitter under test and the state of the transmitter with the receiver under test.

Cl **53** *SC* *P* *L* # **284**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Value for A has changed in clause 52 to -1.75. This reflects transition density and dual-Dirac distribution for DJ.

For 8B10B, transition density is higher than for scrambled data. Best value for A is -1.67, compromise value would be -1.7.

SuggestedRemedy

Option A:
Change value for A to -1.67.

Option B:
If 53 wants to have the same value as clause 52, then both groups should compromise their values to A = -1.7.

These changes should be applied to sections 53.8.4 and 53.8.5.3.

Response *Response Status* **C**

ACCEPT.

Use -1.67

Cl **53** *SC* *P* *L* # **324**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

The entire section on jitter has been copied from clause 52 of draft 3.0. However, clause 52 jitter sections have changed to draft 3.1, and further comments may change them significantly more for revision 3.2.

This comment works in conjunction with other comments to follow that recommend important changes from clause 52 requirements. Therefore, implement this comment first, then deal with the other comments as changes.

SuggestedRemedy

Copy the entire jitter sections from clause 52, revision 3.2 (when completed). This includes 52.8 and 52.9.9-12. Modify for 3.125 rate, etc.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* *P* *L* # **330**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Clause 48B is written to support jitter testing for XAUI. Since both 47 and 53 use 8B10B, same rate, 4-lanes, etc. commonality should enable common test methods and IC blocks.

SuggestedRemedy

At the ends of clauses 53.9.9.1 and 53.9.10.1, add "Annex 48B contains both theoretical and practical information on jitter testing."

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* *P* *L* # **328**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

All jitter and mask measurements and/or calibrations should be done with CJPAT as defined in Annex 48A. This is the same data pattern specified in clause 47. Since both 47 and 53 use 8B10B, same rate, 4-lanes, etc. commonality should enable common test methods and IC blocks.

SuggestedRemedy

Reference CJPAT in clauses 53.8.4.2 and 53.8.5.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change 53.8.4.2 and 53.8.5.1 to read

"Test patterns for 10GBASE-LX4 are specified in Annex 48A. Compliance with the standard is not affected by the usage of Annex 48A test patterns."

Cl **53** *SC* **53** *P* **576** *L* **All** # **356**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A**

There is a fair amount of text that was "lifted" from clause 52. A number of changes were made to said text in 52, which are not reflected in 53. Example: see definition of Signal Detect in Table 53-6 and compare to Table 52-5. This is especially true with the new jitter methodology/specifications/measurement procedures.

Another example is line 1 on page 600.

SuggestedRemedy

Either:
1. Write the material in clause 52 so that clause 53 can reference it without redundancy (thereby assuring that these can't get out of sync -- this is the better solution) or
2. Do a line by line comparison and make sure these are in sync.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.1** *P* **446** *L* **1** # **99003**

Jonathan Thatcher World Wide Packets

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

When the Higher Speed Study Group put forth a PAR to 802 and the IEEE standards board for approval to create a standard, we committed that: "10 Gb/s Ethernet technology will be demonstrated during the course of the project, prior to the completion of the sponsor ballot. " This requirement was added to our PAR because, at the time of writing the PAR, there was no evidence that PMD and PMA technology was feasible which simultaneously meet the other four criteria. Feasibility means that technology must be demonstrated with reports and working models; proven technology; reasonable testing and with confidence in reliability. Historically, Ethernet has been successful, in part, because it "leveraged" technology that existed at the time of the writing of the PAR. No such 10 Gigabit PHY technology existed in November 1999. While the time for which this must be completed is still a couple of meeting cycles away, it is not clear that sufficient effort is being made to validate the specifications; measurement procedures; engineering analysis and judgment and to assure that the PMD meets the requirement we set for ourselves in time for the May 2001 cutoff for last technical change.

SuggestedRemedy

DEMONSTRATE the technical feasibility of the technology specified in Clause 53 for the 10GBASE-LX4 PMD, while ensuring the attainment of the other 4 criteria. Or, change the requirements/specifications such that this goal can be achieved.

Response *Response Status* **U**

REJECT.

There is no specific remedy proposed.

Cl **53** *SC* **53.1** *P* **576** *L* **1** # **153**

Grow, Robert Intel

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

D3.0 comment #852 is both valid and pertinent. Technical feasibility of the interface defined in this clause has not been demonstrated.

SuggestedRemedy

The PMD type must be demonstrated as technically feasible per our commitment in the five criteria.

Response *Response Status* **U**

REJECT.

Per the Technical Feasibility Ad-hoc Group, the criteria for meeting the technical feasibility objectives of the 802.3ae is being addressed.

Cl **53** *SC* **53.10.3** *P* **492** *L* **45** # **534419**

Eric Grann

Comment Type **T** *Comment Status* **A**

non-change bar version

redundant shall

SuggestedRemedy

Change paragraph to read:
"It is recommended that proper installation practices, as defined by applicable local codes and regulations, be followed in every instance in which such practices are applicable."

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.15** *P* **614** *L* **all** # **362**

Jonathan Thatcher World Wide Packets

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

The PICS are not in a completed state. These are not ready for sponsor ballot. TBD's must be removed. The Optional status of some Items is not correct (e.g. *OFP).

SuggestedRemedy

Complete the work; have these reviewed in detail at the July meeting so that we have no comments during the next recirculation.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.3** *P* **579** *L* **1** # **344**

Justin Chang Quake Technologies

Comment Type **T** *Comment Status* **A**

Need to include primitive for PMD_LOOPBACK.indicate based on resolution to draft3.0 comment #742, using alexander_2_0501.pdf.

SuggestedRemedy

Add PMD_LOOPBACK.indicate in the list of primitives and its description similar to 52.1.1.4

Response *Response Status* **C**

ACCEPT.

Copy section 52.1.1.4 into clause 53.

Cl **53** *SC* **53.3.3.3** *P* **580** *L* **11-24** # **345**

Justin Chang Quake Technologies

Comment Type **E** *Comment Status* **A**

Instead of "RECEIVE_SIGNAL_OK" use "SIGNAL_DETECT" for consistancy to clause 52 and per resolution of comment #742 using alexander_2_0501.pdf. The group decided to keep SIGNAL_DETECT only for the PMD Signal.indicate but for all others ... the term would be "SIGNAL_OK".

SuggestedRemedy

Replace all occurances of "RECEIVE_SIGNAL_OK" with "SIGNAL_DETECT".

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.5.10** *P* **586** *L* **20** # **357**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**

Language "all transmitters in each lane" is confusing.

SuggestedRemedy

Do you mean "all the optical transmitters (e.g. all lanes) to be disabled." ?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change sentence to read
"is optional and allows all of the optical transmitters to be disabled."

Cl **53** *SC* **53.5.10** *P* **586** *L* **20** # **146**

Dudek, Mike Cielo Communications

Comment Type **E** *Comment Status* **A**

Typo

SuggestedRemedy

Change to "optional

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.5.4** *P* **473** *L* **36** # **534401**

Brad Booth

Comment Type **T** *Comment Status* **A**

Non-change bar version.

Last sentence of the first paragraph is what the shall statement should apply to, not the first sentence of the second paragraph.

SuggestedRemedy

Change first two paragraphs to read:

The Global PMD Receive Signal OK function shall report the state of RECEIVE_SIGNAL_OK via the PMD service interface. The RECEIVE_SIGNAL_OK parameter is signaled continuously, while the PMD_SIGNAL.indicate message is generated when a change in the value of RECEIVE_SIGNAL_OK occurs.

RECEIVE_SIGNAL_OK shall be a global indicator of the presence of optical signals on all four lanes. The PMD receiver is not required to verify whether a compliant 10GBASE-LX4 signal is being received. This standard imposes no response time requirements on the generation of the RECEIVE_SIGNAL_OK parameter.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.5.7** *P* **586** *L* **14** # **534402**

Brad Booth

Comment Type **T** *Comment Status* **A**

shall is not required as it is defined in 53.5.3.

SuggestedRemedy

Change "shall be" to "are"

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.5.8** *P* **474** *L* **43** # **534403**

Bob Grow

Comment Type **T** *Comment Status* **A**

Non-change bar version.

Shall in point b is not required.

SuggestedRemedy

change "shall" to "may"

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.5.9** *P* **475** *L* **1** # **534404**

Brad Booth

Comment Type **T** *Comment Status* **A**

Non-change bar version.

Shalls are not required.

SuggestedRemedy

Change to read:
b) If a PMD_local_fault is detected, then the PMD may set each PMD_transmit_disable_x to ONE, turning off the optical transmitter in each lane

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.6** *P* **475** *L* **21** # **534405**

John Dallesasse

Comment Type **T** *Comment Status* **A**

non-change bar version

shall is required in the sentence, and remove "center"

SuggestedRemedy

Change sentence to read:
The wavelengths for each multiplexed lane of the 10GBASE-LX4 PMD shall be as defined in Table 53-5.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.8** *P* **475** *L* **50** # **534406**

Brad Booth

Comment Type **T** *Comment Status* **A**

non-change bar version

shall is a blanket shall

SuggestedRemedy

delete sentence

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.8.1** *P* **476** *L* **19** # **534407**

John Dallesasse

Comment Type **T** *Comment Status* **A**

non-change bar version

Transmit eye is covered by shall in 53.9.1.

Patch cord statement refers to table 53-6.

SuggestedRemedy

Remove second line that refers to the transmit eye of the mask.

Move last sentence of 53.8.1 to be last sentence of 53.7.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.8.1, Table 53-7** *P* **476** *L* **42** # **58**

Bor-long Twu PINEPHOTONICS CO

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

This specification limits the ER (extinction ratio) to be 3.42 dBor lower, in order to meet the "Average launch power, per lane (max)" specification of 0.0 dBm. This will have an adverse impact to the transmitter cost, due to higher yield loss by restricting the usable range of ER. None of other PMD's (Clause 52: 850, 1310, and 1550 Serial's) specify maximum OMA. For example, the 1310 Serial specifies an average launch power maximum of 1 dBm, and an extinction ratio of 4 dB to ensure a low cost transmitter. The specification of maximum OMA per lane needs to be removed.

SuggestedRemedy

In order to ensure a low cost transmitter, which is the intent of using OMA and a usable range of extinction ratios, the goal of lower cost is better served by removing the maximum OMA per lanespecification, and adding a minimum extinction ratio specification, instead. I would propose to remove the maximum OMA per lane specification of 750 uW, and to add an "Extinction ratio (min)" specification of 4 dB (the same as that of 10GBASE-LR/LW).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the maximum average launch power per lane specification in Table 53-7 and the maximum average receive power per lane specification in Table 53-8 to -0.5dBm.

Clause 53 group to investigate trade-offs between maximum per lane OMA and maximum per lane peak power.

Cl **53** *SC* **53.8.4.1** *P* **479** *L* **35** # **534408**

Eric Grann

Comment Type **T** *Comment Status* **A**

Non-change bar version.

Incorrect reference and duplicate shall.

SuggestedRemedy

Remove first sentence.

Change second sentence to read:
"The optical channel for 10GBASE-LX4 shall:"

Change a) to use Table 53-13 instead of 53-11.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.8.4.1** *P* **593** *L* **52** # **358**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A**

Note is not correct. This was left over as an issue from long before.

SuggestedRemedy

Replace/Remove and fix any unresolved issues.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Clause 53 will coordinate with Clause 52 on this subject.

Cl **53** *SC* **53.8.4.3** *P* **593** *L* **44** # **147**

Dudek, Mike Cielo Communications

Comment Type **T** *Comment Status* **A**

The delay for this test should scale with the bandwidth of the fiber (ie scaling from the 500MHz.Km result of clause 52 should have a scaling factor of 300/86 (the relative distances).

SuggestedRemedy

Change 148ps to 157ps.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.8.5.2** *P* **480** *L* **33** # **534409**

Eric Grann

Comment Type **T** *Comment Status* **A**

Non-change bar version.

3rd paragraph has a redundant shall, and data rate applies to previous paragraphs

SuggestedRemedy

Change 53.8.5.2:

Over the data range specified in Table 53-8, the following requirements shall be met:
1) The OMA for the receiver jitter tolerance test is less than or equal to 0.2 dB higher than the stressed receive sensistivity specified in Table 53-8, and
2) the vertical eye closure penalty prior to the addition of sinusoidal jitter is greater than or equal to the value specified in Table 53-8.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.8.5.3** *P* **595** *L* **26** # **149**

Dudek, Mike — Cielo Communications

Comment Type **T** *Comment Status* **A**

Through out this section it looks as though much of this is a direct paste from clause 52. However the CDR bandwidth and hence the Golden PLL bandwidth etc. could be expected to scale with the line rate

SuggestedRemedy

Change 4MHz and 40KHz throughout clause 53 to 1.3MHz and 13KHz. (In tables and figures as well)

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.9.1** *P* **482** *L* **31** # **534410**

Bob Grow

Comment Type **T** *Comment Status* **A**

Non-change bar version.

Modify text to be correct.

SuggestedRemedy

The wavelength ranges of each lane shall be measured with an optical spectrum analyzer (OSA) or equivalent device over the wavelength range specified in Table 53-8, with the following conditions:
1) The resolution bandwidth equal to the spectral window values for the particular source type as specified in Table 53-8, and
2) The channel under test is modulated using valid 10GBASE-LX4 signals.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.9.10.2** *P* **600** *L* **26** # **361**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A**

Even though it is clear that this text is supposed to be related to the multimode fiber indicated in the subheader, it should be explicit.

SuggestedRemedy

Change wording to "no known way to create a reliabile channel using multimode fiber that would yield consistend results"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to

"no known way to create a channel using multimode fiber that would yield consistent results"

Cl **53** *SC* **53.9.10.2** *P* **600** *L* **26** # **151**

Dudek, Mike — Cielo Communications

Comment Type **E** *Comment Status* **A**

The use of the word "reliable" is unfortunate. I hope the channel is reliable. The problem is not the 1300nm but the multimode fiber.

SuggestedRemedy

Delete the word "reliable" change 1300nm to MMF

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #361 remedy

Cl **53** *SC* **53.9.11** *P* **487** *L* **49** # **534413**

Brad Booth

Comment Type **T** *Comment Status* **A**

non-change bar version

conformance test signal does not require a shall

SuggestedRemedy

Change 2nd sentence to read:
"It is recommended that the conformance test signal be generated using the short continuous random test pattern as defined in Annex 48A."

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.9.11** *P* **487** *L* **52** # **534414**

Eric Grann

Comment Type **T** *Comment Status* **A**

non-change bar version

change text to be MMF and SMF friendly

SuggestedRemedy

Change line 5 to read:
"The horizontal eye closure (reduction of pulse width) caused by the duty cycles distortion (DCD) component of DJ shall be no less than:
a) 25 ps for the multi-mode case, or
b) 20.5 ps for the single mode case."

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.9.11** *P* **488** *L* **48** # **534415**

Steve Selee

Comment Type **E** *Comment Status* **A**

non-change bar version

remove the "must"

SuggestedRemedy

as per comment

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.9.11** *P* **488** *L* **50** # **534416**

John Dallesasse

Comment Type **T** *Comment Status* **A**

non-change bar version

redundant shall

SuggestedRemedy

combine two sentences to read:
"The vertical and horizontal eye closures to be used for receiver conformance testing are verified using a fast photodetector and amplifier coupled to the oscilloscope input through a filter."

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.9.12** *P* **489** *L* **34** # **534417**

John Dallesasse

Comment Type **T** *Comment Status* **A**

non-change bar version

combine shall's into one shall statement

SuggestedRemedy

change paragraph to read:
"The receiver tests requiring the TP3 conformance test signal are performed on a per channel basis and shall meet the following test conditions:
a) All channels are modulated simultaneously, using valid 10GBASE-LX4 signals.
b) The center wavelengths of channels adjacent to the channel under test are tuned to the edge of their wavelength band nearest the channel under test.
c) When setting the wavelength of the channels adjacent to the channel under test, the center wavelength of the adjacent channels are set within 0.5nm of the edge of that channel's wavelength band while remaining within that channel's wavelength band.
d) In the case of the interior channels, which have two adjacent channels, each adjacent channel is tuned individually and receiver testing is done twice, once for each adjacent channel.
e) The non-adjacent channels are to be tuned to the center of their respective wavelength ranges.

These conditions are summarized graphically in Figure 53-13 for each channel under test."

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.9.13** *P* **491-492** *L* **many** # **534418**

John Dallesasse

Comment Type **T** *Comment Status* **A**

non-change bar version

fix redundant shall's and merge to one cutoff frequency shall

SuggestedRemedy

delete second sentence of first paragraph

change paragraph to read:
"The 3 dB upper cutoff frequency shall be measured using the following steps:
a) Calibrate the frequency response characteristics of the test equipment including the analog radio frequency (RF) signal generator, RF power combiner, and laser source, with the optical source meeting the requirements of this clause
b) Configure the test equipment as shown in Figure 5314. Take care to minimize changes to the signal path which could affect the system frequency response after the calibration in step a. Connect the laser output with no RF modulation applied to the receiver under test through an optical attenuator and set the Optical Modulation Amplitude to a level that approximates the stressed receive sensitivity level in Table 538.
c) Locate the center of the eye with the BERT. Turn on the RF modulation while maintaining the same average optical power established in step b.
d) Measure the necessary RF modulation amplitude (in dBm) required to achieve a constant BER (e.g. 10-8) for a number of frequencies.
e) The receiver 3 dB electrical upper cutoff frequency is that frequency where the corrected RF modulation amplitude (the measured amplitude in "d" corrected with the calibration data in "a") increases by 3 dB (electrical). If necessary, interpolate between the measured response values."

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.9.3** *P* **597** *L* **29** # **359**

Jonathan Thatcher World Wide Packets

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

As written, without the optional MDIO using the optional lane by lane Tx Disable, there is no way to accomplish this measurement.

SuggestedRemedy

Either:
1. Fix the text to something that can be accomplished with the hardware as described, or
2. Add a feature like Signal Detect that can turn off the individual lanes which is a required function even if the MDIO is not implemented. Use language like: "if the MDIO and the lane disables are not implemented, a mechanism shall be provided to"

I much prefer choice 2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add a paragraph at the end of section 53.5.9 that reads

"If the optional PMD_lane_by_lane_transmit_disable function is not implemented in MDIO, an alternative method shall be provided to independently disable each transmit lane."

Cl **53** *SC* **53.9.6** *P* **598** *L* **9** # **326**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Mask location needs to be specified as done in clause 52 mask testing.

SuggestedRemedy

At the beginning of the 2nd paragraph, add " Measurements should be made as per ANSI/TIA/EIA-526-4A (OFSTP-4) Aug. 1997."

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.9.7** *P* **484** *L* **30** # **534411**

Brad Booth

Comment Type **T** *Comment Status* **A**

non-change bar version

should's need to be changed to shall's or removed

SuggestedRemedy

Change 4th sentence to read:
"If a filter is needed to conform to the mask, the filter response shall be removed using the equation:"

Change 5th sentence to read:
"Any filter shall have an impulse response equivalent to a fourth order Bessel-Thomson filter."

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.9.8** *P* *L* # **336**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

a. As in clause 52, this section should be merged with section 53.9.10.
b. The 1st sentence is NA for system level testing and should be removed (unless it is referring to input signal calibration? If so, then clarify as such).
c. Reference to extinction ratio in 2nd paragraph is not appropriate - refer to OMA instead.

SuggestedRemedy

Follow clause 52 writing of Rx testing.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace 53.9.8 text with the following.

"The stressed receive sensitivity shall be measured using the conformance test signal at TP3, as specified in 53.9.11, and meet the conditions specified in Table 53-8."

Cl **53** *SC* **53.9.8** *P* **484** *L* **44** # **534412**

Eric Grann

Comment Type **T** *Comment Status* **A**

non-change bar version

redundant shall's

SuggestedRemedy

Remove last paragraph.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **All** *P* **599** *L* **39** # **360**

Jonathan Thatcher World Wide Packets

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

There can be no unresolved cross references (editorial) or TBDs (TR) in the next draft.

SuggestedRemedy

Search and destroy all TBDs and unresolved cross references.

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **Table 53-11** *P* **590** *L* # **283**

Lindsay, Tom Stratos Lightwave

Comment Type **T** *Comment Status* **A**

Clause 52 Stressed Rx sensitivity values do not include TP4 offset penalty. This was done to reflect that the standard is a system level spec, not a component spec.

This approach should be also adopted for clause 53.

SuggestedRemedy

Add +0.4 dB to the Stressed Rx sensitivity values, and add a table footnote that is the same as the 4th footnote after Table 52-18 (non-change-bar version).

Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **Table 53-11** *P* **590** *L* # **282**

Lindsay, Tom Stratos Lightwave

Comment Type **E** *Comment Status* **A**

I assume that values for Rx sensitivity and Stressed receive sensitivity should be in OMA.

SuggestedRemedy

Change description fields to reflect OMA. Are the values correct?

Response *Response Status* **C**

ACCEPT.

See comment #148

Cl **53** *SC* **Table 53-11** *P* **590** *L* **23** # **148**

Dudek, Mike Cielo Communications

Comment Type **E** *Comment Status* **A**

It would help to clarify that the sensitivity and stressed receiver sensitivity are in OMA

SuggestedRemedy

Add "(OMA)" to the two lines in the table.

Response *Response Status* **C**

ACCEPT.