Cl **00**　　*SC*　　　　　　*P*　　　*L*　　　# **65**

Dawe, Piers　　　　　　　　　Agilent

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

Problem with split tables: both parts are getting the same title. One for a Frame template expert!

SuggestedRemedy

Either
e.g. "Table 40 –1 —Bit-to-symbol mapping (even subsets)" and "Table 40 –1 —Bit-to-symbol mapping (even subsets)(Continued)"
or
e.g. "Table 36 –1a" and "Table 36 –1b"
or
e.g. "45.5.5.3 PMA/PMD management functions" and "" (no title for the overflow).

Response　　　　　*Response Status* **C**

REJECT. This is an IEEE style guideline for tables.

Cl **00**　　*SC*　　　　　　*P*　　　*L*　　　# **83**

Dawe, Piers　　　　　　　　　Agilent

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

Are 49, 50, 51 PICS consistent around XSBI logical (e.g. bit order), XSBI electrical?

SuggestedRemedy

?

Response　　　　　*Response Status* **C**

ACCEPT.
In Clause 50, remove "XSBI:" from WT18, WT19, WT20 and WR18 as the correct bit ordering is mandatory across the PMA Service Interface and not dependent upon the implementation of XSBI.

Clause 51 is okee-dokee!

Clause 49 see comment 49001.

Cl **00**　　*SC*　　　　　　*P*　　　*L*　　　# **86**

Dawe, Piers　　　　　　　　　Agilent

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

Where is the SYNC_UNITDATA.indicate primitive defined? It is mentioned in clauses 48 and 49.

SuggestedRemedy

?

Response　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE. The text will be removed from clause 49. In clause 48, it is defined to move data between the sync state machine and the receive state machine.

Cl **00**　　*SC* **52**　　　　　*P* **449**　　*L* **1**　　　# **195**

Richard Taborek Sr.　　　　　　　Intel

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

Based on the inability to conclusively prove interoperability and provide adequate methodology to guarantee draft conformance, I am concerned that technical feasibility of Clause 52 is in question at this time. The intention of this comment is to get at a potential root cause of Clause 52 issues which may currently be clouded test methodology issues.

Recent data from Clause 52 test methodology investigation indicates a significant variation in link performance as measured by test equipment when various test patterns are used. Specifically, smaller polynomial scramblers typified by shorter PRBS patterns show significantly superior link performance in terms of lower BER than longer polynomial scramblers typified by longer PRBS patterns. An example of the preceding claim is documented in taborek_1_0302, slide 8, from a presentation made at the February, 2002, Serial PMD interim in Santa Rosa entitled: Report on test methodologies from the February 11th and 12th lab work" generated by Agilent. Slide 8 shows a PRBS31 pattern violating the mask where a PRBS7 pattern does not.

I am specifically concerned about the direct utilization of the serial bit pattern from the 64B/66B code of Clause 49 by the PMD and PMA. It should be noted that the current test patterns being employed by Clause 52 and the corresponding test methodology may not accurately reflect the actual performance of the 64B/66B code. In reading the recent P802.3ae reflector email about the PRBS31 and PRBS23, the 64B/66B coding uses a x^{58} scrambler which seems to have harsher characteristics than the PRBS31 and PRBS23 patterns used for testing. It should further be noted that even the shortest of the three, PRBS23, has far harsher characteristics than the SONET scrambler ($X^7 + X^6 + 1$) or 8B/10B transmission code employed by 10GBASE-LX4. By harsher characteristics I am referring to characteristics which both PHY clock and data recovery and compliance test equipment must reliably handle including transition density, run length, DC balance/disparity and DC wander. Reference material providing significant insight into these issues is available in the following P802.3ae public files: ewen_1_0301, ewen_1_0699 and ewen_1_0701.

My concern is limited to the Clause 52 10GBASE-R PHY and excludes 10GBASE-W. It should be noted that 10GBASE-W utilizes the standard SONET scrambler. I am especially concerned that existing 10GBASE-R specifications will not enable the development and manufacture of cost effective 10GbE equipment, especially for cost sensitive and high volume applications such as LAN and SAN. My specific technical concerns may be summarized as follows:

1) Test patterns specified for Clause 52 do not represent either the actual worst case bit streams for 10GBASE-R or 10GBASE-W. My belief is that the specified test patterns are too harsh for 10GBASE-W and not harsh enough for 10GBASE-R.
2) Technical feasibility for the use of 64B/66B code by the 10GBASE-R PMD, including test methodology directly corresponding to the 64B/66B code has not been adequately shown.

SuggestedRemedy

Provide proof that the current test pattern for 10GBASE-R adequately represents a worst case 10GBASE-R payload and that test methodology utilizing the latter test pattern yields interoperable PHYs which can be developed and manufactured at reasonable cost.

TYPE: TR/technical required T/technical E/editorial　COMMENT STATUS: D/dispatched A/accepted R/rejected　SORT ORDER: Clause, Page, Line, Subclause　　Page 1 of 64

RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn　　　　　　　　　　　　　　　*Cl* **00**　　*SC* **52**

- or -

Add a SONET PMA scrambler to 10GBASE-R. Change test patterns for both 10GBASE-R and 10GBASE-W to be identical and match worst case payloads. Adjust test methodology to suit the less harsh SONET PMA scrambler.

Response   *Response Status*   **Z**

REJECT. Comment was withdrawn after satisfactory explanation from the logic track that both the 64B/66B code and test patterns including PRBS31 are adequate for use by the Clause 52 Serial PMD. Specifically, the following explanations were provided:

1) The addition of the SONET scrambler (X^7 + X^6 +1) to the 64B/66B code including its scrambler, as is the case of the WAN PHY, would not significantly affect the characteristics of the LAN PHY in terms of run length, DC balance, running disparity. These characteristics remain statistical for both the LAN and WAN PHY.

2) PBRS31 is not significantly different in its characteristics (harsher or less harsh) from the defined LAN PHY and WAN PHY test patterns for purposes of Clause 52 test methodology development.

3) The A1A2 bytes of the WAN PHY as well as the SONET CID test pattern, which include the A1A2 bytes is somewhat harsher than either mission mode or the specified test patterns for the LAN PHY in terms of DC balance characteristics seen by the PMD. Therefore, the input stream to the Clause 52 serial PMD from the LAN PHY is not harsher than that of the WAN PHY.

Cl **01**   *SC* **1.3**   *P* **373**   *L* **1**   **#** **79**

Dawe, Piers   Agilent

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

Normative references should have footnotes, one for each source of material e.g. ISO.

SuggestedRemedy

Add footnotes detailing how to obtain Normative references as necessary. e.g. T11.

Response   *Response Status*   **C**

REJECT.

All the new normative references already have footnotes in the original standard.

Cl **01**   *SC* **1.3**   *P* **4**   *L* **53**   **#** **59**

Dawe, Piers   Agilent

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

G.957 has been up-issued. It is referred to by clauses 38, 50, 53.

SuggestedRemedy

1999

Response   *Response Status*   **C**

ACCEPT.

Cl **01**   *SC* **1.3**   *P* **5**   *L* **1**   **#** **60**

Dawe, Piers   Agilent

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

Please add reference to O.150.

SuggestedRemedy

ITU-T Recommendation O.150, 1996 - General requirements for instrumentation for performance measurements on digital transmission equipment

Response   *Response Status*   **C**

ACCEPT.

Cl **01**   *SC* **1.4**   *P* **6**   *L* **27**   **#** **62**

Dawe, Piers   Agilent

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

Please add a definition or explanation of "primitive"

SuggestedRemedy

You can refer to 1.2.2.

Response   *Response Status*   **C**

REJECT.

The committee struggled with this definition but could not come up with a good one. The commenter is invited to use his creativity and propose a more precise remedy at the next recirculation.

Cl **30**   *SC* **30.2.5**   *P* **53**   *L*   **#** **175**

Thaler, Pat   Agilent Technologies

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

Why is this page sideways?

SuggestedRemedy

Turn the page upright.

Response   *Response Status*   **C**

ACCEPT.

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause   Page 2 of 64

RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *Cl* **30**   *SC* **30.2.5**

Cl **30**   *SC* **30.8.1.1**   *P* **62**   *L* **21**   **#** **14**

Geoffrey Garner   Lucent Technologies

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

The existing TR comments #13 - #29 (inclusive, all pertaining to clause 30), made by the same commenter as the present comment, relate to inhibiting behavior for performance parameters during unavailable time and inhibiting behavior of CV parameters during SESs. These comments were rejected during previous comment resolution; they have been recirculated because the commenter did not accept the response. The suggested remedy in the present comment is offered as an alternative to the suggested remedies in comments #13 - #29 inclusive.

SuggestedRemedy

Add a note to subclause 30.8.1.1 that reads 'The attributes in the following subclauses (30.8.1.1.1 through 30.8.1.1.28) may be used, possibly in conjunction with other attributes, to derive various system performance monitoring parameters and information.

Response   *Response Status* **C**

ACCEPT.

Cl **30**   *SC* **30.8.1.1.12**   *P* **63**   *L* **52**   **#** **99003**

Geoffrey Garner   Lucent Technologies

Comment Type **TR**   *Comment Status* **A**   *D4.0 #18*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:
At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 52, at the end of the section labeled "BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**   *SC* **30.8.1.1.13**   *P* **64**   *L* **10**   **#** **99004**

Geoffrey Garner   Lucent Technologies

Comment Type **TR**   *Comment Status* **A**   *D4.0 #19*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs, ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 10, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**   *SC* **30.8.1.1.14**   *P* **64**   *L* **21**   **#** **99005**

Geoffrey Garner   Lucent Technologies

Comment Type **TR**   *Comment Status* **A**   *D4.0 #20*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 21, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**   *SC* **30.8.1.1.15**   *P* **64**   *L* **33**   **#** **99006**

Geoffrey Garner   Lucent Technologies

Comment Type **TR**   *Comment Status* **A**   *D4.0 #21*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 33, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**　　　*SC* **30.8.1.1.16**　　　　*P* **64**　　　*L* **44**　　　**#** **99007**

Geoffrey Garner　　　　　　　　　　　　Lucent Technologies

Comment Type **TR**　　　*Comment Status* **A**　　　　　　　　*D4.0 #22*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 44, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**　　　*SC* **30.8.1.1.17**　　　　*P* **65**　　　*L* **1**　　　**#** **99008**

Geoffrey Garner　　　　　　　　　　　　Lucent Technologies

Comment Type **TR**　　　*Comment Status* **A**　　　　　　　　*D4.0 #23*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 1, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**   *SC* **30.8.1.1.20**   *P* **65**   *L* **43**   # **99009**

Geoffrey Garner   Lucent Technologies

Comment Type **TR**   *Comment Status* **A**   *D4.0 #24*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 43, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**   *SC* **30.8.1.1.21**   *P* **66**   *L* **2**   # **99010**

Geoffrey Garner   Lucent Technologies

Comment Type **TR**   *Comment Status* **A**   *D4.0 #25*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 2, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause   Page 6 of 64

RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *Cl* **30**   *SC* **30.8.1.1.21**

Cl **30**	*SC* **30.8.1.1.22**	*P* **66**	*L* **12**	*#*	**99011**

Geoffrey Garner   Lucent Technologies

Comment Type **TR**   *Comment Status* **A**   *D4.0 #26*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 12, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**	*SC* **30.8.1.1.26**	*P* **67**	*L* **8**	*#*	**99012**

Geoffrey Garner   Lucent Technologies

Comment Type **TR**   *Comment Status* **A**   *D4.0 #27*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 8, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**	*SC* **30.8.1.1.27**	*P* **67**	*L* **20**	*#* **99013**

Geoffrey Garner   Lucent Technologies

Comment Type **TR**   *Comment Status* **A**   *D4.0 #28*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 20, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**	*SC* **30.8.1.1.28**	*P* **67**	*L* **30**	*#* **99014**

Geoffrey Garner   Lucent Technologies

Comment Type **TR**   *Comment Status* **A**   *D4.0 #29*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 30, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**   *SC* **30.8.1.1.4**   *P* **62**   *L* **14**   **#** **99015**

Geoffrey Garner   Lucent Technologies

Comment Type   **TR**   *Comment Status* **A**   *D4.0 #14*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 14, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**   *SC* **30.8.1.1.5**   *P* **62**   *L* **26**   **#** **99016**

Geoffrey Garner   Lucent Technologies

Comment Type   **TR**   *Comment Status* **A**   *D4.0 #15*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 26, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**	*SC* **30.8.1.1.6**	*P* **62**	*L* **37**	# **99000**

Geoffrey Garner | Lucent Technologies

Comment Type **TR**   *Comment Status* **A**   *D4.0 #16*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 37, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

Cl **30**	*SC* **30.8.1.1.7**	*P* **62**	*L* **48**	# **99001**

Geoffrey Garner | Lucent Technologies

Comment Type **TR**   *Comment Status* **A**   *D4.0 #17*

See comment on performance monitoring for Clause 30, Subclause 8 and its subclauses, pp. 61-67;the current comment gives the precise location for the new sentence in the current subclauses:At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the following sentence to line 48, at the end of the section labeled"BEHAVIOUR DEFINED AS:"
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #99002

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause
RESPONSE STATUS: O/open   W/written C/closed   U/unsatisfied Z/withdrawn

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Cl **30**   *SC* **30.8.1.1.7**

Cl **30**   *SC* **30.8.1.1.8**   *P* **64**   *L* **3 to 8**   **#** 194

David Law   3Com

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

The J0 Section Trace message Tx value is defined in subclause 50.3.2.3, and this subclause is referenced by the J0 Section Trace message Tx Register subclause, 45.2.2.18, and a the aJ0ValueTX Management attribute subclause, 30.8.1.1.8. The byte ordering definition between each of these subclauses is inconsistent.

Subclause 50.3.2.3 states - 'The J0 octet shall transport a 16-octet continuously repeating Section Trace Message that is formatted as defined by Section 5 and Annex A of ANSI T1.269-2000. Each successive octet of the Section Trace Message, starting from the first, is placed in the J0 octet of a successive WIS frame; after all 16 octets have been transmitted in this way, the process repeats.'

Subclause 30.8.1.1.8 states - 'The J0 Tx octets allow a receiver to verify its continued connection to the WIS transmitter. The most significant transmitted Section Trace octet is J0 Tx 15. The J0 Tx 15 octet is the delineation octet. The default value for the J0 Tx 15 octet is 137 (hexadecimal 89). The least significant transmitted Section Trace octet is J0 Tx 0. The default value for the J0 Tx 0 through 14 octets is 0. The transmitted Section Trace is described in 50.3.2.3.'

Subclause 30.8.1.1.8 states - 'An 16 octet value defining the transmitter's Section Trace message as defined in 50.3.2.3. A SET operation changes the Section Trace message value. A GET operation returns the current Section Trace message value. The default transmitter's Section Trace message is 15 NULL characters, the hexadecimal value 00, followed by the hexadecimal value 89. If a Clause 45 MDIO Interface to the WIS is present, then this will map to the WIS J0 Tx registers specified in 45.2.2.18.;'

Hence we have subclause 50.3.2.3 using the terms 'first' in reference to bytes, subclause 45.2.2.18 using the terms 'most significant' and 'least significant' and subclause 30.8.1.1.8 not really giving any indication of the byte ordering.

Note - This same comment has been placed against Clauses 30, 45 and 50.

SuggestedRemedy

Suggest that a consistent approach be taken and used across all of the Clauses. This needs to also be done in relation to the J0 Section Trace Message Rx and Path Trace Message subclauses.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Need to use the term first and last instead of most and least significant. A string does not have most and least significant bytes. Clause 50 comment resolution to allocate the registers - Clause 30 will follow this allocation.

This will also be fixed for the J0 Section Trace Message Rx and Path Trace Message subclauses.

Note - The comment refers to text from 30.8.1.1.8 twice when in fact the first set of text is from 45.2.2.18.

Clause 50 response
=================
The bytes of a Trace Message have no numeric significance (i.e., the concepts of "Least significant" and "Most significant" cannot be applied). A Trace Message contains a user-definable repeating string of octets, with a control octet being used to perform both delineation and error-checking functions. The underlying reference for the Trace Message format (T1.269-2000) consistently represents the Trace Message as starting with the control octet (first octet sent) and ending with the 15th data octet (last sent).

It is therefore recommended that the following actions be taken:

Subclause 50.3.2.3 should be left intact, as it already uses the proper "first-last" terminology.

Subclause 45.2.2.18 should be changed to read:
"The J0 Tx octets allow a receiver to verify its continued connection to the WIS transmitter. The first transmitted Section Trace octet is J0 Tx 15, which contains the delineation octet. The default value for the J0 Tx 15 octet is 137 (hexadecimal 89). The last transmitted Section Trace octet is J0 Tx 0. The default value for the J0 Tx 0 through 14 octets is 0. The transmitted Section Trace is described in 50.3.2.3."

Subclause 30.8.1.1.8 should be changed to read:
'A 16 octet value defining the transmitter's Section Trace message as defined in 50.3.2.3. The first octet in this value is transmitted first, and the last octet is transmitted last. A SET operation changes the Section Trace message value. A GET operation returns the current Section Trace message value. The default transmitter's Section Trace message is the hexadecimal value 89, followed by 15 NULL characters, the hexadecimal value 00. If a Clause 45 MDIO Interface to the WIS is present, then this will map to the WIS J0 Tx registers specified in 45.2.2.18."

The Section Trace Message RX and Path Trace messages should be changed in the same way.

Coordinate with the Clause 45 and Clause 30 as required to ensure consistency.

Cl **30** *SC* **8 (and its subclauses)** *P* **61-67** *L* **#** **99002**

Geoffrey Garner Lucent Technologies

Comment Type **TR** *Comment Status* **A** *D4.0 #13*

At present, the WIS performance monitoring attributes are always accumulated, regardless ofwhether the system is availableor unavailable. Typically (i.e., as defined in T1.231 and T1.416), attributes such as CVs,ESs, SESs, SEFSs, etc. are inhibited whena system is unavailable. The philosophy behind this is that attributes such as CVs, ESs,SESs, SEFSs, etc. are intended to indicatethe performance of a system over short time scales (e.g., 1 second or less). It is usefulto distinguish between bit error performancedegradation and long periods of unavailability due to fiber cuts or system failures.To make this distinction, the above attributesshould be inhibited when the system is unavailable. The precise definition ofunavailability is given in the suggested remedy below,and is consistent with T1.231 and T1.416.

SuggestedRemedy

Add the respective new subclauses given below and modify the respective subclauses asindicated below.
New Subclauses:
0.8.1.1.14A aLineUASs
ATTRIBUTE APPROPRIATE SYNTAX:
Generalized nonresetable counter. This counter has a maximum increment rate of 1 count per second independent of speed of operation, except at the time of transition fromavailable time to unavailable time (when the counter increases by 10) and at the timeof transition from unavailable time to available time (when the counter decreases by 10).
BEHAVIOUR DEFINED AS:
Increment counter by one in an "Unavailable Second" (UAS). The Line becomes unavailableat the onset of 10 contiguous Line SESs. The 10 Line SESs are included in unavailabletime. Once unavailable, the Line becomes available at the onset of 10 contiguousseconds with no Line SESs. The 10 seconds with no Line SESs are excluded fromunavailable time.Some parameter counts are inhibited during unavailability -- see Clause 30.8.2.30.8.1.1.17A aFarEndLineUASs
ATTRIBUTE APPROPRIATE SYNTAX:
Generalized nonresetable counter. This counter has a maximum increment rate of1 count per second independent of speed of operation, except at the time of transitionfrom available time to unavailable time (when the counter increases by 10) and at thetime of transition from unavailable time to available time (when the counter decreases by 10).
BEHAVIOUR DEFINED AS:
Increment counter by one in an "Unavailable Second" (UAS). The Far End Line becomes unavailable at the onset of 10 contiguous Far End Line SESs. The 10 Far End Line SESs are included in unavailable time. Once unavailable, the Far End Line becomes availableat the onset of 10 contiguous seconds with no Far End Line SESs. The 10 seconds with no Far End Line SESs are excluded from unavailable time.Some parameter counts are inhibited during unavailability -- see Clause 30.8.2.30.8.1.1.22A aPathUASs
ATTRIBUTE APPROPRIATE SYNTAX:
Generalized nonresetable counter. This counter has a maximum increment rate of 1 countper second independent of speed of operation, except at the time of transition from available time to unavailable time (when the counter increases by 10) and at the timeof transition from unavailable time to available time (when the counter decreases by 10).
BEHAVIOUR DEFINED AS:
Increment counter by one in an "Unavailable Second" (UAS). The Path becomesunavailable at the onset of 10 contiguous Path SESs. The 10 Path SESs are

includedin unavailable time. Once unavailable, the Path becomes available at the onsetof 10 contiguous seconds with no Path SESs. The 10 seconds with no Path SESsare excluded from unavailable time.Some parameter counts are inhibited during unavailability -- see Clause 30.8.2.30.8.1.1.28A aFarEndPathUASs
ATTRIBUTE APPROPRIATE SYNTAX:
Generalized nonresetable counter. This counter has a maximum increment rate of 1 countper second independent of speed of operation, except at the time of transition fromavailable time to unavailable time (when the counter increases by 10) and at thetime of transition from unavailable time to available time (when the counterdecreases by 10).
BEHAVIOUR DEFINED AS:
Increment counter by one in an "Unavailable Second" (UAS). The Far End Path becomesunavailable at the onset of 10 contiguous Far End Path SESs. The 10 Far End PathSESs are included in unavailable time. Once unavailable, the Far End Path becomesavailable at the onset of 10 contiguous seconds with no Far End Path SESs.The 10 seconds with no Far End Path SESs are excluded from unavailable time.Some parameter counts are inhibited during unavailability -- see Clause 30.8.2.30.8.1.1.28 Inhibiting Behaviour of WIS Performance Monitoring AttributesFor a given monitored entity (i.e., section, line, or path), the accumulation ofcertain attributes is inhibited during periods of unavailability or during SESs.Inhibiting on a given monitored entity (such as a path) is not explicitly affectedby conditions on any other monitored entity (such as a line).
The inhibiting rules are as follows:
- UAS attribute counts shall not be inhibited
- All other attribute counts for Line, Far End Line, Path, and Far End Path shall be inhibited during UAS. Inhibiting shall be retroactive to the onset ofunavailable time and shall end retroactively to the end of unavailable time
- The CV attribute (i.e., section or line BIP error or path block error) counts shall be inhibited during SESs.
For sections, where no UAS attribute is defined, there shall be no inhibiting ofattribute counts except for the CV attributes as described in this subclause. End New Subclauses:
Add the following sentence to Subclauses 30.8.1.1.4 (aSectionSESs),
30.8.1.1.5 (aSectionESs), 30.8.1.1.6(aSectionSEFSs),
30.8.1.1.7 (aSectionCVs), 30.8.1.1.12 (aLineSESs),
30.8.1.1.13 (aLineESs), 30.8.1.1.14 (aLineCVs),
30.8.1.1.15 (aFarEndLineSESs), 30.8.1.1.16 (aFarEndLineESs),
30.8.1.1.17 (aFarEndLineCVs), 30.8.1.1.20 (aPathSESs),
30.8.1.1.21 (aPathESs), 30.8.1.1.22 (aPathCVs),
30.8.1.1.26 (aFarEndPathSESs), 30.8.1.1.27 (aFarEndPathESs),
30.8.1.1.28 (aFarEndPathCVs) (the precise location is given in the following 16 comments):
This attribute is subject to inhibiting -- see Subclause 30.8.2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add a note to subclause 30.8.1.1 that reads 'The attributes in the following subclauses (30.8.1.1.1 through 30.8.1.1.28) may be used, possibly in conjunction with other attributes, to derive various system performance monitoring parameters and information.'.

Cl **30A**　　*SC* **30A.1.1**　　　　*P* **71**　　　*L* **10**　　　# **191**

David Law　　　　　　　　　　　3Com

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

Syntax error - comma missing at end of line.

SuggestedRemedy

Change the text 'aRateControlAbility GET' to read 'aRateControlAbility GET,'.

Response　　　　　*Response Status* **C**

ACCEPT.

Note: This is a duplicate of comment #190.

Cl **30A**　　*SC* **30A.1.1**　　　　*P* **71**　　　*L* **10**　　　# **190**

David Law　　　　　　　　　　　3Com

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

Syntax error - comma missing at end of line.

SuggestedRemedy

Change the text 'aRateControlAbility GET' to read 'aRateControlAbility GET,'.

Response　　　　　*Response Status* **C**

ACCEPT.

Cl **44**　　*SC* **44.1.4.4**　　　　*P* **164**　　*L* **31**　　　# **176**

Thaler, Pat　　　　　　　　　　Agilent Technologies

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

Also lines 35 and 39.
One uses <noun>, <descriptive phrase> when the descriptive phrase is supplying additional information that is already implied by the noun. That is, the descriptive phrase is non-restrictive.

When the descriptive phrase modifies the meaning of the noun to restrict it, then one should use <noun> <descriptive phrase>.

The use here is restrictive. 10GBASE-X isn't based just on the 8B/10B code, but on a particular use of the 8B/10B specified in Clause 48.

SuggestedRemedy

Delete the commas that were added after "coding method" and "encoded data"

Response　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

The wording "as specified" refers to the 10GBASE-? term. Change first sentences of term paragraphs to read as follows:

The term 10GBASE-X, specified in Clauses 48 and 53, refers to a specific family of physical layer implementations based upon 8B/10B data coding method.

The term 10GBASE-R, specified in Clauses 49, 51 and 52, refers to a specific family of physical layer implementations based upon 64B/66B data coding method.

The term 10GBASE-W, specified in Clauses 49 to 52, refers to a specific family of physical layer implementations based upon STS-192c/SDH VC-4-64c encapsulation of 64B/66B encoded data.

Cl **44A**　　*SC*　　　　　　　*P* **174**　　*L* **53**　　　# **135**

Booth, Brad　　　　　　　　　　Intel

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

Need to add drawing that shows loopbacks.

SuggestedRemedy

Add diagram found at http://www.ieee802.org/3/ae/public/may01/alexander_2_0501.pdf with the following changes: remove signal PMD_loopback, change PMD_signal_ok to be PMD_signal_detect, and remove OR gate that generates PMD_signal_ok.

Response　　　　　*Response Status* **C**

ACCEPT.

Cl **45**   *SC*   *P*   *L*   *#* **25**
Turner, Ed   Lattice Semiconductor

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

There were a couple of comments on D4.0 requesting a consistent use of capitalization throughout the document. Clause 45 is still suffering from inconsistent capitalization of the register names (eg "PMA/PMD Control 1" vs "Devices in package").

SuggestedRemedy

Make all register names lower case (except for the very first letter). So "PMA/PMD Control 1" becomes "PMA/PMD control 1".

Response   *Response Status*   **C**

ACCEPT.
See also #49.

Cl **45**   *SC* **45**   *P* **175**   *L*   *#* **64**
Dawe, Piers   Agilent

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

We need to allow industry standard PRBS31 and also its inverse which has been advertised in D4.1. We may wish to add optional test-pattern-inversion registers (and ability registers) for PCS and WIS, for either or both transmit and receive.

SuggestedRemedy

As resolved.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Clause 49 decided to invert the output of generator. There is therfore no new bit required.

Cl **45**   *SC* **45.1**   *P* **176**   *L* **1 to 16**   *#* **189**
David Law   3Com

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

Suggest that the Overview should mention that Clause 45 uses a new ST of 00 to access a new address space.

SuggestedRemedy

Add text to the effect that the new address space is provided by using a ST code of 00 rather that the existing Clause 22 ST code of 01.

Response   *Response Status*   **C**

ACCEPT.

Cl **45**   *SC* **45.1**   *P* **176**   *L* **9**   *#* **63**
Dawe, Piers   Agilent

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

Use nonbreaking space between 10 and Gb

SuggestedRemedy

per comment

Response   *Response Status*   **C**

ACCEPT.
Apply throughout C45.

Cl **45**   *SC* **45.2.1.1.1**   *P* **179**   *L* **43**   *#* **34**
Turner, Ed   Lattice Semiconductor

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

It has been pointed out to the editor that the text "This action shall set all registers to their default states." may be interpreted as applying to all registers within all MMDs on the MDIO.

SuggestedRemedy

Replace with "This action shall set all PMA/PMD registers to their default states." Also apply to other MMD reset descriptions with appropriate editorial changes.

Response   *Response Status*   **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.1.2**   *P* **180**   *L* **10**   *#* **174**
Thaler, Pat   Agilent Technologies

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

Shouldn't it be "will interrupt data communication"? Also, "datapath" should be two words.

SuggestedRemedy

Change datapath to data path and change may to will.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.
Check entire clause for "..datapath.." and correct as necessary, and check entire clause for low power "..may interrupt.." and correct as described.

Cl **45**   *SC* **45.2.1.2.2**   *P* **181**   *L* **38**   *#* **30**

Turner, Ed   Lattice Semiconductor

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

There was some discussion on the reflector regarding exactly what was meant by link status for the PMA (thread name "Re: [802.3ae] 10GBASE-X PCS; status register definition?").

Rich Taborek's view was that this bit was not relevent to 10G BASE-X and bit 3.1.2 was used instead to indicate that synchronization had been obtained.

Pat Thaler's view was that this was an indication of PLL lock and was also valid for 10G BASE-X.

SuggestedRemedy

Discuss whether this bit is valid for 10G BASE-X as an indication of PLL lock and if it is not then add additional text : "For 10G BASE-X operation, this bit is not applicable and shall return zero.". Else add the text "This bit is applicable to all 10 Gb/s port types."

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Change subclause 45.2.1.2.2 to read 'When read as a one, bit 1.1.2 indicates that the PMA/PMD receive link is up. When read as a zero, bit 1.1.2 indicates that the PMA/PMD receive link is down. The receive link status bit shall be implemented with latching low behavior.'.

In table 45-4 change the description text for bit 1.1.2 to read

1 = PMA/PMD receive link up
0 = PMA/PMD receive link down

Cl **45**   *SC* **45.2.1.3**   *P* **181**   *L* **48**   *#* **31**

Turner, Ed   Lattice Semiconductor

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

The text here says that the device identifier "shall constitute a unique identifier" and later on it says that the device identifier "may return a value of zero" which would not make it unique once more than one device has chosen to return a value of zero.

SuggestedRemedy

Change to "Registers 1.2 and 1.3 provide a 32-bit value, which may constitute a unique identifier for a particular type of PMA/PMD. The unique identifier shall be composed of .."

Also apply this text (with necessary editorial changes) to the package identifier registers of the PMA/PMD and all device identifiers and package identifiers for all other MMDs.

Update the PICS as necessary.

Response   *Response Status*   **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.8**   *P* **187**   *L* **10**   *#* **43**

Tom Mathey   Independent

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

Cross reference to 52.4.5 should be to 52.4.7.

SuggestedRemedy

Change cross reference from 52.4.5 to 52.4.7.

Response   *Response Status*   **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.9**   *P* **188**   *L* **34**   *#* **32**

Turner, Ed   Lattice Semiconductor

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

There is no definition anywhere of what signal OK actually is.

SuggestedRemedy

Change the register name and associated bits from signal OK to signal detect. Check throughout Clause 45 to correct this elsewhere as necessary.

Response   *Response Status*   **C**

ACCEPT.

Cl **45**   *SC* **45.2.2.16**   *P* **204**   *L* **17**   *#* **450001**

Norival Figueira

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

According to the specification, both the Path Block Error Register (2.59) and the Far End Path Block Error Register (2.37) are incremented by one whenever a Far End Path Block Error occurs. I think this is an error. The Path Block Error Register should increment by one if a B3 parity error occurs in the local receiver.

SuggestedRemedy

Change from "Far End Path Block Error" to "B3 parity error".

Response   *Response Status*   **C**

ACCEPT.

Cl **45**   *SC* **45.2.2.18**   *P* **205**   *L* **32 to 36**   # **193**

David Law   3Com

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

The J0 Section Trace message Tx value is defined in subclause 50.3.2.3, and this subclause is referenced by the J0 Section Trace message Tx Register subclause, 45.2.2.18, and a the aJ0ValueTX Management attribute subclause, 30.8.1.1.8. The byte ordering definition between each of these subclauses is inconsistent.

Subclause 50.3.2.3 states - 'The J0 octet shall transport a 16-octet continuously repeating Section Trace Message that is formatted as defined by Section 5 and Annex A of ANSI T1.269-2000. Each successive octet of the Section Trace Message, starting from the first, is placed in the J0 octet of a successive WIS frame; after all 16 octets have been transmitted in this way, the process repeats.'

Subclause 30.8.1.1.8 states - 'The J0 Tx octets allow a receiver to verify its continued connection to the WIS transmitter. The most significant transmitted Section Trace octet is J0 Tx 15. The J0 Tx 15 octet is the delineation octet. The default value for the J0 Tx 15 octet is 137 (hexadecimal 89). The least significant transmitted Section Trace octet is J0 Tx 0. The default value for the J0 Tx 0 through 14 octets is 0. The transmitted Section Trace is described in 50.3.2.3.'

Subclause 30.8.1.1.8 states - 'An 16 octet value defining the transmitter s Section Trace message as defined in 50.3.2.3. A SET operation changes the Section Trace message value. A GET operation returns the current Section Trace message value. The default transmitter s Section Trace message is 15 NULL characters, the hexadecimal value 00, followed by the hexadecimal value 89. If a Clause 45 MDIO Interface to the WIS is present, then this will map to the WIS J0 Tx registers specified in 45.2.2.18.;'

Hence we have subclause 50.3.2.3 using the terms 'first' in reference to bytes, subclause 45.2.2.18 using the terms 'most significant' and 'least significant' and subclause 30.8.1.1.8 not really giving any indication of the byte ordering.

Note - This same comment has been placed against Clauses 30, 45 and 50.

SuggestedRemedy

Suggest that a consistent approach be taken and used across all of the Clauses. This needs to also be done in relation to the J0 Section Trace Message Rx and Path Trace Message subclauses.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Need to use the term first and last instead of most and least significant. A string does not have most and least significant bytes. Clause 50 comment resolution to allocate the registers - Clause 30 will follow this allocation.

This will also be fixed for the J0 Section Trace Message Rx and Path Trace Message subclauses.

Note - The comment refers to text from 30.8.1.1.8 twice when in fact the first set of text is from 45.2.2.18.

Clause 50 response
=================
The bytes of a Trace Message have no numeric significance (i.e., the concepts of "Least significant" and "Most significant" cannot be applied). A Trace Message contains a user-definable repeating string of octets, with a control octet being used to perform both delineation and error-checking functions. The underlying reference for the Trace Message format (T1.269-2000) consistently represents the Trace Message as starting with the control octet (first octet sent) and ending with the 15th data octet (last sent).

It is therefore recommended that the following actions be taken:

Subclause 50.3.2.3 should be left intact, as it already uses the proper "first-last" terminology.

Subclause 45.2.2.18 should be changed to read:
"The J0 Tx octets allow a receiver to verify its continued connection to the WIS transmitter. The first transmitted Section Trace octet is J0 Tx 15, which contains the delineation octet. The default value for the J0 Tx 15 octet is 137 (hexadecimal 89). The last transmitted Section Trace octet is J0 Tx 0. The default value for the J0 Tx 0 through 14 octets is 0. The transmitted Section Trace is described in 50.3.2.3."

Subclause 30.8.1.1.8 should be changed to read:
'A 16 octet value defining the transmitter's Section Trace message as defined in 50.3.2.3. The first octet in this value is transmitted first, and the last octet is transmitted last. A SET operation changes the Section Trace message value. A GET operation returns the current Section Trace message value. The default transmitter's Section Trace message is the hexadecimal value 89, followed by 15 NULL characters, the hexadecimal value 00. If a Clause 45 MDIO Interface to the WIS is present, then this will map to the WIS J0 Tx registers specified in 45.2.2.18."

The Section Trace Message RX and Path Trace messages should be changed in the same way.

Coordinate with the Clause 45 and Clause 30 as required to ensure consistency.

Cl **45**   *SC* **45.2.2.2.2**   *P* **193**   *L* **31**   # **35**

Turner, Ed   Lattice Semiconductor

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

There is no description anywhere of what conditions set or clear WIS link status.

SuggestedRemedy

Change the text to : "When read as a one, bit 2.1.2 indicates that the WIS link status flag is raised. When read as a zero, bit 2.1.2 indicates that the WIS link status flag has been lowered by the WIS. The link status bit shall be implemented with latching low behavior. The link status functionality implemented in the WIS is described in 50.3.10."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the text to : "When read as a one, bit 2.1.2 indicates that the WIS receive link is up. When read as a zero, bit 2.1.2 indicates that the WIS receive link is down. The link status bit shall be implemented with latching low behavior."

Cl **45**   *SC* **45.2.2.2.2**   *P* **193**   *L* **32**   # **177**

Thaler, Pat   Agilent Technologies

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

Shouldn't there be some description of when the WIS link status bit is set or at least a reference to something in clause 50?

SuggestedRemedy

This bit should be set when LOF or LOS bits are set, but I'm not sure what other conditions should be added.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See #35.

Cl **45**   *SC* **45.2.2.4.1**   *P* **194**   *L* **14**   # **46**

Tom Mathey   Independent

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

There are places in the draft where text has a space between 10 and Gbps, "10 Gbps". There are places where text has no space as "10Gbps".

SuggestedRemedy

Change from "10Gbps" to "10 Gbps" at all locations.
p. 179 Table 45-3, entry 1.0.13, 1.0.6
p. 191 Table 45-12 entry 2.0.13, 2.0.6
p. 208 Table 45-30 entry 3.0.13,3.0.6
p. 230 Table 45-53 entry 5.0.13,5.0.6

p. 182 subclause 45.2.1.4.1, two places
p. 194 subclause 45.2.2.4.1, two places
p. 210 subclause 45.2.3.4.1, two places
p. 225 subclause 45.2.4.4.1, two places
p. 233 subclause 45.2.5.4.1, two places

p. 252 PICS entry RM15, RM16

Scrub draft for such places as 9.58Gbps.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #26.
Rather than use Gbps, the preferred notation is Gb/s, as per comment 155 on D4.0.

Cl **45**   *SC* **45.2.2.4.1**   *P* **194**   *L* **14**   # **26**

Turner, Ed   Lattice Semiconductor

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

Comment 155 on D4.0 requested that "10Gb/s" be changed to "10 Gb/s" throughout the document. This has been done in Clause 45, but there are a couple of instances of "10Gbps" and "9.58Gbps".

SuggestedRemedy

Change "10Gbps" to "10 Gb/s" and "9.58Gbps" to "9.58 Gb/s".

Also change "Gbps" to "Gb/s" in section 45.2.2.6.6

Response   *Response Status* **C**

ACCEPT.
See #46.

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause

RESPONSE STATUS: O/open   W/written C/closed   U/unsatisfied Z/withdrawn

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Cl **45**   *SC* **45.2.2.4.1**

Cl **45**　　*SC* **45.2.2.6**　　　　*P* **195**　　　*L*　　　# **27**

Turner, Ed　　　　　　　　　　　Lattice Semiconductor

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

In this section we added PRBS31 test pattern control bits at the last round of comments, but this has led to an inconsistent jumble of names and terminology used for the bits in this register.

SuggestedRemedy

Re-name bit 2.7.3 from "Test pattern" to "Test pattern selection" in the table and description of section 45.2.2.6.3

Re-name "Receive test pattern mode" to "Receive test pattern enable" in section 45.2.2.6.4 to make the text match the table entry.

Re-name "Transmit test pattern mode" to "Transmit test pattern enable" in section 45.2.2.6.5 to make the text match the table entry.

Response　　　　　　　*Response Status*　**C**

ACCEPT.

Cl **45**　　*SC* **45.2.2.6.1**　　　*P* **195**　　　*L* **41**　　# **66**

Dawe, Piers　　　　　　　　　　Agilent

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

Is there a tautology in "The specific functionality active when in PRBS31 test pattern mode is specified ..."

SuggestedRemedy

Delete specific ?　"The behavior of the WIS when in ...".
The same phrase "specific functionality active when" appears six or so times.

Response　　　　　　　*Response Status*　**C**

ACCEPT.

Cl **45**　　*SC* **45.2.2.8**　　　　*P* **197**　　　*L* **37**　　# **178**

Thaler, Pat　　　　　　　　　　Agilent Technologies

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

We may specify the test pattern and its error count in clause 49 and just reference it from 50 in which case this reference should change. Also, the references in 45.2.2.6.1 and 45.2.2.6.2 should be made more specific and may need to reference 49 rather than 50.

SuggestedRemedy

Clean up the references.

Response　　　　　　　*Response Status*　**C**

ACCEPT.

Cl **45**　　*SC* **45.2.3.11**　　　*P* **216**　　　*L* **8**　　　# **47**

Tom Mathey　　　　　　　　　　Independent

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

There are now two 64B/66B test pattern modes:　"seed test pattern" and "PRBS32 test pattern".　I believe that the contents of register 3.32 are undefined during both modes.

SuggestedRemedy

Add text to line 8 as:　... is operating in seed test pattern mode or PRBS32 test pattern mode.

Scrub draft to add "seed" to text "test pattern" where appropriate as there is confusion between generic test patten activity and activity specific to seed test pattern.

Response　　　　　　　*Response Status*　**C**

ACCEPT.

Cl **45**　　*SC* **45.2.3.12.4**　　*P* **218**　　　*L* **10**　　# **182**

Thaler, Pat　　　　　　　　　　Agilent Technologies

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

45.2.3.12.3 and 45.2.3.12.4 use different text to describe the same type of roll-over counter behavior.

SuggestedRemedy

Either version of the text is acceptable except "count as defined by" on line 3 is better than "count defined by" on line 9.

Response　　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.
Use the version in 45.2.3.12.3 for 45.2.3.12.4 (and anywhere else that text like this appears).

TYPE: TR/technical required T/technical E/editorial　COMMENT STATUS: D/dispatched A/accepted R/rejected　SORT ORDER: Clause, Page, Line, Subclause　Page 18 of 64

RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn　　　　　　　　　　　　　　　　　　*Cl* **45**　　*SC* **45.2.3.12.4**

Cl **45**　　　*SC* **Table 45-36**　　　*P* **214**　　　*L*　　　# **28**

Turner, Ed　　　　　　　　　　Lattice Semiconductor

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

Widen the third column of this table so that 'patterns' does not split onto a third line.

SuggestedRemedy

Response　　　　　　*Response Status*　**C**

ACCEPT.

Cl **45**　　　*SC* **Table 45-44**　　　*P* **221**　　　*L*　　　# **29**

Turner, Ed　　　　　　　　　　Lattice Semiconductor

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

Widen the second column of the table so that 'Control' does not split onto two lines.

SuggestedRemedy

Response　　　　　　*Response Status*　**C**

ACCEPT.

Cl **45**　　　*SC* **Table 45-5**　　　*P* **182**　　　*L* **12**　　　# **51**

Tom Mathey　　　　　　　　　　Independent

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

The majority of Clause 45 tables use the format "1 = text" and "0 = text" in column labeled description. There are a small number of places which just use "text".

SuggestedRemedy

At following places, replace "text" with "1 = text" and "0 = text".
p. 182 Table 45-5 entry 1.4.0
p. 194 Table 45-41 entry 2.4.0
p. 198 Table 45-19 entry 2.33.10
p. 210 Table 45-32 entry 3.4.0
p. 224 Table 45-47 entry 4.4.0
p. 232 Table 45-55 entry 5.4.0

Response　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.
Also apply to 2.33.9.

Cl **46**　　　*SC* **46.1.3**　　　*P* **269**　　　*L* **38**　　　# **67**

Dawe, Piers　　　　　　　　　　Agilent

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

Not SDH-64

SuggestedRemedy

STM-64

Response　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE. Change STS192/SDH-64 to:

a) STS-192c/SDH-64c
b) STS-192c/STM-64
c) STS-192c/VC-4-64c
d) SDH-64

Use choice c).

No opposition

Cl **46**　　　*SC* **46.1.4**　　　*P* **269**　　　*L* **51**　　　# **183**

Thaler, Pat　　　　　　　　　　Agilent Technologies

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

1.4 doesn't specify "delay in bit time".

SuggestedRemedy

Change last sentence to "Bit time is defined in 1.4 and pause_quanta is defined in 31B.2."

Response　　　　　　*Response Status*　**C**

ACCEPT.

Cl **46**　　　*SC* **46.3**　　　*P* **275**　　　*L* **39**　　　# **46001**

Bob Grow

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

Submitted for Tim Warland

Looks like you just mandated a loopback mode.

SuggestedRemedy

Can you explicitly include text which says that loopback mode is optional?

Response　　　　　　*Response Status*　**C**

ACCEPT. Insert at beginning of note:

"No XGMII loopback is defined, but . . . "

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause

RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

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Cl **46**　　　*SC* **46.3**

Cl **46** *SC* **46.3.4** *P* **281** *L* **27** *#* **184**

Thaler, Pat Agilent Technologies

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

I agree with the concept here but the wording doesn't seem quite right. "Only an RS signals Remote Fault." One could consider a sublayer which is relaying the Remote Fault signal to be signaling Remote Fault.

SuggestedRemedy

"Only an RS originates Remote Fault signals."

Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **3.4.5** *P* **292** *L* **40** *#* **99017**

Gaither, Justin Xilinx

Comment Type **TR** *Comment Status* **R** *D4.0 #4*

Input impedance should be specified the same as the output impedance.

SuggestedRemedy

Change text similar to the way output impedance is specified.

Response *Response Status* **U**

REJECT. Maintain response from D4.0 below.

Input impedance spec is not considered to be a problem according to test data supplied indicating a valid spec problem with output impedance. Recevier test data indicates that a flat 10 dB input return loss was achievable.

The impact of loosening transmitter return loss as agreed to for D4.0 comment resolutions results in an increase in return loss contribution to deterministic jitter from 0.03 UI to 0.049 UI. The additional impact of loosening receiver return loss as requested by this comment would result in a return loss contribution of 0.072 UI of deterministic jitter. This amount of additional jitter is excessive (blows the jitter budget) in light of the absence of proof of an existing problem with the current input impedance spec.

If evidence is received indicating that the current receiver return loss spec is not acheivable, then other driver and/or receiver parameters must be adjusted in order to maintain a working jitter budget.

Cl **47** *SC* **47.3.3.4** *P* **290** *L* **31** *#* **40**

Thaler, Pat Agilent Technologies

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

The driver output impedance spec has multiple problems:

the spec was loosened in draft 3.4 without analysis of the impact of that on received signal.

the text is unclear:
does "reduce 20 dB per decade from 781.25 MHz to 3.5 GHz and reduce 20 dB per decade again from 3.5 GHz to the third harmonic of the signal" mean that one reduces 40 dB per decade from 3.5 GHz to the third harmonic of the signal. If not, why doesn't it just say "reduce 20 dB per decade from 781.25 MHz to the third harmonic of the signal"? What is "better than?" Text of similar sections 23.5.1.2.6 and 32.6.1.4.1 is more clear and this text should be rewritten to be similar to those sections including the equation for return loss vs. frequency. The "third harmonic" does not translate into a defined frequency. When sending random data, the spectrum will have first and third harmonic energy spread over a range of frequencies. When sending specific data patterns, the position of the harmonics will depend upon the data being sent. For example sending stream of D21.5 or D10.2 produces a spectrum with a fundamental at 1.56 GHz. Perhaps the author meant the peak of the second hump in the spectrum of random data but a specfic number should be used instead.

text is incorrect and self contradictory:
Starting at 10 dB and reducing 20 dB per decade above 781.25 MHz results in hitting 0 dB return loss at about 2.5 GHz and a return _gain_ of 3 dB at 3.5 GHz. Return loss should not be allowed to go negative - the parts won't be doing that. The text says that the 3.5 GHz break point was chosen to get 3 dB return loss at the 3rd harmonic, but the 3 dB return loss point is about 1.7 GHz and the text implies that the third harmonic is above 3.5 GHz.

SuggestedRemedy

Present analysis to show that the spec doesn't produce excessive noise or modify the spec to reduce the noise.
Modify the spec so that the return loss stays positive.
Rewrite the text to be similar to that of 23.5.1.2.6 or 32.6.1.4.1 and specify an actual frequency in place of "the third harmonic".
To give a start on the analysis:
A stream of D21.5 or D10.2 characters puts all the fundamental energy at 1.56 GHz.
Return loss at that frequency is 3.98 dB.
Interconnect loss is specified at 7.5 dB which is stated to cover an interconnect length of approx 50 cm so loss/cm is about 0.15 dB.
The worst case interference occurs when the signal hits an impedance mismatch in the path about 1/4 wave length from the transmitter, bounces back to the transmitter where it is reflected back to the impedance mismatch in the path out of phase with the transmit signal. The noise is then attenuated below the original signal level by the path mismatch return loss, 1/2 wavelength of path attenuation, and the transmitter return loss. 1/2 wavelength is 9.6 cm at the speed of light. The FR4 path is slower than the speed of light, but it might also have less than maximum attenuation per cm so as an approximation I will use the 9.6 cm length to calculate the path attenuation. I am using the +/- 10% path impedance tolerance for the calculation rather than the larger connector to path impedance tolerance under the assumption that the connector's effect on the reflection will largely cancel out

---

because the connector is physically small.
+/- 10% attenuation mismatch loss   20 dB
path attenuation   1.44 dB
transmit attenuation @ 1.66 GHz   3.98 dB
total   25.42 dB

So the reflection from will add noise at about 5% of the received signal level.

There is also the jitter from the reflection between the transmitter and the receiver. If the path has the full 7.5 dB of attenuation then the reflection will experience the following attenuation:
receiver mismatch   10 dB
path attenuation   15 dB
transmit attenuation @ 1.66 GHz   3.98 dB
total   28.98 dB

Which is another 3.5%. The two reflections can occur at the same time and can add.

Can our budget tolerate the additional jitter?

Also the reflection over a short link should be considered. In this case, the transmitter and receiver are separated by 1/4 wavelength distance:
receiver attenuation   10 dB
path attenuation   1.44 dB
transmit attenuation @ 1.66 GHz   3.98 dB
total   15.42 dB
or 17%

Response   *Response Status*   **Z**

REJECT. Withdrawn. This appears to be an old comment against D4.0 which was fixed in 4.1 (see 47.3.3.4, p296, l31). Pat indicates that this comment was sent in inadvertently.

Cl **47**   *SC* **47.3.3.4**   *P* **296**   *L* **30**   *#* **185**

Thaler, Pat   Agilent Technologies

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

There isn't much reason to place a shall statement on an equation. The equation says what it says. The shall needs to apply to the driver not the equation. My comment 37 on D4.0 suggested modeling the text on that of 32.6.1.4.2 but that was not done.

SuggestedRemedy

Replace the first sentence with
"For frequencies from 312.4 MHz to 3.124 GHz, the differential return loss of the driver shall exceed equation"

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.   Replaced the first sentence with:
"For frequencies from 312.5 MHz to 3.125 GHz, the differential return loss of the driver shall exceed equation"

Cl **47**   *SC* **47.3.3.5**   *P* **290**   *L* **43**   *#* **99018**

Lindsay, Tom   Stratos Lightwave

Comment Type   **TR**   *Comment Status*   **A**   *D4.0 #268*

Template (mask) alignment requires locating to the mean (see clause 47.4.2 and Figure 47-7), yet the mean of real jitter distributions is not always halfway between the peaks. This implies that if jitter is asymmetric, pk-pk jitter must be reduced - basically, peak jitter (from the mean) is being specified, not pk-pk as currently written.

SuggestedRemedy

Insert a new sentence "...component of 0.37UIp-p. Note that these values assume symmetrical jitter distributions about the mean. If a distribution is not symmetrical, its peak to peak total jitter value must be less than these total jitter values to claim compliance to the template requirements per the methods of 47.4.2. Jitter specifications include..."

Response   *Response Status*   **C**

ACCEPT. Remedy modified by related comment #161. Please refer to that comment.

Inserted the following: "...component of +/- 0.185 UI from the mean. Jitter specifications include...".

Also changed three other occurances of "p-p" to halve the stated value and state instead "from the mean" in 47.3.3.5. Made the corresponding change to the "Output Jitter" parameter in table 47-1, Driver Characteristics.

Cl **47**   *SC* **47.3.3.5**   *P* **296**   *L*   *#* **161**

Lindsay, Tom   Stratos Lightwave

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

There are 4 values called out for jitter magnitude. They are correctly described as peak values (from the mean) yet either peak-peak or undefined units are given.

SuggestedRemedy

Change 3 cases of "p-p" to "peak". On line 45, change to "+/-0.185 UIpeak from the mean".

Response   *Response Status*   **C**

ACCEPT. The resolution to this comment also resolves comment# 99018.

Cl **47**   *SC* **47.3.3.5**   *P* **296**   *L* **43**   *#* **186**

Thaler, Pat   Agilent Technologies

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

Per response to comment 268, jitter values were to be halved and specified as UI from the mean rather than UIp-p. This is because peak-to-peak isn't an appropriate specification to use when deviation from the mean is being specified. The values got halved and "from the mean" inserted, but UI is still shown as UIp-p.

SuggestedRemedy

Replace UIp-p with UI when specifying jitter from the mean.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE. Use UI peak from the mean.

Cl **47**   *SC* **47.3.5**   *P* **299**   *L* **36**   **#** **187**

Thaler, Pat   Agilent Technologies

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

In accordance with comment 268, UIp-p in this table should have been replaced with UI and the values in those columns should be halved.

SuggestedRemedy

"UIp-p" should be "UI" and the values in UI should be half the current entries.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. Use UI peak from the mean.

Cl **48**   *SC*   *P*   *L*   **#** **48002**

Eric Lynskey

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

1) Add as item f) to 48.1.1 Objectives the following:
    f) Support error and link indication.
    (the period at the end of e) should be changed to a semicolon)

2) In 48.2.4.4 Error /E/, change the second sentence as follows:
    "/E/ may also be generated by the PCS client to indicate a
    transmission error to its peer entity or deliberately corrupt
    the contents of the frame in such a manner that a receiver
    will detect the corruption with the highest degree of
    probability".

SuggestedRemedy

See comment.

Response   *Response Status* **C**

ACCEPT.

Cl **48**   *SC* **1.3.1**   *P* **308**   *L* **11**   **#** **179**

Thaler, Pat   Agilent Technologies

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

As a result of the ballot, we now call the fault conditions detected and reported by devices below the RS "fault". Local Fault is the name of a signal and not the name of the condition.

SuggestedRemedy

Change "Local Fault and Remote Fault" to "fault"

Response   *Response Status* **C**

ACCEPT.

Cl **48**   *SC* **48.1.3.1**   *P* **307**   *L* **42**   **#** **55**

Tom Mathey   Independent

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

Middle of paragraph contains an extra line feed.

SuggestedRemedy

Remove extra line feed.

Response   *Response Status* **C**

ACCEPT.

Cl **48**   *SC* **48.2.2**   *P* **311**   *L* **28**   **#** **180**

Thaler, Pat   Agilent Technologies

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

It appears that the comment resolution from 4.0 on the terms for faults was not applied in Clause 48. local and remote fault are signals not conditions. "local_fault" and "remote_fault" only appear in Clause 48 (and 52 for the former term). The terms should be "Local Fault signal" and "Remote Fault signal". Appears multiple places in clause 48.

SuggestedRemedy

Do global search for local_fault and remote_fault.
For remote_fault condition and local_fault condtion when it refers to the signal carried by the code, replace with Remote Fault signal and Local Fault signal.
When local_fault condition refers to a fault condition detected by the PCS (as in the state machines), replace with "fault", "transmit fault" or "receive fault" as appropriate.

Response   *Response Status* **C**

ACCEPT.

Cl **48**   *SC* **48.2.4.2**   *P* **316**   *L* **5**   **#** **68**

Dawe, Piers   Agilent

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

In view of recent confusion about scrambler inversion, and since we don't care here, and since the default PRBS7 pattern in test equipment is !($X^7 + X^3 + 1$),

SuggestedRemedy

Explicitly allow !($X^7 + X^3 + 1$) or !($X^7 + X^6 + 1$) as well as "based on $X^7 + X^3 + 1$ or $X^7 + X^6 + 1$".

Response   *Response Status* **C**

REJECT. The purpose of this is equation is to randomize idle, and not to perform BER testing.

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause   Page 23 of 64

RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *Cl* **48**   *SC* **48.2.4.2**

Cl **48**   *SC* **48.2.4.2.1**   *P*   *L*   # **48001**
Eric Lynskey

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

The proper alignment of a comma used for code-group synchronization is depicted in Figure 48-3.

SuggestedRemedy

I think this should refer to Figure 48-4, and was incorrectly changed in this draft.

Response   *Response Status* **C**

ACCEPT. A comment submitted against D4.0 incorrectly changed this reference. The correct figure reference should be Figure 48-4.

Cl **48**   *SC* **48.2.5**   *P* **318**   *L* **28**   # **188**
Thaler, Pat   Agilent Technologies

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

Tables have been added for two of the three uses of the functionality. Need to add a table (or a column to one of the existing tables) for PCS. Also, it would be better to put this subclause after the state diagrams because it uses their variables.

SuggestedRemedy

Add a table for linkage to PCS MDIO bits and perhaps swap the order of 48.2.5 and 48.2.6.

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

Cl **48**   *SC* **48A.5.1**   *P* **343**   *L*   # **162**
Lindsay, Tom   Stratos Lightwave

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

It would be very helpful to anyone really trying to understand the pattern to see the association of the binary strings with the 8B pattern given in 48A.5 and the 10B characters.

SuggestedRemedy

1. Keep the descriptive breakdowns (high transition, low transition, etc.) and number of repititions as currently given.

2. Add additional columns of 8B (hex) & 10B codes for each entry. I will send a separate spreadsheet to the editor that contains the information. Note, I have formatted the spreadsheet to allow more convenient translation into the standard.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. Will modify tables in appropriate manner.

Cl **48**   *SC* **Figure 48-9**   *P* **330**   *L* **25**   # **53**
Tom Mathey   Independent

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

In the block "LOCAL_FAULT_INDICATE", the action needs to be an assignment, not an equals. Same for block "IDLE_MODE

SuggestedRemedy

Replace equals "=" with assignment "<=".

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

Cl **48A**   *SC* **48A.5.1**   *P* **343**   *L* **12**   # **172**
Thaler, Pat   Agilent Technologies

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

Some of the text in this paragraph is redundant with text in 48A.5 and some is not accurate. Any stream of continuous packets can be looped indefinately without incurring disparity errors. The CJPAT packet is sent, the disparity of the lanes will be the same at the end of the packet as it was at the start. Therefore, when it is sent continuously, subsequent transmissions of the packet will either have the same disparity as the first one or have opposite disparity on all four lanes.

Also, the example shown depicts of 16 possible 10 bit representations of the packet. Each lane may have the opposite disparity. The text should also make it clear that this is showing the 10 bit representation of the CJPAT defined in 48A.5

SuggestedRemedy

Replace with:
The following tables depict a 10-bit encoding for CJPAT. This is the encoding which will occur when each lane has negative disparity before the start. The actual 10-bit encoding sent when CJPAT is transmitted will be one of 16 encodings depending upon the disparity of each lane at the beginning of the packet. CJPAT has been designed to produce the same disparity on each lane after the Terminate column as that lane had before the Start Column. When CJPAT is sent continuously, two of the sixteen possible encodings will occur because Idle will either leave the disparity the same or flip the disparity on all lanes.

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

Cl **48A**   *SC* **48A.5.1**   *P* **343**   *L* **31**   **#** **54**

Tom Mathey   Independent

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

The 10 bit values given in table 48A-1 are not an exact duplicate of subclause 48A.5. At the text "Table 48A-2 Low density transition pattern (repeat 65 times)", the repeat 65 times represents a total of 520 bytes. The corresponding entry in 48A.5 is listed as a total of 524 bytes.

SuggestedRemedy

Harmonize. If necessary, recalculate the CRC.

Response   *Response Status*   **C**

REJECT. The first 4 bytes of this low density transition pattern are included in Table 48A-1. This was done so that the specific 10-bit pattern could be repeated properly.

Cl **49**   *SC* **49.2.12**   *P* **364**   *L* **7**   **#** **42**

Thaler, Pat   Agilent Technologies

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

The text does not make it clear what the test_pattern_error_count counts.

SuggestedRemedy

Replace:
The first mismatch in a window will not increment the test pattern error counter. Any subsequent mismatch in a window indicates an error and will increment the test pattern error counter.

With:
The test pattern error counter counts blocks with a mismatch corrected to remove the effect of loading a new seed. The first block with a mismatch in a window will not increment the test pattern error counter. Any subsequent block with a mismatch in a window indicates an error and will increment the test pattern error counter.

Response   *Response Status*   **Z**

Cl **49**   *SC* **49.2.12**   *P* **372**   *L* **52**   **#** **77**

Dawe, Piers   Agilent

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

Scrambler polarity: the PRBS31 as defined in D4.1 is the opposite of the industry standard one. We should not be re-inventing the wheel and redefining things that already exist. But the genie is out of the bottle: we have to tolerate the D4.1 PRBS31 as well as the industry standard one. here we need to allow checkers that check for either polarity or both. I'm not sure if Figure 49-11 needs an inverter. My remedy should be checked for mathematical correctness.

SuggestedRemedy

Please change "will be zero" to "will be static". In following line, change "go high three times; once when it is received and once when it is at each tap." to "contain three low (or high) bits; one when the errored bit is received and once when it is at each tap". On p373 line 2 change "high" to "low (or high)".

Use optional PRBS31 polarity register if appropriate. Standard polarity contains a run of 31 zeroes.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE. It is too much of a complicaiton to handle both polarities. The previous version has only been in the draft for a month and this is a draft "subject to change". Therefore, we should just check for the inverted polarity signal. We will add an inverter into the pattern checker.

Cl **49**   *SC* **49.2.12**   *P* **373**   *L* **1**   **#** **78**

Dawe, Piers   Agilent

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

Error counter records triple the error rate. This could be seen as contradicting line 17 "In PRBS31 test mode it is counting bit errors at the scrambler output." I would prefer to divide this output by 3 and record the error rate but maybe it's too late to change that.

SuggestedRemedy

Wordsmithing. Here's my suggestion: "In PRBS31 test mode it is counting on a bit basis at the pattern checker output; this is very nearly three times the bit errors." Apply to clause 50 if appropriate.

Response   *Response Status*   **C**

REJECT. The text is correct. It countes errors at the scrambler output. The text makes clear the difference between this and the line bit error rate.

We do not divide by three because that factor is only correct when isolated single bit errors are occurring. When burst errors occur, then we do not know the factor.

Cl **49**　　*SC* **49.2.12**　　　　　*P* **373**　　*L* **5**　　　　# **17**

Tim Warland　　　　　　　　　　　Quake Technologies

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

Assuming the committee "does the right thing" with respect to the pattern generator in section 49.2.8, we must also invert the input prior to entering the PRBS31 checker.

SuggestedRemedy

Install an inverter between "input" and the "T" at S0.

Response　　　　　　　*Response Status*　**W**

ACCEPT.

Cl **49**　　*SC* **49.2.13.2.1**　　　*P* **373**　　*L* **43**　　　# **15**

Tim Warland　　　　　　　　　　　Quake Technologies

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

Not sure if this is the best place to insert this comment. The definition for Local_Fault declaration is not robust enough. The 64b/66b PCS layer crosses clock boundaries from the XGMII clock to the clock defined by the PMA. As was the case in the XGXS, there exists a remote possibility that a situation causes the gearbox (which crosses clock domains) to overflow or under run. Tracing through the logic in Clause 49, there is no mechanism for the PCS to generate a Local Fault ordered set (tx_coded<=LBLOCK_T) if such a condition occurs. A mechanism is required for the PCS transmit process to generate a local_fault ordered set in the condition of transmit FIFO overflow or under run, particularly since we are always crossing time domains in this clause.

SuggestedRemedy

Either modify the definition for the gearbox in 49.2.7 such that the gearbox will produce (tx_raw) = Local_Fault ordered set in the condition of FIFO overflow or under run. Or, create a state machine in the transmit process which monitors the gearbox fill level. If the gearbox overflows or under runs, the Tx state machine returns to the TX_INIT condition and resets the gearbox.

Response　　　　　　　*Response Status*　**W**

REJECT. FIFO underrun/ FIFO overrun and clock mismatch is an implementation dependent problem. It is possible to generate the transmit output clock from the transmit input clock and the receive output clock from the receive input clock in which case FIFO underrun or overrun will not occur.

In implementations where there is a clock boundary, FIFO underrun or overrun do not necessarily indicate a link fault. It could be a transient condition such as an excessively large packet. Also, it would be an oscillating condition as FIFO underrun and overrun cannot occur when one is receiving idle or sequence ordered sets. Therefore, local fault would not be an appropriate response,

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Cl **49**　　*SC* **49.2.7**　　　　　*P* **370**　　*L* **19**　　　# **49001**

Thaler, Pat

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

There is no shall statement regarding bit order to/from the XSBI.

SuggestedRemedy

Add the requirements and corresponding PICS entries.

Response　　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE. Also, there does not seem to be a clear statement on which bit in the block is the least significant bit of each field.
49.2.4.3 Add to end of second to last paragraph: "The least significant bit for each field is placed in the lowest numbered position of the field."

49.2.7 Add to end fo first paragraph: "When a PMA_UNITDATA.request or WIS_UNITDATA.request contains bits from two blocks, then the bits from the first block shall be placed in the lowest numbered bits of tx_data-group<15:0>. The bits shall be packed into the tx_data-group in sequence with the lowest numbered bit of each block going into the lowest numbered bit of tx_data-group<15:0> for that block (see Figure 49-5)."

Replace the content of 49.2.9 with: When the receive channel is operating in normal mode, the block synchronization function receives data via 16-bit PMA_UNITDATA.request or WIS_UNITDATA.request primitives. It shall form a bit stream from the primitives by concatenating requests with the bits of each primitive in order from rx_data-group<0> to rx_data-group<15> (see Figure 49-6). It obtains lock to the 66-bit blocks in the bit stream using the sync headers and outputs 66-bit blocks. Lock is obtained as specified in the block lock state machine shown in Figure 49-12.

Add PICS entries for tx_data-group and rx_data-group bit order

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TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause
RESPONSE STATUS: O/open   W/written C/closed   U/unsatisfied Z/withdrawn

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Cl **49**　　*SC* **49.2.7**

Cl **49**   *SC* **49.2.8**   *P* **371**   *L* **16**   **#** **69**

Dawe, Piers   Agilent

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

Scrambler polarity: the PRBS31 as defined in D4.1 is the opposite of the industry standard one. We should not be re-inventing the wheel and redefining things that already exist. But the genie is out of the bottle: we have to tolerate the D4.1 PRBS31 as well as the industry standard one.

SuggestedRemedy

"The PRBS31 generator shall produce the 2 147 483 647-bit pseudo-random test sequence defined in O.150, or the sequence of opposite polarity which may be obtained by inversion. The scrambler polynomial is .... (as is) and a possible implementation is shown in Figure 49-9."
I suggest you delete "The initial value of the PRBS31 generator shall not be all zeros. It may be any other value." as not necessary, and messy to generalize.

Use optional PRBS31 polarity register if appropriate. Standard polarity contains a run of 31 zeroes.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. We will invert the output, but we will leave the normative description in this clause rather than referencing O.151. It would be a disservice to the reader to require them to go to another standard for a paragraph of normative material. We will not delete the statement about initial value as it is necessary. If the initial value is all zeros, the output will be a constant stream of all ones (after the inverter).

Cl **49**   *SC* **49.2.8**   *P* **371**   *L* **27**   **#** **74**

Dawe, Piers   Agilent

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

Figure 49-9 bug fixes: The inverter is needed to bring the example implementation into line with industry practice. The position of the output is, we know, arbitrary but it may defuse arguments to move it.

SuggestedRemedy

Change S27 to S28, S28 to S29.
Take the output from an inverter following S31.

Response   *Response Status* **C**

ACCEPT.

Cl **49**   *SC* **49.2.8**   *P* **371**   *L* **28**   **#** **173**

Thaler, Pat   Agilent Technologies

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

Typo in pattern generator figure

SuggestedRemedy

S30 and S31 should be S29 and S30

Response   *Response Status* **C**

ACCEPT.

Cl **49**   *SC* **49.2.8**   *P* **371**   *L* **30**   **#** **16**

Tim Warland   Quake Technologies

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

After a lengthy discussion, I believe the conclusion is that the PRBS31 generator selected is not compatible with "Normal" PRBS31 patterns as defined by both the ITU and the Test and Measurement community. The PRBS31 generator requires an output inverter to maximize compatibility. Since we don't really care what the bits are in the sequence only that the pattern is fully defined, what difference does it make to anyone whether we add an inverter to the output? Even if the pattern generator was exclusively for IEEE802.3ae use, as long as transmit and receive process are identical, the inverter is moot. However by adding an inverter to the output, we become compatible with the defacto industry standard for PRBS31. Furthermore, if we add the inverter now, the people who run the test will believe we have implemented a normal PRBS pattern generator/detector. If we don't we will regularly be answering question from test engineers wondering why the PRBS31 won't sync to the test equipment unless they press the invert button.

SuggestedRemedy

Place an inverter between the "T" to S0 and the "PRBS31 pattern output". Change the polynomial to G(x) = !(1+x^28+x^31)

Response   *Response Status* **W**

ACCEPT IN PRINCIPLE. We will add an inverter. We will not add an ! to the polynomial equation because changing the polynomial that way would change the sequence. It would mean that the inverted signal is also the input to the shift register. Instead we will state that the PRBS is the inversion of that produced by G(x) = (1+x^28+x^31).

Cl **49**   *SC* **49.3.4**   *P* **383**   *L*   # **81**

Dawe, Piers   Agilent

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

Should 49 have e.g. optional LVDS PICS, status XSBI:M, like 51?

SuggestedRemedy

?

Response   *Response Status*   **C**

REJECT.   For optional interfaces specified in other clauses, the PICS in a clause just
includes an indication of whether the option is supported but does not reference the
detailed specs in the other clause. This is consistant across the handling of XSBI, XGMII
and MDIO interfaces. It is also consistant with the way the optional interfaces were handled
at the lower speeds.

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

Dawe, Piers   Agilent

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

Are 49, 50, 51 PICS consistent around XSBI logical (e.g. bit order), XSBI electrical?

SuggestedRemedy

?

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

This is related to the Clause 00 comment (comment #83) submitted by Piers Dawe.

The bit order appears to be correct in Clauses 49, 50, 51 and Annex 44A. In addition,
Clause 51 specifically calls out the XSBI electrical ordering vs the logical bit order (see
Figure 51-2).

However, the bit order specification for the WIS-PMA interface is independent of whether
the XSBI is present or not. Hence the XSBI dependency on the corresponding PICS entries
(WT18, WT19, WR18, WR19) should be removed.

Cl **50**   *SC* **50.3.10.1**   *P* **411**   *L* **40**   # **36**

Turner, Ed   Lattice Semiconductor

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

A commenter on the reflector pointed out that there was no description anywhere of what
sets and clears the WIS link status bit.

An additional comment has been raised against Clause 45 to add text that says that the
conditions that raise and lower the WIS link status flag are detailed in this section.

SuggestedRemedy

Add some additional text to say which conditions lead to the WIS link status flag being
raised and which conditions lead to the WIS link status flag being lowered.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

The link status bits are used in general to indicate whether valid data can be transferred
across the link. The conditions that should cause a WIS link to be declared down because
it can no longer transfer valid data are:
   - a Path failure as listed in 50.3.5.1 (PLM-P, AIS-P, LOP-P)
   - a Line failure as listed in 50.3.2.5 (AIS-L)
   - a synchronization failure as listed in 50.3.5.1 (state machine not in SYNC)

Add the following text to 50.3.10 (new subclause):

"The WIS link status, as reported in the Link status bit in the WIS Status 1 register (see
45.2.2.2.2), shall be set to down if a PLM-P, AIS-P, or LOP-P defect is detected (50.3.5.1),
an AIS-L defect is detected (50.3.2.5), or the Synchronization process is not in the SYNC
state (50.4.2). Otherwise, the WIS link status is set to up."

Co-ordinate with Clause 45 editor to ensure that Clause 45 points to 50.3.10 to reference
the behavior underlying the WIS Link status bit. Add a PICS entry to 50.6.4.6 to cover the
new normative text.

Cl **50**   *SC* **50.3.10.2**   *P* **412**   *L* **16 - 18**   # **450003**

David Law

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

Please delete this subcluse as no other clause in 802.3 has similar text.

SuggestedRemedy

Delete subclause

Response   *Response Status*   **C**

ACCEPT.

Cl **50**   *SC* **50.3.2.3**   *P* **400**   *L* **50 to 54**   *#* **192**

David Law   3Com

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

The J0 Section Trace message Tx value is defined in subclause 50.3.2.3, and this subclause is referenced by the J0 Section Trace message Tx Register subclause, 45.2.2.18, and a the aJ0ValueTX Management attribute subclause, 30.8.1.1.8. The byte ordering definition between each of these subclauses is inconsistent.

Subclause 50.3.2.3 states - 'The J0 octet shall transport a 16-octet continuously repeating Section Trace Message that is formatted as defined by Section 5 and Annex A of ANSI T1.269-2000. Each successive octet of the Section Trace Message, starting from the first, is placed in the J0 octet of a successive WIS frame; after all 16 octets have been transmitted in this way, the process repeats.'

Subclause 30.8.1.1.8 states - 'The J0 Tx octets allow a receiver to verify its continued connection to the WIS transmitter. The most significant transmitted Section Trace octet is J0 Tx 15. The J0 Tx 15 octet is the delineation octet. The default value for the J0 Tx 15 octet is 137 (hexadecimal 89). The least significant transmitted Section Trace octet is J0 Tx 0. The default value for the J0 Tx 0 through 14 octets is 0. The transmitted Section Trace is described in 50.3.2.3.'

Subclause 30.8.1.1.8 states - 'An 16 octet value defining the transmitter's Section Trace message as defined in 50.3.2.3. A SET operation changes the Section Trace message value. A GET operation returns the current Section Trace message value. The default transmitter's Section Trace message is 15 NULL characters, the hexadecimal value 00, followed by the hexadecimal value 89. If a Clause 45 MDIO Interface to the WIS is present, then this will map to the WIS J0 Tx registers specified in 45.2.2.18.;'

Hence we have subclause 50.3.2.3 using the terms 'first' in reference to bytes, subclause 45.2.2.18 using the terms 'most significant' and 'least significant' and subclause 30.8.1.1.8 not really giving any indication of the byte ordering.

Note - This same comment has been placed against Clauses 30, 45 and 50.

SuggestedRemedy

Suggest that a consistent approach be taken and used across all of the Clauses. This needs to also be done in relation to the J0 Section Trace Message Rx and Path Trace Message subclauses.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

The bytes of a Trace Message have no numeric significance (i.e., the concepts of "Least significant" and "Most significant" cannot be applied). A Trace Message contains a user-definable repeating string of octets, with a control octet being used to perform both delineation and error-checking functions. The underlying reference for the Trace Message format (T1.269-2000) consistently represents the Trace Message as starting with the control octet (first octet sent) and ending with the 15th data octet (last sent).

It is therefore recommended that the following actions be taken:

Subclause 50.3.2.3 should be left intact, as it already uses the proper "first-last" terminology.

Subclause 45.2.2.18 should be changed to read:
"The J0 Tx octets allow a receiver to verify its continued connection to the WIS transmitter. The first transmitted Section Trace octet is J0 Tx 15, which contains the delineation octet. The default value for the J0 Tx 15 octet is 137 (hexadecimal 89). The last transmitted Section Trace octet is J0 Tx 0. The default value for the J0 Tx 0 through 14 octets is 0. The transmitted Section Trace is described in 50.3.2.3."

Subclause 30.8.1.1.8 should be changed to read:
'A 16 octet value defining the transmitter's Section Trace message as defined in 50.3.2.3. The first octet in this value is transmitted first, and the last octet is transmitted last. A SET operation changes the Section Trace message value. A GET operation returns the current Section Trace message value. The default transmitter's Section Trace message is the hexadecimal value 89, followed by 15 NULL characters, the hexadecimal value 00. If a Clause 45 MDIO Interface to the WIS is present, then this will map to the WIS J0 Tx registers specified in 45.2.2.18."

The Section Trace Message RX and Path Trace messages should be changed in the same way.

Coordinate with the Clause 45 and Clause 30 as required to ensure consistency.

Cl **50**   *SC* **50.3.8.2**   *P* **407**   *L* **37**   *#* **76**

Dawe, Piers   Agilent

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

Duplicate figures

SuggestedRemedy

Delete: refer to Figure 49-9, delete Figure 50-12.
Similarly for Figures 49-10 and 50-13

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Acceptance of the resolution to comment #197 will effectively implement the remedy suggested in this one, by doing away with the figures and substituting with a reference to Clause 49.

Cl **50**   *SC* **50.3.8.2**   *P* **407**   *L* **37**   # **18**

Tim Warland   Quake Technologies

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

It is good to have the PRBS31 generator and detector identical between Clause 49 and 50. Since there is no reason to independently specify each PRBS31 generator and detector, I recommend that clause 50 reference the PRBS sections from clause 49. (The reason this is a TR is because I have a TR against the PRBS section of clause 49 which, if they accept, would require clause 50 to "fall-in-line".)

SuggestedRemedy

Reference section 49.2.8 for the generator and section 49.2.12 for the checker.

Response   *Response Status*   **C**

ACCEPT.

See resolution to comment #197.

Cl **50**   *SC* **50.3.8.2**   *P* **407**   *L* **43**   # **75**

Dawe, Piers   Agilent

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

Scrambler polarity: the PRBS31 as defined in D4.1 is the opposite of the industry standard one. We should not be re-inventing the wheel and redefining things that already exist. But the genie is out of the bottle: we have to tolerate the D4.1 PRBS31 as well as the industry standard one.

SuggestedRemedy

Please change to something like "The PRBS31 generator shall produce the 2 147 483 647-bit pseudo-random test sequence defined in O.150, or the sequence of opposite polarity which may be obtained by inversion. The scrambler polynomial is .... (as is) and a possible implementation is shown in Figure 49-9."
I suggest you delete "The initial value of the PRBS generator shall be any value other than all-zeros." as not necessary, and messy to generalize.

Use optional PRBS31 polarity register if appropriate. Standard polarity contains a run of 31 zeroes.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

The PRBS31 generator and checker are being specified now by reference to Clause 49 rather than explicitly in the text. Therefore, the relevant comments against the Clause 49 PRBS apply. See comments #197, #18, #76.

Cl **50**   *SC* **50.3.8.2**   *P* **407 - 408**   *L* **39-54, 1-3**   # **197**

Thomas Alexander   PMC-Sierra, Inc.

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

The optional PRBS31 test pattern generator and checker function description is duplicated between Clauses 50 and 49. This leads to unnecessary extra text, the possibility of unintentional errors and confusion, and extra work during maintenance. There should only be one instance of detailed description of the PRBS31 generator/checker, preferably in Clause 49.

SuggestedRemedy

Delete the body of subclause 50.3.8.2 and replace it with the following text:

"The PRBS31 test pattern mode is optional. When the transmit portion of the WIS is operating in PRBS31 test pattern mode, the WIS Transmit process is disabled or otherwise prevented from processing data, and the output of a Pseudo-Random Bit Sequence (PRBS) generator shall be continuously transferred to the PMA via the PMA Service Interface. The PRBS generator functionality is described in 49.2.6.

When the receive portion of the WIS is operating in PRBS31 test pattern mode, the WIS Receive process is disabled or otherwise prevented from processing data, and a PRBS pattern checker shall check the bits received from the PMA via the PMA Service Interface. The PRBS checker functionality is described in 49.2.12."

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Substitute the following text for the suggested remedy (to remove the double shall statements):

"The PRBS31 test pattern mode is optional. When the transmit portion of the WIS is operating in PRBS31 test pattern mode, the WIS Transmit process is disabled or otherwise prevented from processing data, and the output of a Pseudo-Random Bit Sequence (PRBS) generator shall be continuously transferred to the PMA via the PMA Service Interface. The PRBS generator functionality is described in 49.2.6.

When the receive portion of the WIS is operating in PRBS31 test pattern mode, the WIS Receive process is disabled or otherwise prevented from processing data, and a PRBS pattern checker shall check the bits received from the PMA via the PMA Service Interface. The PRBS checker functionality is described in 49.2.12."

(Fix stupid screwup in suggested remedy)

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause
RESPONSE STATUS: O/open   W/written C/closed   U/unsatisfied Z/withdrawn

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Cl **50**   *SC* **50.3.8.2**

Cl **50**   *SC* **50.3.8.3**   *P* **408**   *L* **36**   # **19**

Tim Warland   Quake Technologies

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

Recent discussion has suggested that the mixed frequency test pattern is overly complex and poorly defined. Althought this test structure has yet to be validated by the user community, we might make some changes to improve the definition and complexity of the TSS. The reference to O.172 is useless since the TSS structure which is referenced in O.172 is shown in figure 50-15. Similarly, the reference to G.957 for the CID is redundant since the CID pattern is shown in figure 50-16. (These references were in place to show the legacy of the pattern but add no value.) The PRBS pattern is not clearly defined (recall the PRBS31 discussion). Since the WIS has ITU heritage we should reference O.150 for the PRBS23. (Note that this has the inverter on the output of the LFSR.) There is no advantage to inverting the PRBS23 in alternate frames. A PRBS and its inverse have almost identical disparity and identical transition density. Lastly, the PRBS reset point is not unambiquously defined

The committee is encouraged to consider whether there is real value in inverting the CID from all ones to all zeros. All zeros may be the more stressful of the two

SuggestedRemedy

Page 409
change "is based upon" to "has"

change "defined by ITU-T Recommendation O.172, 1999 (Jitter and wander measuring equipment for digital systems which are based on the synchronous digital hierarchy (SDH))," to "described by 50.3.8.3.1"

change "as described by ITU-T Recommendation G.957, 1995 (Optical interfaces for equipments and systems relating to the synchronousdigital hierarchy (SDH))." to "described by 50.3.8.3.2"

Line 27 after PRBS add "as defined by ITU-T Recommendation O.150, 1996 (Equipment for the measurement of digital and analogue/digital parameters)"

Line 53 delete "and inverted before being placed into the second SPE."

Modify figure 50-15 to remove the inverted PRBS

Page 409 line 53 the PRBS generator shall be reset to all ones at the start of the SPE (row 1, column 641).

optional - page 410 line 46 remove reference to O.172.

optional - use only CID = zero and don't alternate TSS's

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Note that the mixed frequency test pattern text is not actually open for comments (no changes from 4.0 to 4.1). In addition, the mixed frequency test pattern has been relatively stable for a long time and gratuituous changes (functionality changes that do not address

bugs) are not advisable at this time.

The commenter, however, has pointed out problems with referencing standards when the contents have already been placed directly in the text. Therefore, the changes to the references will be accepted. The functionality changes will not.

Page 409
change "is based upon" to "has"

change "defined by ITU-T Recommendation O.172, 1999 (Jitter and wander measuring equipment for digital systems which are based on the synchronous digital hierarchy (SDH))," to "described by 50.3.8.3.1"

change "as described by ITU-T Recommendation G.957, 1995 (Optical interfaces for equipments and systems relating to the synchronous digital hierarchy (SDH))." to "described by 50.3.8.3.2"

Line 27 after PRBS add "as defined by ITU-T Recommendation O.150, 1996 (Equipment for the measurement of digital and analogue/digital parameters)"

Cl **50**   *SC* **50.3.8.3**   *P* **409**   *L* **25**   # **61**

Dawe, Piers   Agilent

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

G.957 has been up-issued. I'm not sure you need to give the date here, as it is specified in clause 1.3.

SuggestedRemedy

1999

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Editor is directed to find other instances of the same reference within Clause 50 and perform the same substitution as necessary.

Cl **50**   *SC* **50.6.4**   *P* **419**   *L*   # **82**

Dawe, Piers   Agilent

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

Should 50 have further optional XSBI PICS e.g. LVDS, status XSBI:M, like 51?

SuggestedRemedy

?

Response   *Response Status* **C**

REJECT.

The XSBI is defined as an optional compatibility interface in Clause 51 only (which also contains the definition of the PMA service interface, for which the XSBI is the physical instantiation). The PICS entries for the XSBI electricals and signals should therefore be present in Clause 51 only.

In fact, Clause 50 makes no normative statements with regard to the XSBI implementation except for requiring that the WIS interface to the XSBI, if present, should conform to whatever Clause 51 specifies. Therefore, there is no need to have PICS entries for the electrical portions of the XSBI in Clause 50.

Cl **51**   *SC* **4**   *P* **427**   *L*   # **99019**

Gaither, Justin   Xilinx

Comment Type **TR**   *Comment Status* **R**   *D4.0 #3*

As stated in the Note on page 421. XSBI is based on the OIF SFI-4 specification. The OIF specification includes the optional use of a Dual Data Rate clock which the XSBI implementation is missing.

An optional Dual Data Rate clock should be included in the standard as part of the XSBI interface for the following reasons:
1. Maintain continuity between OIF interface and XSBI
2. Broad market availability of LVDS IO at <400 Mhz (FPGA & ASIC)
3. >600 Mhz LVDS IO requires higher cost. (ASIC only, higher license fee)
4. lower EMI radiation.

SuggestedRemedy

The following changes will be required:
1. pg. 422 Table 51-1: add "SDR Mode defined as Single data rate clock mode of operation in which data is latched on the rising edge of the clock signal"
2. pg 422 Table 51-1: add "DDR Mode defined as Optional Dual Data Rate clock operation in which data is latched on both the rising and falling edge of the clock signal."
3. pg. 423 line 4: add text to read "...edge of the PMA_TX_CLK for SDR mode or the corresponding edge for DDR mode."
4. pg. 423 line 10 and 11. removed ", PMA_RX_CLK, which is at 1/16 the bit rate,"
5. pg 423 Table 51-4: Change active level for PMA_TX_CLK and PMA_RX_CLK to indicate rising edge for SDR Mode and both edges for DDR Mode.
6. pg 424 line 45: add text to read "rising edge of PMA_TX_CLK is used to latch data into the PMA in SDR mode and both edges of PMA_TX_CLK are used to latch data into the the PMA in DDR mode."
7. pg 425 line 11: add text to read "presented to the PMA client on the rising edge of PMA_RX_CLK in SDR Mode or both edges of PMA_RX_CLK in DDR Mode.
8. pg 427 line 10: add text to read "positioning clocks relative to the data in SDR mode."
9. pg 427 line 16: Change title of 51.6.1 to read "XSBI transmit interface timing for SDR mode" Similarly add for SDR mode to subclause titles as needed.
10. Insert new subclause 51.6.2 containing content similar to 51.6.1 except referenced to DDR mode. (I will gladly create the figures and text). specifications should be similar to OIF standard.
11. pg 429 line 50: add text to read "positioning clocks relative to the data in SDR mode"
12. pg 430 line 1: Change the title of 51.7.1 to read "XSBI receive interface timing for SDR Mode" Similarly add for SDR mode to subclause titles as needed.
13. Insert new subclause 51.7.2 containing content similar to 51.7.1 except referenced to DDR mode. (I will gladly create the figures and text). specifications should be similar to OIF standard.
14. pg 429 Table 51-8: existing spec should be specified for SDR mode. Add another row specifing DDR mode frequency.
15. pg 432 Table 51-12: existing spec should be specified for SDR mode. Add another row specifing DDR mode frequency.

Response   *Response Status* **U**

REJECT.

The DDR option was voted out over one year ago in working groups. This feature last

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause   Page 32 of 64

RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *Cl* **51**   *SC* **4**

appeared in draft 1.1(Oct 2000). Since draft 2.0 (Dec 2000) this option was longer in XSBI. There was consensus in the working groups that there was no extensive usage of this mode in the industry.
[Note: Prior vote to remove the 3xx MHz mode.
"Move to accept resolution.
Vote: For: 12 Against: 2 Abstain: 6 (motion carries)"]

The XSBI is an OPTIONAL interface. The commenter is free to implement a proprietary internal interface if desired.

Including different options for the same interface is highly deprecated as it tends to split the market and offer little benefit for the end users. If the commenter believed that the DDR interface had significant benefits, the comment should have proposed substitution of the DDR interface for the present XSBI interface, not offering it as an option.

Cl **51**   *SC* **51.10.3**   *P*   *L*   **# 80**

Dawe, Piers   Agilent

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

XSBI1 .... physical

SuggestedRemedy

*XSBI .... Physical

Response   *Response Status* **C**

ACCEPT.

Cl **51**   *SC* **51.4**   *P* **435**   *L* **13**   **# 37**

Turner, Ed   Lattice Semiconductor

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

There is no longer a PMD loopback and the text in this section and the diagram in figure 51-3 should be modified accordingly.

SuggestedRemedy

Modify accordingly.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.   See comment #58.

Cl **51**   *SC* **51.4**   *P* **435**   *L* **14**   **# 58**

Dawe, Piers   Agilent

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

There is no PMD loopback for the serial PMD. Opportunity to refer to Tom Alexander's diagram.

SuggestedRemedy

"PMA_SIGNAL.indicate is a function of PMD_SIGNAL.indicate, the Sync_Err signal and the optional PMA loopback signal. These signals can be seen in context in Figures 44-x and 51-3. In the case of PMA loopback being inactive, PMA_SIGNAL.indicate will indicate a FAIL whenever PMD_SIGNAL.indicate indicates a FAIL. PMA_SIGNAL.indicate will also indicate a FAIL when Sync_Err is valid, i.e. PMA unable to recover clock from the incoming data stream. If the PMA loopback function is implemented and activated, PMA_SIGNAL.indicate will ignore PMD_SIGNAL.indicate and behave as if PMD_SIGNAL.indicate is valid."

Also delete PMD_LOOPBACK.indicate from Figure 51–3.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. Will edit text and reference appropriate figure in clause 44 (if approved). "PMD_Loopback.indicate" will be deleted from Figure 51-3.

Cl **51**   *SC* **51.4.1**   *P* **437**   *L* **15**   **# 70**

Dawe, Piers   Agilent

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

There is no PMD loopback for the serial PMD.

SuggestedRemedy

"The indicator is a function of the PMD_SIGNAL.indicate status, the Sync_Err function and the optional PMA loopback signal."

Response   *Response Status* **C**

ACCEPT.

Cl **51**   *SC* **51.6.2**   *P* **441**   *L* **16**   **# 51001**

Justin Chang

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

Add space for "MHz" in Table 51-8.

SuggestedRemedy

Change "622.08MHz" and "644.53125MHz" to
"622.08 MHz" and "644.53115 MHz", respectively.
Scrub document for proper spacing between number and units.

Response   *Response Status* **C**

ACCEPT.

Cl **51**　　　*SC* **51.8**　　　　　*P* **444**　　*L* **14**　　*#* **72**

Dawe, Piers　　　　　　　　　Agilent

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

No PMD loopback

SuggestedRemedy

delete "/PMD"

Response　　　　　*Response Status* **C**

ACCEPT.

Cl **51**　　　*SC* **51.8**　　　　　*P* **444**　　*L* **15**　　*#* **56**

Tom Mathey　　　　　　　　　Independent

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

Incorrect cross-reference

SuggestedRemedy

Change reference from 45.2.1.7.4 to 45.2.1.1.4.

Response　　　　　*Response Status* **C**

ACCEPT.

Cl **51**　　　*SC* **51.8**　　　　　*P* **444**　　*L* **15**　　*#* **71**

Dawe, Piers　　　　　　　　　Agilent

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

45.2.1.7.4 not a link, and is wrong subclause. Should it be 45.2.1.1.4 ?

SuggestedRemedy

check, change, activate

Response　　　　　*Response Status* **C**

ACCEPT.   See comment #56.

Cl **51**　　　*SC* **Table 51-8**　　　*P* **441**　　*L* **18**　　*#* **57**

Tom Mathey　　　　　　　　　Independent

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

There are 14 places in the draft where text is "100 ppm". there are 3 places where text is "100ppm", without the space.

SuggestedRemedy

Change from "100ppm" to "100 ppm".
Also change: p. 444 Table 51-12 line 7, line 8
scrub draft for other places, such as 2500ppm.

Response　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.
Scrub entire document for "xxxppm" to "xxx ppm" (100ppm, 2500ppm, 20ppm).

Cl **52**　　　*SC*　　　　　　　　*P*　　　*L*　　*#* **52001**

Kabal, David

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

Names are of reflection parameters for transmitter, fiber plant and receiver are confusingly named, and this has manifested itself in various conversations on the e-mail reflector. Suggest we use more common, explicit names for these parameters and call them out in the respective tables explicitly.

SuggestedRemedy

Use common, less ambiguous names:

Optical Return Loss Tolerance (ORLT), Transmitter Reflectance (TR), Receiver Reflectance (RR), Maximum Discrete Reflectance (MDR) for these parameters:

In Table 52-7, under RIN12OMA, add Optical Return Loss Tolerance (min) of 12 dB
In Table 52-9, replace Return Loss with Receiver Reflectance (max) of -12 dB
In Table 52-12, under RIN12OMA, add Optical Return Loss Tolerance (min) of 12 dB
In Table 52-12, replace Return Loss with Transmitter Reflectance (max) of -12 dB
In Table 52-14, replace Return Loss with Receiver Reflectance (max) of -12 dB
In Table 52-17, under RIN21OMA, add Optical Return Loss Tolerance (min) of 21 dB
In Table 52-18, replace Return Loss with Receiver Reflectance (max) of -26 dB
In Table 52-19, replace Return Loss of any… to Maximum Discrete Reflectance (max) of -26 dB

In 52.14.2.2 Connection return loss

Change title to Maximum discrete reflectance,
change text to:

The Maximum Discrete Reflectance for 10GBASE-S shall be less than -20 dB.
The Maximum Discrete Reflectance for 10GBASE-L and 10GBASE-E shall be less than -26 dB.

Response　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.   Change ORLT (min) to ORLT (max).

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause
RESPONSE STATUS: O/open   W/written C/closed   U/unsatisfied Z/withdrawn

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Cl **52**　　　*SC*

Cl **52**   *SC*   *P*   *L*   **#** **11**

Ohlen, Peter   Optillion

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

The receiver sensitivity is currently specified using the stressed sensitivity, measured with a conditioned input signal to which both jitter and ISI has been added. Although the method has been simplified, it still has a limited track record. There are a few parameters which can put you in different corners of a multi-dimensional "stress space". Different receivers designs have different strong and weak points, and depending on which corner you choose, you punish or favor different devices. For some, the nominal sensitivity is more critical, for others, SJ stress is most difficult. For yet another rx, DCD is more difficult.What do we really want to to? We want to find a set of parameters for the stressed eye such that the subsets (1)[passes_test & not_working] and (2)[fails_test & works] are both minimized. This calls for extensive testing and development of test procedures.At the time we want to make products that we can sell to the market-place without revising the spec numbers every other month.These two things don't go along very well, and we might need to give up one of the two options.

SuggestedRemedy

Settle on something that we think works today, with numbers that can easily be validated. Do one or several of the following:

1. Make the currently informative receiver sensitivity normative. This measurement is easier to calibrate but does not test jitter.

Separate the jitter and the ISI in the RX stress tests:

2. Remove the jitter from the stressed eye, only use a low-pass filter. Thi s would guard against low-bandwidth signals caused by TX and/or fiber impairments.

3. Introduce a SONET-style jitter tolerance test to ensure that the receiver can cope with a jittered input signal.

Other things we could do:

4. Keep the stressed eye, but follow the precedent of 1GbE and take out the margin for the stressed sensitivity because of the large uncertainty in how the actual penalty and stress (VECP measured on the oscilloscope) correlate.

5. Recognize that we have gathered enough measurement data to say that the stressed eye methodology is well understood and the we have confidence in the chosen numbers and know their significance to ""mission mode"" performance.

Response   *Response Status* **U**

ACCEPT IN PRINCIPLE. Keep current specification and methodology, but recognize that measurements are still needed to prove viability. It is believed that the current methodology is sound.

16:4

Cl **52**   *SC*   *P* **457**   *L*   **#** **92**

Dawe, Piers   Agilent

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

RIN spec is now unnecessarily tight.
1. Because we directly measure the transmitter and dispersion penalty, a transmitter with excessive RIN will be caught by that test. For this reason we can relax the RIN spec and cost-reduce with reduced testing. We could consider deleting it altogether but we have other things to consider!

2. RIN spec value changes if in the RIN measurement we measure the modulation RF power on a mixed signal, as may be more convenient, consistent with other measurements, and gives a more relevant result. For this reason alone the spec value should be relaxed (made less negative) by 1 dB.

Both these arguments apply at all wavelengths.

SuggestedRemedy

-126 or -127, for all three PMD types.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. Choose -128 dB/Hz.

8:0

Cl **52**   *SC*   *P* **459462**   *L*   **#** **98**

Dawe, Piers   Agilent

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

In tables 52-9,14 footnotes e, missing space in "0.4dB".

SuggestedRemedy

0.4 dB

Response   *Response Status* **C**

ACCEPT.

Cl **52**   *SC* **52**   *P*   *L*   **#** **99023**

Dawe, Piers   Agilent

Comment Type **TR**   *Comment Status* **R**   *D4.0 #52 rin*

Our RIN spec is tighter than it need be. It is calculated assuming everything else is worst case and even then it is tighter than it need be.

SuggestedRemedy

If we stay with a standalone RIN measurement, relax it by 2 dB, to -128 dB/Hz if there are no other changes.

Response   *Response Status* **C**

REJECT. This is a significant change to the RIN specification.
10:1:3

Cl **52**   *SC* **52**   *P*   *L*   # **99020**

Ohlen, Peter   Optillion

Comment Type **TR**   *Comment Status* **R**   *D4.0 #112*

As we gather more results from testing and refine our models, we might want to tune some parameters.

SuggestedRemedy

We need more testing input before we know.

Response   *Response Status* **C**

REJECT. No change to the text is specific enough to implement in this comment.

8:2:2

Cl **52**   *SC* **52**   *P*   *L*   # **99022**

Dawe, Piers   Agilent

Comment Type **TR**   *Comment Status* **A**   *D4.0 #64 oma*

Measurement standardisation: OMA, eye amplitude, RIN, risetime.OMA has caused much confusion. We need to do more to simplify this and relate the new measures to traditional units of measurement. For clause 52, possibly not clause 53, we should use eye-based measurements per OFSTP-4A for four reasons:
  it is standards based,
  it is what people have the habit of doing,
  several metrics can be obtained from one measurement, and
  it much simplifies measurement on complete systems, e.g. in a network.Factories can learn how to relate a square-wave based measurement to a measurement per standards as they wish.

SuggestedRemedy

Replace all references to OMA to "eye amplitude" per another comment.
Unless changing for other reasons, keep OMA spec values as "eye amplitude" spec values.
Change name of RIN_x_OMA to RIN_x_EA or RIN_x_modulated or similar. Change 52.9.6.3 e) to give the effect of "This parameter is to be assured in mission mode. However, measurements with an appropriate PRBS (2^23 -1 or 2^31 -1) or a valid 10GBASE-R or 10GBASE-W or OC192c or STM-64 signal will give equivalent results.".
For BASE-L,E, make RIN spec values 1 dB more positive. (The revision of RIN spec isn't very important in its own right but doing it means we don't need a detailed OMA measurement section.) For BASE-S, if risetime is still called out, replace "35 ps" with "33 ps" representing a measurement from an eye.   See separate comment for revisions to Extinction Ratio on same basis.

Response   *Response Status* **Z**

ACCEPT IN PRINCIPLE. OMA and ER already use mixed pattern. See #62.

9:1:4

Cl **52**   *SC* **52**   *P*   *L*   # **99021**

Dawe, Piers   Agilent

Comment Type **TR**   *Comment Status* **R**   *D4.0 #53 rin*

A standalone RIN spec is probably unnecessary, and because the way of measuring it relates to a component, is not very desirable in a system level standard. A transmitter with RIN high enough to give a bad error floor would be found out either by the jitter bathtub test (but that test doesn't work, except possibly for "sigma" jitter), or more straightforwardly from the BER vs. power curve of a transmitter and path penalty ("TDP" in current ER/EW) measurement.

SuggestedRemedy

Delete the RIN specs and tests. Use BER vs. power curve of a transmitter and path penalty measurement to screen for several impairments including RIN, sigma jitter, other noises, in a single measurement. Refer informatively to a target RIN value that we think is acceptable, less stringent than the current one, and to the procedure we imported (from Fibre Channel?).

Response   *Response Status* **C**

REJECT. Keep RIN until TDP is better understood.
7:1:4

Cl **52**　　*SC* **52**　　　　　　*P* **437484**　　*L*　　　　# **99024**

Dawe, Piers　　　　　　　　　　Agilent

Comment Type **TR**　　*Comment Status* **R**　　　　*D4.0 #43 test*

Need to prove viability of all optical test methods and detailed optical spec numbers, and/or make changes to achieve viability.While technical feasibility of PMDs has been demonstrated, although with tiny numbers of samples, feasibility of some of the measurement and specification procedures has not. Some procedures have not been exercised; some have and have been shown to be not viable. Until we have measurement procedures that work we cannot freeze the specification values.

SuggestedRemedy

Continue, and ramp up, the engineering work to refine and/or replace optical test methods and detailed optical spec numbers.Set a non-binding target hurdle of proof of feasibility such as:

For test procedures: procedure satisfactorily demonstrated in at least three organizations, on at least three samples per site, with a high level of confidence in the repeatability and the correlation from site to site.For PMD spec values: PMDs from at least three implementers compliant per feasible measurement techniques consistent with draft standard, with at least three samples per site, with a high level of confidence in interoperability across the compliant parameter space.This is a pretty weak level of experimental confidence and, I understand, represents a tiny fraction of the numbers of parts measured for the Gigabit Ethernet standardization process.In some instances we may be able to develop confidence by reference to other work, e.g. OC-192 parts.To avoid needless program slippage and churn, delay the issue of Draft 4.1 until we have demonstrated at least one of everything and have developed procedures, parameter limits and text which at least appear to be viable and worth further refinement.

Response　　　　　　*Response Status* **U**

REJECT. This is a process request, not a comment against the draft.

9:1:2

Cl **52**　　*SC* **52**　　　　　　*P* **4449**　　*L*　　　　# **99025**

Dawe, Piers　　　　　　　　　　Agilent

Comment Type **TR**　　*Comment Status* **R**　　　　*D4.0 #67 ttc*

The triple trade off calculation we have used has attracted comment because it is known to be inaccurate for single mode lasers. However, a simple but better formula is not available. We need to acknowledge this so we do not mislead the average reader and do not appear as idiots to the expert reader.

SuggestedRemedy

Add explanatory text where the subject is introduced, which is 52.5.1 - or, if preferred, in 52.6.1."The trade offs between center wavelength, maximum RMS spectral width and minimum eye amplitude are known as triple trade offs. The formula used is unlikely to be accurate, especially for single mode lasers. However, it is thought to be preferable to using no trade off."

Response　　　　　　*Response Status* **Z**

REJECT.   Model is pessimistic and so pointing out an inaccuracy is a model that is not shown in the standard and that does not hinder performance or interoperability does not aid the reader.

14:1:3

Cl **52**　　*SC* **52.1.1**　　　　　*P* **451**　　*L* **40**　　　# **84**

Dawe, Piers　　　　　　　　　　Agilent

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

It's hard for the reader to know what is meant, here, by "primitive". The explanation is not referenced or bookmarked, and is about 1600 pages away in 1.2.2.

SuggestedRemedy

Add: Note: Primitives are described in 1.2.2.

Response　　　　　　*Response Status* **C**

ACCEPT.

Cl **52**　　*SC* **52.1.1.2.3**　　　*P* **452**　　*L* **30**　　　# **85**

Dawe, Piers　　　　　　　　　　Agilent

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

Gratuitously unhelpful. Last time's response, "where a primitive receipt is unspecified" and "is common to the rest of this document (outside of 10GE as well)" ("but we always do it this way") is unconvincing. It IS specified, elsewhere.

SuggestedRemedy

Add: Note: This primitive is received by the PMA sublayer as described in 51.2.2 and 51.3.2.

Response　　　　　　*Response Status* **C**

REJECT. 51.2.2 and 51.3.2 describe the behavior of a specific client. The client of a PMD need not be a PMA, hence the current wording.

TYPE: TR/technical required T/technical E/editorial　COMMENT STATUS: D/dispatched A/accepted R/rejected　SORT ORDER: Clause, Page, Line, Subclause　　Page 37 of 64

RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn　　　　　　　　　　　　　　　　　　　　　　　　*Cl* **52**　　*SC* **52.1.1.2.3**

Cl **52**   *SC* **52.1.1.3.3**   *P* **453**   *L* **3**   *#* **87**

Dawe, Piers   Agilent

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

Gratuitously unhelpful. This primitive's receipt is at least described, elsewhere.

SuggestedRemedy

Add: Note: This primitive is received by the PMA sublayer as described in 51.4.

Response   *Response Status* **C**

REJECT. See #85.

Cl **52**   *SC* **52.14.3**   *P* **486**   *L* **50**   *#* **160**

Dudek, Mike   Cielo Communications

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

The maximum Channel insertion loss for 10GBASE-E from 52.7.3 is 10.9dB

SuggestedRemedy

Change 11 dB to 10.9 dB

Response   *Response Status* **C**

REJECT. 10.9 dB is from the INFORMATIVE link budget table, and should not have any bearing the NORMATIVE attenuator management section.

8:1

Cl **52**   *SC* **52.15.4**   *P* **479483**   *L*   *#* **99026**

Dawe, Piers   Agilent

Comment Type **TR**   *Comment Status* **A**   *D4.0 #82*

Should there be more in the Value/Comment column? Compare other clauses.

SuggestedRemedy

I have made this a TR so you can gather suggestions over more than one editing cycle.

Response   *Response Status* **U**

ACCEPT IN PRINCIPLE.   No specific recommendations here. We are still finalizing contents of clause, so comments may be premature. Specific suggestions are encouraged for these cells.

8:2:3

Cl **52**   *SC* **52.3**   *P* **453**   *L* **36**   *#* **181**

Thaler, Pat   Agilent Technologies

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

D4.0 comment resolution changed the names of fault conditions to remove "local".

SuggestedRemedy

replace local_fault and local fault with fault

Response   *Response Status* **W**

ACCEPT.

Cl **52**   *SC* **52.4.6**   *P* **455**   *L* **28**   *#* **33**

Turner, Ed   Lattice Semiconductor

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

Sections 52.4.6, 52.4.7, 52.4.8, and 52.4.9 all refer to local fault. Comment #270 on D4.0 requested the replacement of "local fault" with "fault".

SuggestedRemedy

Perform replacement of "local fault" with "fault" for these sections.

Response   *Response Status* **C**

ACCEPT.   See also other comments.

Cl **52**   *SC* **52.4.6**   *P* **455**   *L* **29**   *#* **88**

Dawe, Piers   Agilent

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

Not clear. I believe we mean to report faults within this PMD by this function, not faults elsewhere that could in other sublayers invoke "LF". It's implementation specific anyway.

SuggestedRemedy

I would appreciate advice from the logic gurus. My suggestion is, replace "local fault" with "fault associated with the PMD", and add "The faults detected by this function are implementation specific."

Response   *Response Status* **U**

ACCEPT IN PRINCIPLE. See #181. "PMD_fault is the logical OR of PMD_receive_fault, PMD_transmit_fault and any other implementation specific fault."

Also, forgot to implement D4.0 #270: Need to change text in PMD_receive_fault to: "PMD_receive_fault is the logical OR of NOT SIGNAL_DETECT and any implementation specific fault."

13:1

Cl **52**   *SC* **52.4.7**   *P* **455**   *L* **42**   **#** **45**

Tom Mathey   Independent

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

The text on this line maps the serial transmit disable MMD bit to 1.9.1 via its reference to 45.2.1.8.4. Clause 45 maps the serial transmit disable MMD bit to 1.9.0 at subclause 45.2.1.8.5.

SuggestedRemedy

Harmonize.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.   Change table 52-3, second row, to Global Transmit disable, and variable is then: PMD_global_transmit_disable. Change all other instances as well, and use 45.2.1.8.5 as section reference. Also add note:

PMD Transmit Disable 0 is not used for serial PMDs.

Cl **52**   *SC* **52.5**   *P* **456**   *L* **15**   **#** **89**

Dawe, Piers   Agilent

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

"400 MHz km" looks odd in the middle of a sentence. Would e.g. "400 MHz.km" be allowed?

SuggestedRemedy

MHz.km ?

Response   *Response Status*   **C**

REJECT. Although odd, it is correct, and choosing a dot is prone to typeset error.

Cl **52**   *SC* **52.5.1**   *P* **456**   *L* **38**   **#** **90**

Dawe, Piers   Agilent

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

Uneven font size

SuggestedRemedy

size 10

Response   *Response Status*   **C**

ACCEPT.

Cl **52**   *SC* **52.5.3**   *P* **447**   *L* **7**   **#** **99027**

Paul Kolesar   OFS Fitel

Comment Type   **TR**   *Comment Status*   **A**   *D4.0 #359 budgets*

The 7.3 dB power budget value does not seem to be supported by the transmitter and receiver specs. Using clause 52.6 as an example, it appears that the power budget is derived by taking the highest signal level in the triple trade off table and subtracting the receiver sensitivity. In this example (-3.2) - (-12.6) = 9.4 power budget. Following this approach with clause 52.5 yields (-2.8) - (-11.98) = 9.2, not the 7.3 dB stated in Table 52-10.

SuggestedRemedy

Rectify by adjusting appropriate Tx and Rx parameters following consistent philosophy for both S and L PMDs.

Response   *Response Status*   **U**

ACCEPT IN PRINCIPLE. Arbitrary spectral characteristics chosen for budget values, not worst case.

Cl **52**   *SC* **52.6**   *P* **448**   *L* **36**   **#** **99028**

Dawe, Piers   Agilent

Comment Type   **TR**   *Comment Status*   **R**   *D4.0 #44*

LR/LW transmitter power window is too narrow for single mode optics where single mode connector loss uncertainty plays a part as well as the usual setup, tracking and alignment issues. Need a window 5 dB wide at 5 dB extinction ratio, preferably at 4 dB extinction ratio. Gigabit Ethernet has a window 8 dB wide. Present LR/LW window is approx. 4.6 dB wide at 5 dB extinction ratio, and approx. 3.7 dB wide at 4 dB extinction ratio, for the most optimistic wavelength choices, narrower otherwise. We need about 0.5 dB more.There are two ways to fix this: either increase the Average launch power (max) or reduce the launch power min. and improve the receiver sensitivity limits to match. A combination would work. It may be that we do not yet have enough information to make a final choice.The file Pave_OMA-L.pdf shows the issue graphically.

SuggestedRemedy

Reduce launch power min. by 0.5 dB throughout table 52-13 and figure 52-4. Reduce the stressed sensitivity max from -10.3 to 10.8 and the unstressed sensitivity max from -12.6 to -13.1.

Response   *Response Status*   **C**

REJECT. See #38.

8:2:0

Cl **52**   *SC* **52.6**   *P* **459**   *L* **50**   **#** **95**

Dawe, Piers   Agilent

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

With the move to a more directly measurement based specification the triple trade off curves which were in any case inaccurate are no longer an actual error in this standard, but they are still over-complicated and confusing and causing concern in the marketplace. We have found at least 11 ways to simplify the situation: see http://www.ieee802.org/3/10G_study/public/serial_adhoc/email/msg00577.html and http://www.ieee802.org/3/10G_study/public/serial_adhoc/email/msg00581.html and another comment about the <=0.05 nm column. My preferred is "option 4" which is very like what we have, stably, for 10GBASE-E. My next preferred option allows compensation for wavelength dependent attenuation: OMA-TDP-0.0036(wavelength-1310) > spec value

SuggestedRemedy

In table 52-12:
OMA (min) -3.9 dBm
TDP (max) 3.2 dB
OMA-TDP   TBA dB (where TBA can be found from the attachment to my email http://www.ieee802.org/3/10G_study/public/serial_adhoc/email/msg00577.html).

From line 47:
"minimum optical modulation amplitude as defined in Table 52–12. Note that OMA and TDP are specified both independently and as a pair."
Delete the paragraph at line 50. Delete figure 52-4 and table 52-13.

Still rigorous, still flexible, but far simpler!

Response   *Response Status* **C**

ACCEPT. Choose #4. Remove TTC for 10GBASE-L, specification on transmitter is for OMA-TDP > -6.2. TDP <3.2 (OMA)-5.2 dBm)

13:0

Cl **52**   *SC* **52.6 to 52.9**   *P* **444**   *L*   **#** **39**

Thaler, Pat   Agilent Technologies

Comment Type **TR**   *Comment Status* **R**   *D4.0 comment*

Many of the test methods specified here do not have demonstrated viability. For instance:

stressed eye generation measurement and stressed sensitivity needs further work.

BERT bathtub "W" test appears to be producing misleading results.

We thought we could create a worst case pattern for jitter tests to shorten test time - the psuedo-random data pattern of 49.2.8. However, we are finding that the worst case pattern is not predictable and we get bit errors with a long (2^31) PRBS pattern under conditions that don't get errors for the psuedo-random pattern. Therefore, we may have to give up on a short cut and revert to testing with random/psuedo-random bit streams.

SuggestedRemedy

Verify all test methods before approval of the draft. Modify as necessary. This modification of the tests may also require modification of some parameter values in the specification.

See the comments of Piers Dawe for more specifics.

Response   *Response Status* **W**

REJECT. Duplicate… Delete

Cl **52**   *SC* **52.6 to 52.9**   *P* **444**   *L*   **#** **99029**

Thaler, Pat   Agilent Technologies

Comment Type **TR**   *Comment Status* **A**   *D4.0 #36*

Many of the test methods specified here do not have demonstrated viability. For instance:

stressed eye generation measurement and stressed sensitivity needs further work.

BERT bathtub "W" test appears to be producing misleading results.

We thought we could create a worst case pattern for jitter tests to shorten test time - the psuedo-random data pattern of 49.2.8. However, we are finding that the worst case pattern is not predictable and we get bit errors with a long (2^31) PRBS pattern under conditions that don't get errors for the psuedo-random pattern. Therefore, we may have to give up on a short cut and revert to testing with random/psuedo-random bit streams.

SuggestedRemedy

Verify all test methods before approval of the draft. Modify as necessary. This modification of the tests may also require modification of some parameter values in the specification.See the comments of Piers Dawe for more specifics.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.   New method adopted.

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause   Page 40 of 64

RESPONSE STATUS: O/open   W/written C/closed   U/unsatisfied Z/withdrawn   *Cl* **52**   *SC* **52.6 to 52.9**

Cl **52**   *SC* **52.6.1**   *P* **448**   *L* **35**   **#** **99030**

Jim Tatum   Honeywell

Comment Type **TR**   *Comment Status* **R**   *D4.0 #1*

There is no specification for rise and fall time for the 10GBASE -L and 10GBASE-E transmitters in tables 52-12 and 52-17. In addition, it makes no sense to talk about side mode suppression in Table 52-12 when the allowed RMS spectral bandwidth is clearly multimode.

SuggestedRemedy

Add rise and fall time specs to tables 52-12 and 52-17.Remove reference to side mode suppression in table 52-12.

Response   *Response Status* **U**

REJECT. Insufficient evidence to reinstate rise and fall times for -L and -E. SMSR is necessary to complete specification.

Cl **52**   *SC* **52.6.1**   *P* **448**   *L* **36**   **#** **99031**

Thaler, Pat   Agilent Technologies

Comment Type **TR**   *Comment Status* **R**   *D4.0 #38*

LR/LW transmit power window is too narrow.

SuggestedRemedy

Raise the maximum transmit level or reduce the minimum transmit window (or a combination of the two) to allow at least a 5 dB window.

A similar change may be appropriate for ER/EW.

Response   *Response Status* **C**

REJECT. Commenter is invited to resubmit after presenting data for premise of "too narrow" window. Why is a wider one needed?
8:2:2

Cl **52**   *SC* **52.6.1**   *P* **448**   *L* **36**   **#** **41**

Thaler, Pat   Agilent Technologies

Comment Type **TR**   *Comment Status* **D**   *D4.0 comment*

LR/LW transmit power window is too narrow.

SuggestedRemedy

Raise the maximum transmit level or reduce the minimum transmit window (or a combination of the two) to allow at least a 5 dB window.

A similar change may be appropriate for ER/EW.

Response   *Response Status* **Z**

Cl **52**   *SC* **52.6.1**   *P* **449**   *L* **3-39**   **#** **99032**

Juergen Rahn   Lucent Technologies

Comment Type **TR**   *Comment Status* **R**   *D4.0 #94 ttc*

In 10GBASE-L: 1310 nm 10km triple-trade-off is used.This trade-off is intended to optimize the yield of laser transmitters to support this spec; the resulting difference in optical power levels from the model is only a few 0.1 dB; considering that the general measurement accuracy and reproducibility of optical power measurements is of the order of +/- 0.25 dB the "gain" of this trade-off is to be doubted; even more the amount of testing needed to verify spec compliance is much more than the actual gain in component yield; finally the validity of the model as such is still not confirmed. So if the main reason for the optical spectrum broadening is chirp this may interact with fibre dispersion in a positive or negative way.(positive way : pulse compression ; negative way : pulse broadening) This behavior cannot be modeled by simple spectral measurement and may lead to wrong conclusions. However if the validity of the model is not proven and this model is used as a basis for specification and as such also for verification, this can only lead to rejecting good devices and approving bad devices, which does not serve this industry.

SuggestedRemedy

triple tradeoff should be removed from the 1310 nm interface and the spec should be further simplified, e.g. by specifying a minimum OMA output power of -3.5 dBm (or any other value that serves this application). The gain of allowing up to -4 dBm due to the model is not significant enough to justify the model; it is only unnecessarily complicated.

Response   *Response Status* **U**

REJECT. Triple tradeoff curves do simplify normative compliance over a wider range of laser parameters than permitted by a point specification. Specifically, allowed OMA range is 0.8 dB which is relatively significant for emerging DFB-like technologies (example: LW-VCSELs).

9:2:1

Deferred until Piers recalculates TTC and tables with TDP.

Cl **52**   *SC* **52.6.2**   *P* **450**   *L* **14**   # **99033**
Juergen Rahn   Lucent Technologies

Comment Type **TR**   *Comment Status* **R**   *D4.0 #93 clock tolerance*

For the 10GBASE-LW receive optical specifications a clock tolerance of +/-100ppm is specified in table 52-14. This is more than is required in relation to the transmitter specification and any possible transport network such as SDH/SONET, OTN, and also old legacy 10 G WDM transponder equipment. As such, the specification is internally inconsistent and also inconsistent with respect to transport equipment. There is no reason to require the receiver to have a tolerance of +/- 100 ppm because no received signal will ever have a frequency offset greater than +/- 20 ppm. The receiver specification should be changed to what is required in line with the transmitter and transport network specification.

SuggestedRemedy

Add an extra column for 10GBASE-LW in table 52-14 with 9.95328 GBd as rate and +/-20ppm as clock tolerance in the same way as it is in Table 52-12.

Response   *Response Status* **U**

REJECT. This is consistent with Clauses 46-51. This would be a flip-flop of a previous decision after much discussion to set the receiver frequency tolerance to +/- 100 ppm (the suggested change was rejected once)

6:1:3

Cl **52**   *SC* **52.7**   *P* **448**   *L* **36**   # **99034**
Dawe, Piers   Agilent

Comment Type **TR**   *Comment Status* **R**   *D4.0 #45*

ER/EW transmitter power window depends strongly on both extinction ratio and transmitter and dispersion penalty (TDP). At present the range is between 0.7 (!) and 8 dB. For single mode optics where single mode connector loss uncertainty plays a part as well as the usual setup, tracking and alignment issues, we need a window 5 dB wide for all anticipated conditions, but not necessarily going right into the corners of the parameter space. Gigabit Ethernet has a window 8 dB wide.If receiver sensitivity cannot be improved, we can increase the Average launch power (max), remembering to adjust the minimum link attenuation and receiver max power for damage points. We do not need to change the receiver overload for BER point.The file Pave_OMA-E.pdf shows the issue graphically.

SuggestedRemedy

Increase average launch power (max) and receiver max power for damage by 1 dB to +5 dBm. Increase the minimum channel insertion loss by 1 dB to 6 dB. Change "5" to "6" in 52.14.3 and update figure 52-18.

Response   *Response Status* **Z**

REJECT. Commenter is invited to present the supporting data at next meeting.

6:1:4

Cl **52**   *SC* **52.7.1**   *P* **452**   *L* **24**   # **99035**
Juergen Rahn   Lucent Technologies

Comment Type **TR**   *Comment Status* **R**   *D4.0 #40*

For 10GBASE-E: 1550nm 40km an Extinction Ratio minimum of 3 dB is specified: Considering directly modulated lasers in 1310nm a minimum of 4 dB for 1310 nm, which can be justified for those directly modulated sources, a lower value for indirectly modulated lasers is totally out of place. In contrast to this it has been proven during the feasibility investigation that a lower value than 8.2 dB results in an increased path penalty. If there is a need to allow future new technologies then there should be an idea of what that is. Currently we are not aware of any alternative (cheaper) technology (besides EML) that could support 40 km transmission at 1550 nm. There might be also impact on other parameters then Extinction Ratio.

SuggestedRemedy

Change the minimum extinction ratio to 8.2 dB for 1550 nm EML source.

Response   *Response Status* **U**

REJECT. This would make Extinction Ratio the primary specification, where OMA is the desired specification.

11:1:4

Cl **52**   *SC* **52.7.2**   *P* **453**   *L* **14**   # **99036**
Juergen Rahn   Lucent Technologies

Comment Type **TR**   *Comment Status* **R**   *D4.0 #92 clock tolerance*

For the 10GBASE-EW receive optical specifications a clock tolerance of +/-100ppm is specified in table 52-18. This is more than is required in relation to the transmitter specification and any possible transport network such as SDH/SONET, OTN, and also old legacy 10 G WDM transponder equipment. As such, the specification is internally inconsistent and also inconsistent with respect to transport equipment. There is no reason to require the receiver to have a tolerance of +/- 100 ppm because no received signal will ever have a frequency offset greater than +/- 20 ppm. Thereceiver specification should be changed to what is required in line with the transmitter and transport network specification.

SuggestedRemedy

Add an extra column for 10GBASE-LW in table 52-18 with 9.95328 GBd as rate and +/-20ppm as clock tolerance in the same way as it is in Table 52-17.

Response   *Response Status* **U**

REJECT. See #93.

5:1:4

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause
RESPONSE STATUS: O/open   W/written C/closed   U/unsatisfied Z/withdrawn

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Cl **52**   *SC* **52.7.2**

Cl **52**　　*SC* **52.8**　　　　　*P* **455**　　　*L* **25**　　　# **99037**
Juergen Rahn　　　　　　　　　　Lucent Technologies

Comment Type **TR**　　*Comment Status* **A**　　　　*D4.0 #91*

The transmitter and receiver jitter requirements for the WAN interfaces are defined to be 0.35 UI pk to pk DJ for 10GBASE-E and 0.3 UI pk to pk DJ + some amount of random jitter for the 10GBASE-L. Measurements have shown that this will result in a penalty of about 3 dB and 2.5 dB respectively (Typical), while no tolerance difference between 1550nm and 1310 nm receivers have been observed so far. Due to the fact of measuring at TP3, the related penalty is a part of transmitter and path penalty also, and it is in total too big and needs to be reduced significantly. A jitter only penalty value a bit above 1dB could be acceptable at this reference point. This jitter tolerance penalty should be possible to be achieved for worst case EOL conditions under 0.2 UI pk to pk DJ conditions following the measurement results.

SuggestedRemedy

Change the maximum deterministic pk to pk jitter values in table 52-20 BERT mask specifications Table for 10GBASE-L from 0.30 UI pk to pk to 0.2 UI pk to pk and the values for the 10GBASE-E from 0.35 UI pk to pk to pk to the same value of 0.2 UI pk to pk, which will serve feasibility of the receivers.

Response　　　　　　　*Response Status* **U**

ACCEPT IN PRINCIPLE. Section replaced by new jitter methodology.

Cl **52**　　*SC* **52.8**　　　　　*P* **466**　　　*L*　　　# **166**
Lindsay, Tom　　　　　　　　　　Stratos Lightwave

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

Too many sections.

SuggestedRemedy

Move contents and heading name of 52.8.1.1 up to 52.8.1. Eliminate 52.8.1.1.

Response　　　　　　　*Response Status* **C**

ACCEPT.

Cl **52**　　*SC* **52.8.1**　　　　*P* **466**　　*L* **16**　　# **137**
Booth, Brad　　　　　　　　　　Intel

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

There is no title associated with the heading.

SuggestedRemedy

Promote 52.8.1.1 to 52.8.1.

Response　　　　　　　*Response Status* **C**

ACCEPT.

Cl **52**　　*SC* **52.8.1**　　　　*P* **467**　　*L* **13**　　# **20**
Tim Warland　　　　　　　　　　Quake Technologies

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

The applied sinusoidal jitter creates some additional high frequency stress in the form of 0.05UI jitter above 4MHz. I understand the rational for having a high frequency contribution for the applied sinusoidal jitter but am opposed to "raising the bar". The 0.05UI of high frequency jitter should be taken from the DJ budget.

SuggestedRemedy

Add the note to table 52-20 " 0.05UI high frequency jitter is taken from the DJ budget for the DUT."

Response　　　　　　　*Response Status* **C**

REJECT. There is no specific allocation for DJ.

Cl **52**　　*SC* **52.8.1.1**　　*P* **466**　　*L*　　　# **169**
Lindsay, Tom　　　　　　　　　　Stratos Lightwave

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

Sinusoidal jitter has become the main source of (high probability) jitter in the stressed eye. As such, the values here are too low.

SuggestedRemedy

The sum of sinusoidal jitter and pulse shrinkage jitter (measured during calibration of the stressed eye, but at least 5 psec) should equal our old value(s) for W for frequencies above 4 MHz. The values for lower frequencies should correspond.

This table should be reworded to reflect this. Ensure compatibility with the new writing of 52.9.11.

Response　　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE. Resolved per lindsay_3_0302.pdf.

Cl **52**　　*SC* **52.9**　　　　　*P*　　　*L*　　　# **99040**
Ohlen, Peter　　　　　　　　　　Optillion

Comment Type **TR**　　*Comment Status* **R**　　　*D4.0 #111 test methodology*

Some measurement methods have not been tested thouroghly and might benefit from some rework as measurement methods are implemented and tested on more hardware.

SuggestedRemedy

We need more testing input before we know.

Response　　　　　　　*Response Status* **C**

REJECT. No specific change to the text is suggested. Probably will be dealt with anyway as a function of more specific motions and comments.

5:1:4

Cl **52**   *SC* **52.9**   *P*   *L*   # **99039**

Lindsay, Tom   Stratos Lightwave

Comment Type **TR**   *Comment Status* **A**   *D4.0 #293*

A Golden PLL is required in several places. Although parameters and values are not included in the standard, their performance can greatly affect measured results.

SuggestedRemedy

From test equipment manufacturers, require demonstration of golden PLL performance acceptable for 802.3ae or at least a path to acceptability.

Response   *Response Status* **U**

ACCEPT IN PRINCIPLE. Technical feasibility to be demonstrated, even though this comment does not directly address a text change.

6:1:2

Cl **52**   *SC* **52.9**   *P*   *L*   # **99038**

Ohlen, Peter   Optillion

Comment Type **TR**   *Comment Status* **A**   *D4.0 #110 pattern*

Patterns. So far, very limited testing has been performed using test patterns 1&2 that we have specified for 10GBASE-R, and all feasibility studies so far have used PRBS patterns. The testing that has been performed indicates that:
* Test pattern 1 seems to be somewhat more stressful than test pattern 2, although the opposite was intended.
However, this seems to be somewhat dependent on the DUT. (Did we fix this?)
* The test patterns seem to be less stressful than the standard PRBS-31 which is commonly used.This behaviour could be due to the short pattern length which gives more discrete spectral lines than longer PRBS words.

SuggestedRemedy

Replace the largely untested patterns with the PRBS-31 pattern that was present in D3.0. This implies changes to several sub-sub-clauses in 52.8-9.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. Optionally add PRBS (2^31) (test pattern 3) in each instance where test pattern 1 or 2 is used. Add optional test pattern 3 generator to appropriate test modes.

17:4::24

Cl **52**   *SC* **52.9**   *P* **457**   *L*   # **99041**

Dawe, Piers   Agilent

Comment Type **TR**   *Comment Status* **A**   *D4.0 #57*

There are four different modes of operation, and manual switching between, this could add cost and inconvenience to network operations.
The four are:
  Mission mode (64B/66B coded packets, idles, aligns, LF and R
  Square wa
  Test pattern
  Test pattern
We may need to add a 5th, lone bit, pattern but it need not be generated by compliant hardware. In addition, the designer patterns appear to be much too short and may provide uneven test coverage. I believe that for BASE-L, the use of any pattern which is not truly random or a long PRBS allowed to run through all of its states, is tantamount to adding uncertainty (either sign) to a measurement of uncommon events such as spec BERs. This is a different case to 8B10B or XAUI which are not scrambled; here there is no point trying to guess the "worst case", and less reason to use a square wave. If anyone has experimental evidence on this subject, please bring it forward! Without evidence we can't adopt untried designer patterns anyway.

SuggestedRemedy

Do like telecoms does: State that compliance should be assured in mission mode. The bits on the line are as good as the same (scrambled) whether idles, data, LF, or RF.Because we don't have mission mode scramblers in today's BERTs, allow compliance to be shown for LAN PHY with PRBS31 (recently I've found that PRBS23 may not be adequate for BER measurements).Also change the tests which call for a square wave to use mission mode or PRBS31 (actually PBRS23 would work for these). Change spec values of extinction ratio, risetime, RIN to reflect the change of pattern. Revise 52.9 text and table 52-24 per this comment.Add optional PRBS31 generator to clause 49 PCS and appropriate registers to clause 45.

Response   *Response Status* **Z**

ACCEPT IN PRINCIPLE. Need note before test pattern section:

Note: Test patterns for specific optical tests are designed to ensure system operation while passing valid 10GBASE-R or 10GBASE-W data.

Cl **52**　　　*SC* **52.9**　　　　　　　　*P* **467**　　　*L* **23**　　　# **136**

Booth, Brad　　　　　　　　　　　　Intel

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

In November 2001, the serial PMD group stood before the Task Force and stated that they had shown technical feasibility and that they had a path to compliance. The Task Force accepted this resolution as did the Working Group in granting conditional approval for the draft to go to Sponsor Ballot. After the first Sponsor Ballot circulation, the serial PMD group decided to change the test methodology for the serial PMDs. This major change to what was previously deemed technical feasible calls into question whether or not the serial PMD group and Task Force have achieved technical feasibility.

This new methodology and parameters for the serial PMDs has not been presented to the Task Force or Working Group to provide proof of technical feasibility in the form of manufacturability and ability to conformance test serial PMDs. Without proof that the new methodology and parameters are equal to or better than what the draft previously contained, one can only be left to assume that all previous statements about technical feasibility are now invalid and void.

SuggestedRemedy

Provide data to the Task Force that shows that at least 4 optical transceiver vendors can conform to the new specifications. Provide data to the Task Force that shows the difference between D4.0 and D4.1 test methodologies. Provide data to the Task Force that proves that vendors who comply with the D4.1 test methodology also comply with the BER, distance and interoperability requirements as per our objectives, PAR, and 5 criteria.

Response　　　　　　　*Response Status*　**U**

ACCEPT IN PRINCIPLE.

Technical feasibility of transceivers was asserted and proved, but the measurement techniques were not. New methodologies and parameters were presented to the IEEE task force at the Santa Rosa meeting, where they were incorporated in D4.1.

There is a consensus opinion within the PMD track that the current direction is the best one to follow.

Comparing D4.0 and D4.1 methodologies or results is not helpful to moving the standard forward.

Verification of test methodology based on experimental results will be shown at April meeting.

[Note from commenter: I eagerly await the information to be presented at our next interim meeting with the expectation that with the experimental results shown, this comment will be withdrawn]

Cl **52**　　　*SC* **52.9.1**　　　　　　　*P* **467**　　　*L* **29**　　　# **104**

Dawe, Piers　　　　　　　　　　　　Agilent

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

The flow of text could be improved.

SuggestedRemedy

Move the paragraph "Compliance shall be achieved ... and its footnote to the start of this subclause. Then insert new text "Two groups of test pattern are used, square wave and other. Put square wave paragraph into its own subclause 52.9.1. Put everything else in 52.9.1 into a subclause 52.9.1.2. Start that subclause with new text "Patterns 1, 2 and 3 are defined in table 52-22. Pattern 3 is optional."

Response　　　　　　　*Response Status*　**C**

ACCEPT.

Cl **52**　　　*SC* **52.9.1**　　　　　　　*P* **467**　　　*L* **29**　　　# **105**

Dawe, Piers　　　　　　　　　　　　Agilent

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

Clarification of reasoning for so many test patterns.

SuggestedRemedy

Insert into new subclause 52.9.1.2 after "Pattern 3 is optional.", "However, it is the preferred test pattern for critical measurements for 10GBASE-R, and may be used for 10GBASE-W. 10GBASE-R test patterns 1 and 2 may not be long enough to generate fully representative jitter effects in all cases. However, they may be useful in diagnosis."

Response　　　　　　　*Response Status*　**C**

REJECT. Test pattern 1 & 2 are still deemed useful and this added subclause does not appear to guide or clarify under which condition a particular pattern is deprecated. If we know, we should be specific.

3:1

Cl **52**　　　*SC* **52.9.1**　　　　　　　*P* **467**　　　*L* **36**　　　# **103**

Dawe, Piers　　　　　　　　　　　　Agilent

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

"0x" in the seeds is a significant obstacle to understanding if the reader does not know what it means, and seems to have no significant meaning if the reader does know what it means. Other optical PMD clauses 38 and 53 do not use it. It is a diversion and not required.

SuggestedRemedy

Add "in hexadecimal format" to read "specified in hexadecimal format in Table 52–21". Delete "0x" (4 times).

Response　　　　　　　*Response Status*　**C**

REJECT. 0x is approved method of representing hexadecimal numbers.

Cl **52**   *SC* **52.9.1**   *P* **468**   *L* **31**   **#** **5**

Ohlen, Peter   Optillion

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

I an not sure that compliance can tested in normal operation. How would I test the ""shall""
? Strictly, you don't need to test a spec point. Howeverm does not compliance mean that
all the PICS (shall:s) requirements are fulfilled? One of the PICS (shall:s) say that you have
to fulfil all the PICS. This sounds like a circular argument.I think we need to be more clear
on this point and say what we mean explicitly.

SuggestedRemedy

Maybe something along these lines would work:"The test patterns are thought to be
representative of real traffic, and should give similar levels of BER, base-line wander etc.
However, it is to be ensured that the same level of performance is also achieved for real
traffic."

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.   Change "shall" to "is to be".

Cl **52**   *SC* **52.9.10**   *P* **475**   *L* **50**   **#** **122**

Dawe, Piers   Agilent

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

Use of Latin

SuggestedRemedy

Replace "negligible intersymbol interference (ISI), fast rise/fall times, low jitter and RIN,
etc." with "negligible impairments such as intersymbol interference (ISI), rise/fall times,
jitter and RIN."

Response   *Response Status*   **C**

ACCEPT.

Cl **52**   *SC* **52.9.11**   *P* **476**   *L*   **#** **167**

Lindsay, Tom   Stratos Lightwave

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

As directed by the serial PMD ad hoc, the Stressed eye test requires changes.

SuggestedRemedy

I will send input for this comment in a separate attachement.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE. Resolved per lindsay_3_0302.pdf.

Cl **52**   *SC* **52.9.11.1**   *P* **476**   *L* **17**   **#** **123**

Dawe, Piers   Agilent

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

Not "the test pattern defined in 49.2.8." for one thing, won't work for WIS.

SuggestedRemedy

"a signal or test pattern according to 52.9.1"

Response   *Response Status*   **C**

ACCEPT.

Cl **52**   *SC* **52.9.11.1**   *P* **476**   *L* **19**   **#** **124**

Dawe, Piers   Agilent

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

Remember WIS pattern checker.

SuggestedRemedy

"section 49.2.12 and 50.3.8, the PCS or WIS is"

Response   *Response Status*   **C**

ACCEPT.

Cl **52**   *SC* **52.9.11.1**   *P* **478**   *L* **14**   **#** **24**

Tim Warland   Quake Technologies

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

Line 14 recommends a 5GHz filter, line 22 recommends 7.5GHz. Converging on one value
reduces test complexity

SuggestedRemedy

Specify filter at 7.5GHz bandwidth in accordance with...

Response   *Response Status*   **C**

REJECT.   Need to generate slow rise times.

Cl **52**   *SC* **52.9.11.1**   *P* **478**   *L* **14**   **#** **153**

Dudek, Mike   Cielo Communications

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

Depending on whether the system is 850nm, 1300nm, or 1550nm the amount of ISI to be
generated for the vertical eye closure penalty is different. For this reason it would be better
to use different filters for each filter.

SuggestedRemedy

Replace "of approximately 5GHz" with "in the range of 4GHz to 8GHz (depending on the
risetime of the test Tx and the amount of ISI required)"

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE. Overtaken by other comments and other rewrites.

Cl **52**   *SC* **52.9.11.1**   *P* **478**   *L* **18**   **#** **154**

Dudek, Mike   Cielo Communications

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

The diagram shows electrical summing of the sine wave. Hence the wording is wrong.

SuggestedRemedy

Chage "before the E/O is an option to avoid the second optical source, but high linearity is mandatory" to "before the E/O requires high linearity in the E/O convertor. Alternatively the sinusiodal AM signal can be added optically.

Response   *Response Status*   **C**

ACCEPT.

Cl **52**   *SC* **52.9.11.1**   *P* **478**   *L* **21**   **#** **139**

Pepeljugoski, Petar   IBM

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

The Bessel-Thompson filters built-in the measurement equipment have very loose tolerances. These tolerances are +/- 0.85 dB for frequencies up to 7.45 GHz, and grow up to +/- 4dB at 14.9 GHz. Using these components in the receiver conformance testing adds additional level of variability in the measurement setup.

Simulations show that instead of nominally 2.2 dB, these filters can generate ISI penalties in the range of 1.6 dB to 3.4 dB.

The standard does not prescribe how to correct for these type of errors. For instruments and test implementations where the filters are built-in, it is impossible (or at least very difficult) for the end user to know the magnitude and direction of the error.

For filters built-in the scopes and other instruments it is impossible for the end user to determine the actual bandwidth

SuggestedRemedy

Modify the receiver conformance test setup to eliminate the 7.5 GHz filter used to calibrate the VECP of the stress signal and mandate high bandwidth receiver. Accordingly, modify Tables 52.9, 52.14 and 52.18 (the entry for the required VECP).

Response   *Response Status*   **U**

ACCEPT IN PRINCIPLE. Replace text "The vertical and horizontal eye closures to be used for receiver conformance testing are verified using an
optical reference receiver with a 7.5 GHz fourth order Bessel-Thomson response as specified in G.691 as the ITU-T STM-64 reference." with "The vertical and horizontal eye closures to be used for receiver conformance testing are verified using an
optical reference receiver with a 7.5 GHz fourth order ideal Bessel-Thomson response. Use of G.691 tolerance filters may significantly degrade this calibration."

12:3

Cl **52**   *SC* **52.9.11.1**   *P* **478**   *L* **23**   **#** **22**

Tim Warland   Quake Technologies

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

The Bessell Thomson filter is referenced from G.691, which in turn references the definition from G.957. Why don't we skip a layer and specify G.957 directly

SuggestedRemedy

Change G.691 to G.957, 1999 (Digital transmission system – Digital sections and digital line system – Digital line systems)

Response   *Response Status*   **C**

REJECT. See #21.

Cl **52**   *SC* **52.9.11.2**   *P* **478**   *L* **39**   **#** **125**

Dawe, Piers   Agilent

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

Extinction ratio varies per port type. Pattern has changed.

SuggestedRemedy

Replace "approximately 3 dB (extinction ratio should be calibrated with the low frequency square wave pattern)." with "approximately the value given in 52.5.1, 52.6.1, or 52.7.1;"

Response   *Response Status*   **C**

ACCEPT. Make sure to correct also incoming text of Lindsay_03_02.pdf

---

Cl **52**   *SC* **52.9.11.2**   *P* **478**   *L* **41**   **#** **155**

Dudek, Mike   Cielo Communications

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

Typo

SuggestedRemedy

3) the is should be if.

Response   *Response Status*   **C**

ACCEPT.

Cl **52**   *SC* **52.9.11.2**   *P* **478**   *L* **43**   **# 140**

Pepeljugoski, Petar   IBM

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

The procedure for calibrating the vertical eye closure in the presence of sinusiodal interferer is not clear. The instruments (scopes) have several different options how to measure the signal amplitude and eye height.

The addition of the sinusoidal interfering signal when ISI and noise are present further complicates existing procedures, because it changes the histograms for both signal levels, thus misleading the built-in algorithms to determine amplitude and eye height.

Also, the procedure uses short sequence that canmn be observed on the scope to find the VECP, but when swicthed to long patterns like 2^31-1, no verification is done that the penalty has not changed.

This can lead to inaccurate determination of the VECP.

SuggestedRemedy

Since the procedure for determining the signal amplitude and eye height in the presence of ISI, noise and sinusioidal interferer is not verified, adopt a requirement that most of the vertical eye closure is accomplished using filters, and only minor tweaking by adding the sinusoidal interferer.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. Resolved per lindsay_3_0302.pdf.

Cl **52**   *SC* **52.9.11.2**   *P* **479**   *L* **20**   **# 127**

Dawe, Piers   Agilent

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

Updating patterns definition.

SuggestedRemedy

Replace "Switch to a specified test pattern. The data pattern for 10GBASE-R is generated using test pattern 2 as defined in 52.9.1. The data pattern for 10GBASE-W is generated using the CID test pattern as defined in 50.3.8;."
with
"Switch to a signal or test pattern as specified in 52.9.1."

Response   *Response Status* **C**

ACCEPT.

Cl **52**   *SC* **52.9.11.2**   *P* **479**   *L* **20**   **# 126**

Dawe, Piers   Agilent

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

For consistency and simplicity for the user, AN should now = OMA.

SuggestedRemedy

Delete "and AN is the normal amplitude without ISI, as measured in Figure 5214." In equation (3), replace AN with OMA. Remove AN from figure 52-12.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.   479:20 after "… ISI" put "(OMA)". (needs to be applied AFTER TL input)

12:1

Cl **52**   *SC* **52.9.11.2**   *P* **479**   *L* **21**   **# 156**

Dudek, Mike   Cielo Communications

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

Figure reference is incorrect.

SuggestedRemedy

Change 5214 to 52-12.

Response   *Response Status* **C**

ACCEPT.

Cl **52**   *SC* **52.9.11.2**   *P* **479**   *L* **22**   **# 157**

Dudek, Mike   Cielo Communications

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

"Based on" is too weak.

SuggestedRemedy

Change "based on" to "given by"

Response   *Response Status* **C**

ACCEPT.

Cl **52**   *SC* **52.9.11.2**   *P* **480**   *L* **8**   **# 128**

Dawe, Piers   Agilent

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

Grammar! Not "implementer ... their".

SuggestedRemedy

"his" or "her".

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. Avoid awkward gender-specific term, make implementer plural, remove "a", keep "their".

Cl **52** *SC* **52.9.11.2** *P* **480** *L* **9** *#* **158**

Dudek, Mike Cielo Communications

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

52.8.1.1 is the sinusoidal jitter mask. It is the jitter on the receive input signal that must meet this mask, not the signal itself.

SuggestedRemedy

Insert "the jitter on" between "that" and "the"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. "input signal meets the requirements of 52.8.1.1" (check for clause number change in other comment).

Cl **52** *SC* **52.9.11.3** *P* **480** *L* **13-16** *#* **7**

Ohlen, Peter Optillion

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

It is not quite clear if:(1) the BER should be measured for each fequency of the sinusoidal jitter (more stringent)or if(2) the BER should be averaged over all frequencies of SJ (less stringent).

SuggestedRemedy

Decide which way to go, and clarify in the text.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change word "swept" to "stepped". Choose #1: "The BER is to be compliant at all frequencies in the specified frequency range."

Cl **52** *SC* **52.9.12.1** *P* **480** *L* *#* **170**

Lindsay, Tom Stratos Lightwave

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

Should add more description to reference transmitter. These are not difficult to achieve.

SuggestedRemedy

Jitter less than 0.25 peak-peak.
Minimize RIN, <-136 dB/Hz

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Adding d/e. Change 0.25 UI to 0.20 UI.

Cl **52** *SC* **52.9.12.2** *P* **480** *L* **49** *#* **159**

Dudek, Mike Cielo Communications

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

The back reflection referred to is rather hidden in the tables.

SuggestedRemedy

Change the wording to "optical back reflection specified as the x subscript in RinxOMA in table"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Use new term "Optical Return Loss Tolerance" here, which is explicitly called out in each table.

Cl **52** *SC* **52.9.12.3** *P* **481** *L* *#* **171**

Lindsay, Tom Stratos Lightwave

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

We discussed controlling the sampling point being +/- offset from the center. We need more verification of the "contract" between Tx and Rx (jitter and amplitude), but at least the Rx should represent typical behaviors and tolerance of receivers.

SuggestedRemedy

Specify the sampling point as +/-0.1 UI from the eye center.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE. See #10.

Cl **52** *SC* **52.9.12.3** *P* **481** *L* **3** *#* **9**

Ohlen, Peter Optillion

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

The sentence "The sampling instant .... " on p.481:3-4 is duplicated below where it is more appropriate as the decision timing and threshold are not really set in the test receiver.

SuggestedRemedy

Remove it here as it is also present on lines 20-22.

Response *Response Status* **C**

ACCEPT.

Cl **52**   *SC* **52.9.12.3**   *P* **481**   *L* **6**   *#* **131**
Dawe, Piers   Agilent

Comment Type **T**   *Comment Status* **A**
Transmitter impairments are unavoidable and can damage this measurement, letting weak parts pass. We need to strengthen the text

SuggestedRemedy
Add (here): "The sensitivity S must be corrected for any significant transmitter impairments including any vertical eye closure." Delete similar sentiment at line 41.

Response   *Response Status* **C**
ACCEPT. Delete paragraph at line 41, add sentence suggested after "… removed."

7:1

Cl **52**   *SC* **52.9.12.4**   *P* **481**   *L*   *#* **10**
Ohlen, Peter   Optillion

Comment Type **T**   *Comment Status* **A**
Do we want to have a time window to measure the TDP?

SuggestedRemedy
The decision threshold is set at the average signal level. The sampling instant is displaced from the eye center by +- 0.05 UI. The following procedure is repeated for early and late decision and the highest TDP value is used.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE. Choose +/-5 ps (+/-0.05 UI) offset, do not change link budgets and specifications. (doubles measurements)

15:2

Cl **52**   *SC* **52.9.12.4**   *P* **481**   *L* **18**   *#* **129**
Dawe, Piers   Agilent

Comment Type **T**   *Comment Status* **A**
Here is where we can put in the timing point offset. Also line 4 above.

SuggestedRemedy
From recent experimental evidence I suggest +/-5 ps not +/-10 ps.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE. See #10.

8:1

Cl **52**   *SC* **52.9.12.4**   *P* **481**   *L* **18**   *#* **130**
Dawe, Piers   Agilent

Comment Type **T**   *Comment Status* **R**
Remembering we are under pressure to reduce the uncertainty and confusion of end customers who expect to use mean power measurements. Could substitute 0.5 for 1 dB below.

SuggestedRemedy
Replace "If P_DUT is larger than S," with "If P_DUT exceeds S by more than 1 dB" and "zero, TDP = 0." with "taken as 1 dB, TDP = 1.".

Response   *Response Status* **C**
REJECT. No additional guard band on OMA vs. TDP is needed, beyond what is specified for each PMD.

9:1

Cl **52**   *SC* **52.9.12.4**   *P* **481**   *L* **40**   *#* **8**
Ohlen, Peter   Optillion

Comment Type **T**   *Comment Status* **A**
The paragraph on lines 40-42 has a better context in 52.9.12.3, i.e. on p.481:8.

SuggestedRemedy
Move the text as above.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE. Replaced by another comment.

Cl **52**   *SC* **52.9.13**   *P* **481**   *L* **33**   *#* **134**
Dawe, Piers   Agilent

Comment Type **TR**   *Comment Status* **R**
Coming under renewed pressure from the food chain to declare the minimum mean power. Let's just do it, it won't hurt!

SuggestedRemedy
Add normative Tx specifications to three tables 52-7, 12, 17 which impose a minimum mean power about 0.5 dB above the hypothetical minimum mean power for minimum OMA, the most favorable triple trade off point and a very high extinction ratio. Suggested values were -5.5 dBm for BASE-L, -3 for BASE-E. See Pave_OMA-L.pdf and Pave_OMA-E.pdf
For BASE-S, if in-building links are less likely to be tested with power meters, we could either do the same or just include an informative note which gives the hypothetical minimum.

Response   *Response Status* **U**
REJECT. This overspecifies a link and may confuse customers.

11:1

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

Page 50 of 64
Cl **52**   *SC* **52.9.13**

Cl **52**   *SC* **52.9.13**   *P* **481**   *L* **33**   # **133**
Dawe, Piers   Agilent

Comment Type **T**   *Comment Status* **A**
Pruning the obvious.

SuggestedRemedy
Delete "If necessary, interpolate between the measured response values."

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

Cl **52**   *SC* **52.9.3**   *P* **468**   *L* **47**   # **106**
Dawe, Piers   Agilent

Comment Type **E**   *Comment Status* **A**
. within sentence

SuggestedRemedy
signal, STM-64

Response   *Response Status* **C**
ACCEPT. (Delete)

Cl **52**   *SC* **52.9.3**   *P* **468**   *L* **51**   # **108**
Dawe, Piers   Agilent

Comment Type **T**   *Comment Status* **A**
Where we have "The extinction ratio is measured under fully modulated conditions.", clause 38 has "The extinction ratio is measured under fully modulated conditions with worst-case reflections." First, why would the reflections be needed? Second, as 52 is much more definitely a system level standard and less a component level standard than clause 38, the "fully modulated" seems superfluous.

SuggestedRemedy
Delete the sentence. Join the next sentence into this paragraph.

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

Cl **52**   *SC* **52.9.3**   *P* **468**   *L* **51**   # **107**
Dawe, Piers   Agilent

Comment Type **T**   *Comment Status* **A**
Where we have "OFSTP-4A" clause 38 has "ANSI/TIA/EIA-526-4A-1997 [B13].

SuggestedRemedy
As resolved.

Response   *Response Status* **C**
ACCEPT. As clause 38.

Cl **52**   *SC* **52.9.5**   *P*   *L*   # **99042**
Dawe, Piers   Agilent

Comment Type **TR**   *Comment Status* **A**   *D4.0 #62*
Measurement standardisation: OMA and eye amplitude.OMA has caused much confusion. We need to do more to simplify this and relate the new measures to traditional units of measurement. For clause 52, possibly not clause 53, we should use eye-based measurements per OFSTP-4A for four reasons:
it is standards based,
it is what people have the habit of doing, <ccr>several metrics can be obtained from one measurement, and it much simplifies measurement on complete systems, e.g. in a network. Factories can learn how to relate a square-wave based measurement to a measurement per standards as they wish.

SuggestedRemedy
Replace all references to OMA to "eye amplitude" which is defined per OFSTP-4A as the difference between b1, b0 where b1, b0 are the mean of the signal between 0.4 and 0.6 UI in the upper and lower halves of the eye diagram, respectively. Refer forward to definition, first time "eye amplitude" is used p443 line 7). Revise 52.9.5, OMA test procedure to specify eye amplitude measurement, probably by reference - it can be much shorter.Unless changing for other reasons, keep OMA spec values as "eye amplitude" spec values. For nominal sensitivity (very good eye), the two metrics must give the same result. For transmit powers and stressed sensitivities there is a discrepancy but it has been sort of overlooked in our analysis so keeping the values is probably our best course, unless we agree changes to reflect real (experimental) sensitivity results. See other comments for related changes to RIN, extinction ratio and risetime.

Response   *Response Status* **Z**
ACCEPT IN PRINCIPLE. Make OMA able to use mixed signal.

Cl **52**   *SC* **52.9.5**   *P* **469**   *L*   # **168**
Lindsay, Tom   Stratos Lightwave

Comment Type **T**   *Comment Status* **D**
The OMA test method calls out mixed data test pattern, whereas the spreadsheet method currently accepted bases OMA on a low frequency square wave. Also, Figure 52-7 shows a "square" wave pattern, also inconsistent with the text.

SuggestedRemedy
Make the text, the figure, and the spreadsheet tool consistent.

Response   *Response Status* **Z**
Withdrawn.

Cl **52**   *SC* **52.9.5**   *P* **469**   *L* **38**   **#** **109**

Dawe, Piers   Agilent

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

Following improvements agreed last time, this subclause can be condensed and brought further into line with industry practice. This also makes for cheaper measurements (because the DUT has to be exercised in fewer modes), and makes for a more relevant measurement. We could have reduced this to a one-liner "per ANSI/TIA/EIA-526-4A" but because OMA is relatively new, let's spell it out.

SuggestedRemedy

"52.9.5 Optical modulation amplitude (OMA) measurement

OMA is the difference in optical power for the nominal "1" and "0" levels of the optical signal as defined as b1 and b0 in ANSI/TIA/EIA-526-4A-1997 [B13]. It should be assured during system operation. However, measurements with pattern 1 or 3 defined in 52.9.1, or other patterns such as a 2^23-1 PRBS or a valid 10GBASE-R or 10GBASE-W or OC192c or STM-64 signal will give equivalent results. The measurement system, e.g. digital communications analyzer, has a 4th order Bessel-Thomson filter as specified in 52.9.7. On an eye diagram, b1 is the mean of the histogram of the upper half of the diagram in the time window from 0.4 to 0.6 UI where 0 and 1 UI are the mean crossing times of the signal. Similarly, b0 is the mean of the histogram of the lower half of the diagram in the same time window. OMA, known as "Eye Amplitude" in some digital communications analyzers, is b1 - b0. It is equivalent to
$OMA = 2A((ER-1)/$
$(ER+1))$
where A is the average optical power A (in mW) and ER = b1 /b0 is the extinction ratio (absolute ratio NOT dB). OMA may be quoted in dBm or mW."

Delete figures 52-6 and 52-7.

Response   *Response Status*   **U**

REJECT. Revert to square wave method (D4.0). State "OMA can be approximated by AN on Fig. XXX". (goes in OMA measurement section, replacing "An alternative… " paragraph.)

13:4

Cl **52**   *SC* **52.9.5**   *P* **469**   *L* **38**   **#** **13**

Ohlen, Peter   Optillion

Comment Type   **TR**   *Comment Status*   **D**

It is recommended that OMA is measured with random data. Still, the recommended measurement uses a square wave.

SuggestedRemedy

Modify the text on p.469:41 to read:"... OMA is measured for a node transmitting pattern 1, 3 or the square wave defined in 52.9.1. // If a square wave is used, the recommended measurement method is illustrated in figure ...."

Response   *Response Status*   **Z**

Withdrawn

Cl **52**   *SC* **52.9.5**   *P* **469**   *L* **41**   **#** **145**

Dudek, Mike   Cielo Communications

Comment Type   **TR**   *Comment Status*   **D**

The change to the use of the eye diagram to measure OMA has completely messed up this section.

SuggestedRemedy

Revert to using the square wave with the wording from draft 4.0 (change here and in table 52-23)

Alternatively if this is not acceptable delete figure 52-7
Change a) line 48 page 469 to " The bandwidth of the measurement system shall be at least 7.5GHz.
Change b) line 2 page 470. to "Measure the optical power P1 in the nominal 1 (see figure 52-12). The nominal 1 is the value of 1 in a long string of 1's.
Change c) line 4 page 470 to "Measure the optical power P0in the nominal 0 (see figure 52-12). The nominal 0 is the value of 0 in a long string of 0's.

Response   *Response Status*   **Z**

Withdrawn.

Cl **52**   *SC* **52.9.5**   *P* **470**   *L* **8**   **#** **143**

Dudek, Mike   Cielo Communications

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

The change in section 52.9.4 to use the eye pattern rather than square wave for measuring extinction ratio conflicts with the phrase "or use of any pattern other than the recommended square wave with make this relation less accurate". The use of the eye diagram to measure the extinction ratio at TP3 will make this so inaccurate that it will be useless.

SuggestedRemedy

Revert back to using the square wave to measure Extinction Ratio in section 52.9.4 using the wording from draft 4.0. and change the pattern to square wave in table 52-23. If that is not acceptable delete the paragraph starting "An alternative method of measurement........"

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE. OMA no longer references ER method.

Cl **52**　　　*SC* **52.9.6**　　　　　　*P* **462**　　　*L* **2**　　　　# **99043**
Dawe, Piers　　　　　　　　　　　Agilent

Comment Type **TR**　　　*Comment Status* **A**　　　　　　*D4.0 #51*

We have been quite nervous of signal borne noise and set a fairly strict RIN requirement, measured in a 10 GHz bandwidth (rather than 7.5), in case the receiver has a wider than minimum bandwidth. A receiver with higher bandwidth will suffer less ISI, so what it loses in noise it may more than regain in reduced ISI. But the calculation, for a typical peaky laser RIN spectrum, is quite involved. But here's another scenario: a transmitter uses a "DC light source" which is a laser with a 3 GHz resonant frequency, for example, followed by a modulator. The RIN calculation we use assumes that the noise is white so only approx. 7/10 of it is relevant, which is not so. I doubt if this is a big error but maybe the traditional 3B/4 bandwidth would be the one we should use.

SuggestedRemedy

If we need to stay with a RIN measurement, go back to 7.5 GHz measurement bandwidth.

Response　　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE. Send to Serial PMD ad hoc for resolution.

5:1:8

Cl **52**　　　*SC* **52.9.6**　　　　　　*P* **470**　　　*L* **53**　　　　# **110**
Dawe, Piers　　　　　　　　　　　Agilent

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

What test cable?

SuggestedRemedy

Replace "The test cable between the Device Under Test (DUT) and the detector forms an optical path having a single discrete reflection at the detector with the specified optical return loss."
with
"The optical path between the Device Under Test (DUT) and the detector has a single discrete reflection with the specified optical return loss as seen by the DUT".
In 52.9.6.2, rename "test cable" as "optical path".

Response　　　　　　　*Response Status* **C**

ACCEPT.

Cl **52**　　　*SC* **52.9.6**　　　　　　*P* **471**　　　*L*　　　　# **111**
Dawe, Piers　　　　　　　　　　　Agilent

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

Far too many words for the terse style of 802.3. Here's an attempt to prune some of the beginner's guide stuff.

SuggestedRemedy

Delete "There is only one reflection in the system as the polarization rotator can only adjust the polarization state of one reflection at a time.", "If multiple lengths of cable are required to complete the test setup they should be joined with splices or connectors having return losses in excess of 30 dB.", "A polarization rotator consisting of two quarter wave retarders has the necessary flexibility.", "The O/E converter may be of any type which is sensitive to the wavelength range of interest.", "in the filter selection", "The power meter should be an RF type designed to be used in a 50 [Ohm] coaxial system.", "from the detector or its attendant amplifier, if used", "a) Connect and turn on the test equipment. Allow the equipment to stabilize for the manufacturers recommended warm up time;", "to remove the contribution of any noise power from the detector and amplifier, if used;".

Response　　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE. Except change: "The power meter should be an RF type designed to be used in a 50 ? coaxial system." to "The electrical power meter should be an RF type."

Cl **52**　　　*SC* **52.9.6.2**　　　　　　*P* **471**　　　*L* **42**　　　　# **23**
Tim Warland　　　　　　　　　　　Quake Technologies

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

In some instances, the BT filter is set to 5GHz, in others it is spec'd at 7.5GHz. Converging on one value reduces test complexity. G.691 (and subsequently G.957) specifies 7.5GHz.

SuggestedRemedy

Specify filter at 7.5GHz bandwidth in accordance with...

Response　　　　　　　*Response Status* **C**

REJECT. Is this the right reference? Not clear whether this refers to the RIN test or stressed eye generation. If RIN, already addressed by another comment. If stressed eye, it is important to generate a slow rise time as expected at TP3.

Cl **52**   *SC* **52.9.6.2**   *P* **471**   *L* **43**   # **114**
Dawe, Piers   Agilent

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

Filter bandwidth: in D4.0 comment #51 I argue that the unusually wide filter bandwidth used here assumes which side the threat is coming from, and the assumption may not be always correct. Another reason for using the standard measurement bandwidth is so that we can do as many measurements as possible in one set-up, e.g. can we measure RIN using a sensitive DCA? We are looking for an RMS noise >=1/40 of the OMA. This would be a worthwhile test cost reduction. In the following suggested remedy I may be over-specifying the filter; at present its order is undefined. But at least it's clear, and consistent with other measurements.

SuggestedRemedy

Change "The upper -3 dB limit of the measurement apparatus is to be approximately equal to the bit rate (i.e., 10 GHz)." to "The frequency response of the measurement apparatus is that defined in 52.9.7."

Response   *Response Status* **C**

REJECT. Lasers are known to have RIN peaks at their relaxation oscillation frequencies. It is quite feasible that this peak could be in the range of 7.5 to 10 GHz.

14:1

Cl **52**   *SC* **52.9.6.2**   *P* **471**   *L* **44**   # **112**
Dawe, Piers   Agilent

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

d.c. ... <1

SuggestedRemedy

DC ... less than 1

Response   *Response Status* **C**

ACCEPT.

Cl **52**   *SC* **52.9.6.3**   *P* **472**   *L* **12**   # **113**
Dawe, Piers   Agilent

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

Wrong pattern. OMA in RIN test must use same pattern as OMA in OMA test!

SuggestedRemedy

Replace "square wave pattern of 52.9.1" by "a signal or pattern per 52.9.5"

Response   *Response Status* **U**

ACCEPT IN PRINCIPLE. No change required because square wave already specified for OMA.

13:1

Cl **52**   *SC* **52.9.7**   *P* **462**   *L*   # **99044**
Dawe, Piers   Agilent

Comment Type **TR**   *Comment Status* **A**   *D4.0 #63*

For the avoidance of doubt, define 0 and 1 UI in the transmit mask.

SuggestedRemedy

Add normative text: 0 and 1 UI are the mean crossing points of the signal.

Response   *Response Status* **Z**

ACCEPT IN PRINCIPLE. See #295.

Cl **52**   *SC* **52.9.7**   *P* **472**   *L* **34**   # **115**
Dawe, Piers   Agilent

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

Updating patterns sentence in line with other subclauses.

SuggestedRemedy

Replace "An appropriate PRBS (2^23-1 or 2^31-1) or a valid 10GBASE-R or 10GBASE-W or OC192c or STM-64 signal should be used."
with
"This should be assured during system operation. However, measurements with pattern 3 or 1 defined in 52.9.1, or other patterns such as a 2^23-1 PRBS or a valid 10GBASE-R or 10GBASE-W or OC192c or STM-64 signal are likely to give very similar results."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. Change to: "Compliance is to be assured during system operation. However, measurements with pattern 3 or 1 defined in 52.9.1, or other patterns such as a 2^23-1 PRBS or a valid 10GBASE-R or 10GBASE-W or OC192c or STM-64 signal are likely to give very similar results."

12:1

Cl **52**   *SC* **52.9.7**   *P* **472**   *L* **41**   # **116**
Dawe, Piers   Agilent

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

Time definitions "measured at the average value of the optical eye pattern" is what we want, but specifying it involves straying too far into the inner workings of oscilloscopes. I had a quick look at this: what they do seems to be good enough, and we have bigger issues to settle.

SuggestedRemedy

Delete "measured at the average value of the optical eye pattern".

Response   *Response Status* **U**

REJECT. The definition is trying to emulate AC coupling which is typical for receivers.

12:2

Cl **52**   *SC* **52.9.7**   *P* **472**   *L* **44**   *#* **118**

Dawe, Piers   Agilent

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

H(y) ? Other standards have H(p). I would have thought H(w) or H(f) would make more sense. Not knowing better than the wise people who wrote G.957,

SuggestedRemedy

H(p)

Response   *Response Status*   **C**

REJECT. This changes equation.

Cl **52**   *SC* **52.9.7**   *P* **472**   *L* **44**   *#* **117**

Dawe, Piers   Agilent

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

high frequency corner of ?

SuggestedRemedy

bandwidth ?

Response   *Response Status*   **C**

ACCEPT.

Cl **52**   *SC* **52.9.7**   *P* **473**   *L* **5**   *#* **21**

Tim Warland   Quake Technologies

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

The Bessell Thomson filter is referenced from G.691, which in turn references the definition from G.957. Why don't we skip a layer and specify G.957 directly

SuggestedRemedy

Change G.691 to G.957, 1999 (Digital transmission system – Digital sections and digital line system – Digital line systems)

Response   *Response Status*   **C**

REJECT. Because G.957 does not specify the 7.5 GHz filter.

Cl **52**   *SC* **52.9.8**   *P* **473**   *L* **36**   *#* **119**

Dawe, Piers   Agilent

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

This test could be replaced if wished. It applies to 10GBASE-S only. Advantage: cost reduction by doing more measurements with the same measurement apparatus with DUT in the same condition

SuggestedRemedy

Consider Mike Dudek's proposal to use an eye mask at virtual TP3 (this would be on the usual mixed-signal patterns) instead. Would need to define a new eye template for the purpose.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE. Rise/fall time specification for 10GBASE-S already removed, will also remove T&M section if this stands.

Add editor's note to this effect.

Cl **52**   *SC* **52.9.9**   *P* **474**   *L*   *#* **12**

Ohlen, Peter   Optillion

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

Eye mask measurement at TP3... This would probably make sense if we did not have a penalty measurement. Now we have the penalty measurement at TP3, which is fairly well understood, and a relative measurement. (This makes the performance of the measurement equipment less important.)An eye mask measurement is an abolute measurement of the system: TX+oscilloscope. Some data also indicate that there is only a weak correlation between mask performance and real performance. A mask measurement tests the both the measurement system and the DUT. If we decide to go with a TP3 eye mask, it will have to be different than the TP2 eye mask for 850nm and 1550nm where we have significant degradation in the fiber. How much different, we do not know today.For 850mn it is probably doable although I do not think there is calibrated oscilloscopes available today. (We have the 7.5GHz BT, but not the filter we would need to simulate the fiber.)For 1550nm, the measurement takes a larger part of the allowed degradation due to the fairly high losses of 40km fiber.

SuggestedRemedy

Rely on the penalty measurement and remove the eye mask at TP3.

Response   *Response Status*   **C**

ACCEPT. Remove ALL of 52.9.9 except for referenced figures and tables, which go to their referencing sections.

11:1

Cl **52**   *SC* **52.9.9**   *P* **474**   *L* **1**   # **146**

Dudek, Mike   Cielo Communications

Comment Type   **TR**   *Comment Status*   **D**

We now have two transmitter optical waveform tests section 52.9.7 measured at TP2 and section 52.9.9 measured at virtual TP3, however there is only one specification for the required waveform (Fig 52-9). The expected eye at Virtual TP3 is actually the stressed receiver eye, which is considerably more closed that fig 52-9. Hence it is inappropriate to measure this eye at TP3. (Note that the performance of the Tx and channel is controlled by the Transmitter and Dispersion Penalty specification and hence measuring an eye at virtual TP3 is not necessary).

SuggestedRemedy

Move section 52.9.9.2. into 52.9.12.2
Delete the rest of section 52.9.9
If there are no reference to figure 52-10 from sections other than 52.9.9 delete it as well.

Response   *Response Status*   **Z**

Withdrawn. See #12.

Cl **52**   *SC* **52.9.9**   *P* **474**   *L* **1**   # **121**

Dawe, Piers   Agilent

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

This subclause is only useful if we can agree eye masks for TP3 (see other comment). In case we choose to measure eye masks at TP3 for any of S, L and E, here's the remedy. But I don't recommend it.

SuggestedRemedy

Delete:
"The transmitter (Tx) of the system under test is tested for conformance using the pattern defined in 52.9.1.";
"A reference receiver converts the optical signal to the electrical domain for input to the oscilloscope.
For 10GBASE-L/E the reference receiver has a fourth-order Bessel-Thomson response with the transfer function specified in 52.9.7.
The CRU is used in the transmitter optical waveform measurement. It has a corner frequency of less than or equal to 4MHz and a slope of 20dB/decade. When using a clock recovery unit as a clock for BER measurements, passing of low frequency jitter from the data to the clock removes this low frequency jitter from the measurement. The corner frequency corresponds to the point at which the CRU must begin to track this low frequency jitter.";
"It should also be noted that a poorer grade of test equipment will force a greater burden onto the system-under-test to meet specifications. Similarly, a better grade of test equipment will ease the development and manufacture of the system and system components. It is expected that trade-offs needed to optimize the overall cost of development, manufacture and test will change over time and are best left to the implementer.";
"Jitter is measured at the average value of the overall optical waveform. This can be accomplished with AC coupling.";
"52.9.9.3 Transmitter test procedure".

Consider deleting "Compliance to the transmitter optical waveform test is to be met while any allowable combination of signal conditions is input to the optical receiver of the system under test. These signal conditions may include the ranges of data patterns, signalling speed, jitter, optical power, rise/fall times, etc. at the receiver input that are allowed by this standard." If not, change " signalling" to " signaling" for consistency.

Keep, but move to the appropriate place in 52.9.7:
"A block diagram for the transmitter optical waveform test is shown in Figure 52-10.";
Figure 52-10;
"Depending on the port type, a test fiber is added to the channel so that the jitter can be measured at a virtual TP3 (hereafter simply referred to simply as TP3) and thus include dispersion and other chromatic and channel induced penalties.";
"Since there is no known way to create a worst-case channel for 850 nm operation that would yield consistent results, for 10GBASE-S the test fiber from TP2 to TP3 is omitted.";
all of 52.9.9.2 (but see below).

Replace and move to the appropriate place in 52.9.7:
"Transmitter optical waveform testing shall be performed in accordance with the requirements of 52.9.9.1, 52.9.9.2, and 52.9.9.3." with "Transmitter optical waveform testing shall be performed in accordance with the requirements of 52.9.7.1 and 52.9.7.2";

"52.9.9.1 Block diagram and general description of test set up" with "52.9.7.1 Block diagram and general description";
"Instead the reference receiver has a fourth-order Bessel-Thomson response with the transfer function specified in 52.9.7 followed by a transversal filter with 2 equal amplitude paths with a differential delay of 45ps." with " Instead the reference receiver response is equivalent to a fourth-order Bessel-Thomson transfer function specified in 52.9.7 in series with a transversal filter with two equal amplitude paths with a differential delay of 45ps.

Keep, but move to the appropriate place in 52.9.7:
Note: The specifications for the reference receiver , clock recovery unit, and oscilloscope, except as specified above, are outside the scope of this document. The reference receiver and clock recovery unit are intended to provide consistent and repeatable measurements, not to represent the worst case receiver.

Add to note: Some or all of these three units may be combined in a Digital Communication Analyzer."
In figure 52-10, replace "BERT" with "Oscilloscope".

In new 52.9.9.2 (formerly 52.9.7.2), decide if we want back reflection or not. I suggest not, as not necessary in this test.
If not, replace "The channel provides an optical back reflection specified in Table 52-7 for 10GBASE-S, Table 52-12 for 10GBASE-L and Table 52-17 for 10GBASE-E. The state of polarization of the back reflection is adjusted to create the greatest RIN. The methods of 52.9.6.2 and 52.9.6.3 may be used." With "Back reflection according to 52.9.12.2 may be present."
If yes, add Polarization Rotator, Singlemode fiber, Splitter, Variable Reflector as in Figure 52-8 to Figure 52-10.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE. Eye mask at TP3 removed per #12.

Cl **52**   *SC* **52.9.9**   *P* **474**   *L* **1**   *#* **120**

Dawe, Piers   Agilent

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

Most of this subclause is only useful if we can agree eye masks for virtual TP3. While it seems good in principle, we cannot use other standards as a precedent and I don't think we have the time and manpower to go it alone. As we have learnt, eye mask testing is not very exact anyway. I believe TDP measurements (which are at virtual TP3) will be more reproducible. To be sure that we are not fooling ourselves with TDP, see another comment for =/-5ps decision timing window.

Much of the material duplicates 52.9.7.

SuggestedRemedy

We can make this decision for S, L and E separately if preferred:
Delete the whole subclause except table 52-24 and anything else referred to by the TDP test 52.9.12.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE. Eye mask at TP3 removed per #12.

Cl **52**   *SC* **52.9.9.1**   *P* **474**   *L* **21**   *#* **142**

Dudek, Mike   Cielo Communications

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

The transversal filter is intended to emulate worst case DMD of the fiber and therefore should have a bandwidth equal to the worst case bandwidth.distance product of the multi-mode fibers. The delay in the transversal filter wasn't changed when the distances were reduced for the narrower bandwidth fibers.

SuggestedRemedy

Change 45ps to 41ps here and in section 52.9.12.3 page 481 line 11.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE. The fiber bandwidths are 3 dB optical, not 3 dB electrical, therefore the correct number is 55 ps.

5:1

Cl **52**   *SC* **52.9.9.3**   *P* **475**   *L* **45**   *#* **6**

Ohlen, Peter   Optillion

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

Lone title.

SuggestedRemedy

Remove title.

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

Cl **52**   *SC* **52.9.9.3**   *P* **475**   *L* **45**   *#* **138**

Booth, Brad   Intel

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

There is a heading and no associated text.

SuggestedRemedy

If the text needs to be added, then this is not an editorial comment, but a TR and the corresponding text needs to be added. Right now, I'm assuming that this heading is just left over, and if so, it can be removed.

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

Cl **52**   *SC* **52.9.9.3**   *P* **475**   *L* **46**   *#* **144**

Dudek, Mike   Cielo Communications

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

A heading with no text.

SuggestedRemedy

Delete section 52.9.9.3 and the reference to it on page 474 line 4

Response   *Response Status*   **C**

ACCEPT.

Cl **52**   *SC* **52-19**   *P* **466**   *L* **6**   *#* **151**

Dudek, Mike   Cielo Communications

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

The transmitter and dispersion penalty used to calculate the Link Power Budget is incorrect.

SuggestedRemedy

In the footnote change "A wavelength of 1565 nm and 3dB tranmsiter and dispersion penalty" to "A wavelength of 1565 nm and 3.5dB tranmsiter and dispersion penalty"

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE. It is now correct, see #150.

Cl **52**   *SC* **6.2**   *P* **450**   *L* **14**   *#* **99045**

Rick Townsend   Lucent Technologies

Comment Type   **TR**   *Comment Status*   **R**   *D4.0 #35 clock tolerance*

For the 10GBASE-LW receive optical specifications a clock toleranceof +/-100ppm is specified in table 52-14. This is more than is required inrelation to the transmitter specification and any possible transport network suchas SDH/SONET, OTN, and also old legacy 10 G WDM transponder equipment. As such,the specification is internally inconsistent and also inconsistent with respect totransport equipment. There is no reason to require the receiver to have a tolerance of+/- 100 ppm because no received signal will ever have a frequency offset greater than+/- 20 ppm. Thereceiver specification should be changed to what is required in line with thetransmitter and transport network specification.

SuggestedRemedy

Add an extra column for 10GBASE-LW with 139.95328 GBd as rate and +/-20ppm as clock tolerance in the same way as it isin Table 52-12.

Response   *Response Status*   **U**

REJECT. See #93.

5:1:4

Cl **52**   *SC* **6.2**   *P* **450**   *L* **14**   *#* **99046**

Geoffrey Garner   Lucent Technologies

Comment Type   **TR**   *Comment Status*   **R**   *D4.0 #11 clock tolerance*

For the 10GBASE-LW receive optical specifications a clock toleranceof +/-100ppm is specified in table 52-14. This is more than is required inrelation to the transmitter specification and any possible transport network suchas SDH/SONET, OTN, and also old legacy 10 G WDM transponder equipment. As such,the specification is internally inconsistent and also inconsistent with respect totransport equipment. There is no reason to require the receiver to have a tolerance of+/- 100 ppm because no received signal will ever have a frequency offset greater than+/- 20 ppm. Thereceiver specification should be changed to what is required in line with thetransmitter and transport network specification.

SuggestedRemedy

Add an extra column for 10GBASE-LW with 139.95328 GBd as rate and +/-20ppm as clock tolerance in the same way as it isin Table 52-12.

Response   *Response Status*   **U**

REJECT. See #93.

5:1:4

Cl **52**   *SC* **7.2**   *P* **453**   *L* **14**   *#* **99048**

Geoffrey Garner   Lucent Technologies

Comment Type   **TR**   *Comment Status*   **R**   *D4.0 #12 clock tolerance*

For the 10GBASE-EW receive optical specifications a clock toleranceof +/-100ppm is specified in table 52-18. This is more than is required inrelation to the transmitter specification and any possible transport network suchas SDH/SONET, OTN, and also old legacy 10 G WDM transponder equipment. As such,the specification is internally inconsistent and also inconsistent with respect totransport equipment. There is no reason to require the receiver to have a tolerance of+/- 100 ppm because no received signal will ever have a frequency offset greater than+/- 20 ppm. Thereceiver specification should be changed to what is required in line with thetransmitter and transport network specification.

SuggestedRemedy

Add an extra column for 10GBASE-LW with9.95328 GBd as rate and +/-20ppm as clock tolerance in the same way as it isin Table 52-17.

Response   *Response Status*   **U**

REJECT. See #93.

7:1:2

Cl **52**   *SC* **7.2**   *P* **453**   *L* **14**   **#** **99047**

Rick Townsend   Lucent Technologies

Comment Type   **TR**   *Comment Status*   **R**   *D4.0 #34 clock tolerance*

For the 10GBASE-EW receive optical specifications a clock toleranceof +/-100ppm is specified in table 52-18. This is more than is required inrelation to the transmitter specification and any possible transport network suchas SDH/SONET, OTN, and also old legacy 10 G WDM transponder equipment. As such,the specification is internally inconsistent and also inconsistent with respect totransport equipment. There is no reason to require the receiver to have a tolerance of+/- 100 ppm because no received signal will ever have a frequency offset greater than+/- 20 ppm. Thereceiver specification should be changed to what is required in line with thetransmitter and transport network specification.

SuggestedRemedy

Add an extra column for 10GBASE-LW with9.95328 GBd as rate and +/-20ppm as clock tolerance in the same way as it isin Table 52-17.

Response   *Response Status*   **U**

REJECT. See #93.

5:1:4

Cl **52**   *SC* **7.2**   *P* **456**   *L* **20**   **#** **1**

Juergen Rahn   Lucent Technologies

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

The sensitivity has again been made 1 dB more stringent. This is incontradiction to the feasibility investigation result.

SuggestedRemedy

Replace the nominal sensitivity with 13.4 dBm and thestressed with 10.3 dBm

Response   *Response Status*   **W**

REJECT. Current specifications reflect feasibility study results, are consistent (but not identical) with SONET, and maintain current link budget.

Cl **52**   *SC* **8**   *P* **466**   *L* **12**   **#** **2**

Juergen Rahn   Lucent Technologies

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

The jitter methodology has been changed to a new not verifiedprocedure. Itis not clear if this gives feasible results.

SuggestedRemedy

Change the method to industry practice . Reference ITUTG.783 for 10G WAN-Phy jitter specification.

Response   *Response Status*   **W**

REJECT. The SONET standard does not deal with jitter within a link. The SONET specification deals with accumulated jitter which is not relevant for an Ethernet (point-to-point) link.

Cl **52**   *SC* **82.9.9.2**   *P* **475**   *L* **36**   **#** **152**

Dudek, Mike   Cielo Communications

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

The Paragraph is referring to 10GBASE-L/E it should not reference 10GBASE-S in addition the back reflection referred to is rather hidden in the tables.

SuggestedRemedy

Delete "Table 52-7 for 10GBASE-S"
Change the wording to.
optical back reflection specified as the x subscript in RinxOMA in table

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE. Use new term "Optical Return Loss Tolerance".

Cl **52**   *SC* **Figure 52-12**   *P* **479**   *L* **30**   **#** **3**

Ohlen, Peter   Optillion

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

This figure is not representative of the new stressed eye.

SuggestedRemedy

Change the eye diagram to show the result of the new stressed eye, with the correct A_N and A_O.New figure needed as reference to p.469:41 (to show what we mean by OMA) because the stressed eye is not very similar in shape to a typical product TX eye.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE. To use new eye diagram as per lindsay_302_2.pdf.

Cl **52**   *SC* **Figure 52–13**   *P* **481**   *L* **33**   **#** **132**

Dawe, Piers   Agilent

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

Would help to show the reflection stuff.

SuggestedRemedy

Add reflection stuff from Figure 52–8.

Response   *Response Status*   **C**

ACCEPT. Between DUT and Optical Attenuator as per Figure 52-8 between DUT and O-E.

Cl **52**   *SC* **Table 52-14**   *P* **450**   *L* **22**   *#* **99049**

Pepeljugoski, Petar   IBM

Comment Type **TR**   *Comment Status* **R**   *D4.0 #114 stressed receiver*

The stressed receive sensitivity measurement is difficult to implement and calibrate (the input signal for the test). It has not been shown that it can be implemented in a repeatable manner.

SuggestedRemedy

Implement a stressed receive sensitivity measurement with input signal that has the vertical eye closure requirements, but not the jitter requirements (horizontal eye closure).

Response   *Response Status* **U**

REJECT.   Overtaken by new stressed receiver calibration.

6:1:4

Cl **52**   *SC* **Table 52-7**   *P* **457**   *L* **10**   *#* **141**

Dudek, Mike   Cielo Communications

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

With the introduction of Tranmitter and Dispersion Penalty test (TDP) for 850nm rise/fall time specifications are no longer necessary to ensure link operation. (just as this has not been necessary for 1550nm since TDP was introduced for that wavelength.)

SuggestedRemedy

Delete the rise/fall time specification line in table 52-7

In addition it may be appropriate to Delete section 52.9.8. and the rise/fall time characteristics line from Table 52-23. However section 52.9.12.1 requires the test transmitter to have a rise/fall time specification and it may be appropriate to leave the test methods in the document so that the method of checking the test transmitter is in the document.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.   Only do 1.

Cl **52**   *SC* **Table 52-12**   *P* **460**   *L* **27**   *#* **99**

Dawe, Piers   Agilent

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

Save two lines on the page, might get all the footnotes on the right page.

SuggestedRemedy

Make columns "Description" and "Unit" wider. "Unit or "Units"?

Response   *Response Status* **C**

REJECT.   I tried and it doesn't work (still not enough room to get the footnotes onto the same page).

Cl **52**   *SC* **Table 52-12**   *P* **460**   *L* **36**   *#* **97**

Dawe, Piers   Agilent

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

The transmitter power setup window is just too narrow for a really cost-effective transmitter. There are many issues to be taken into account here: the window may be about right for a multimode product but the extra uncertainty in optical power with any single mode connectored measurement means a slight widening is appropriate. This issue has been held over from previous meetings through lack of time. See http://www.ieee802.org/3/ae/comments/d4.0/dawe_comment_2_0102.pdf , my D4.0 comment #44 and Pat's #38. WRT the pdf, a width of 5 dB at 5 dB extinction ratio is required. This has to impact receiver dynamic range, currently 3.5-(-12.6)=16.1 dB wide, to be 16.6 dB wide by raising the overload or improving the sensitivity. Our experience is that both are feasible. In particular, receivers either achieve +1 dBm overload or cannot meet the current +0.5 dBm anyway, depending on design. In the suggested remedy below, the receiver sensitivity required becomes just slightly harder than the STM-64 1310 nm VSR specs (2km), and ~1.5 dB easier than several 1550 nm codes.

SuggestedRemedy

Reduce launch power OMA min. by 0.5 dB throughout table 52-12,13 and figure 52-4. Reduce the stressed sensitivity max from -10.3 to -10.8 and the unstressed sensitivity max from -12.6 to -13.1.

Response   *Response Status* **C**

REJECT. At higher extinction ratio there is more allowable variability; the existing numbers represent a good compromise in receiver dynamic range and transmitter output power variability.

11:1

Cl **52**   *SC* **Table 52-12**   *P* **460**   *L* **45**   *#* **96**

Dawe, Piers   Agilent

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

Rename "Return loss" as "Reflectance" following common practice for optical receivers in other international standards.

SuggestedRemedy

Here and in tables 52-14, 18, "Reflectance".
In table 52-19, "Maximum discrete reflectance".
In 52.14.2.2 and PICS FO2, FO3, "maximum reflectance".
Change sign of numbers affected, change "greater than" to less than" or "not more than".

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. See #52001.

Cl **52**   *SC* **Table 52-12**   *P* **460**   *L* **48**   *#* **4**
Ohlen, Peter   Optillion

Comment Type   **T**   *Comment Status*   **A**
Is there an extra "0" in "0.00036" ???

SuggestedRemedy
Check number of 0:s and correct if necessary.

Response   *Response Status*   **Z**
Withdrawn. See #149.

Cl **52**   *SC* **Table 52-12**   *P* **460**   *L* **49**   *#* **149**
Dudek, Mike   Cielo Communications

Comment Type   **TR**   *Comment Status*   **A**
Error in formula (too many zero's)

SuggestedRemedy
Change to 0.0036(lambda-1310) instead of 0.00036(lambda-1310)

Response   *Response Status*   **C**
ACCEPT. May be superceded by other comments.

Cl **52**   *SC* **Table 52-14**   *P* **450**   *L* **19**   *#* **99050**
Pepeljugoski, Petar   IBM

Comment Type   **TR**   *Comment Status*   **R**   *D4.0 #115 stressed receiver*
The relationship between the stressed receiver sensitivity and the nominal sensitivity predicted by the spreadsheet model has not been verifies by lab measurements. In light of the difficulties calibrating the stressed receiver sensitivity measurements, it makes more sense to make the nominal receiver sensitivity normative, and the stressed receiver sensitivity informative.

SuggestedRemedy
Make the nominal receiver sensitivity normative and the stressed receiver sensitivity informative.

Response   *Response Status*   **C**
REJECT. Voted in committee and rejected in favour of making stressed sensitivity simpler.

Cl **52**   *SC* **Table 52-15**   *P* **463**   *L* **5**   *#* **100**
Dawe, Piers   Agilent

Comment Type   **T**   *Comment Status*   **A**
"Link power budget" confuses, because it contains penalties which are in the terminals rather than the link.

SuggestedRemedy
Add footnote: "Link power budget includes transmitter penalties as well as losses and impairments in the fiber cables". Also consider deleting "Link" from "Link power budget". Apply change to 3 tables for different port types.

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE. Remove word "link".

Cl **52**   *SC* **Table 52-15**   *P* **463**   *L* **5**   *#* **101**
Dawe, Piers   Agilent

Comment Type   **T**   *Comment Status*   **A**
Note d may need tweaking to be more like BASE-E as we simplify the TTO.

SuggestedRemedy
As needed following TTO discussion.

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE. Change to "A Tx wavelength of 1260 nm with a TDP of 3 dB is used to calculate channel insertion loss, and allocation for penalties in this table."

Cl **52**   *SC* **Table 52-18**   *P* **465**   *L* **25**   *#* **150**
Dudek, Mike   Cielo Communications

Comment Type   **T**   *Comment Status*   **A**
The Transmitter and Dispersion penalty (max)has been increased from 3.0dB to 3.5dB while the Vertical eye closure penalty has remained at 3.0dB, despite the fact that virtually all the transmitter and dispersion penalty is expected to be due to ISI type eye closure.

SuggestedRemedy
Change Vertical eye closure penalty to 3.5dB.
Change Stressed receiver sensitivity from 0.074(-11.3) to 0.083(-10.8)

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE. Change TDP back to 3.0, in power penalty table, change 15.5 back to 15. Change penalties to 3.6, 4.1 (from 4.1, 4.6).

7:1

Cl **52**   *SC* **Table 52-7**   *P* **457**   *L*   *#* **93**

Dawe, Piers   Agilent

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

The footnotes of this table are interrupted by a figure.

SuggestedRemedy

1. Sort out the float properties.
2. Make the "Unit" column a little wider and retrieve one line on the page.
3. Add closing periods to notes e and f.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. Editorial cleanups like this are difficult if not done by rule in FrameMaker, so we will try and implement a rule, but failing this, will wait until a later draft before finalizing a "hard" break fix.

Cl **52**   *SC* **Table 52-7**   *P* **457**   *L* **24**   *#* **147**

Dudek, Mike   Cielo Communications

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

The Transmitter and Dispersion penalty is measured with a short fiber without the effect of chromatic dispersion. Therefore the additional OMA required of wide spectral width, low center wavelength transmitters is not available for additional penalties in this measurement. (It has to be kept for the allowances for chromatic dispersion.)

SuggestedRemedy

Change the allowed transmitter and dispersion penalty from "OMA(min) + 7.7dB" to "3.9"

Response   *Response Status* **C**

ACCEPT.

4:1

Cl **52**   *SC* **Table 52-7**   *P* **457**   *L* **30**   *#* **91**

Dawe, Piers   Agilent

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

"module laser" is an implementation.

SuggestedRemedy

"transmitter"   Also tables 52-12 and 52-17.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. Change to "optional PMD shut down conditions."

Cl **52**   *SC* **Table 52-8**   *P* **458**   *L* **11**   *#* **94**

Dawe, Piers   Agilent

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

The resolution of typical spectrometers is ~0.05 nm.   The two columns "Up to 0.05" and "0.05 to 0.1" nm are mostly the same except from 486 to 454 nm where they differ by just 0.1 dB.

SuggestedRemedy

Replace with one column, "Up to 0.1" with the values appropriate to the "0.05 to 0.1" column. Remember to revise figure 52-3 to match.

Response   *Response Status* **C**

REJECT. Evenly spaced ranges are simpler. Might consider removing from graph, though.

8:1

Cl **52**   *SC* **Table 52-9**   *P*   *L*   *#* **102**

Dawe, Piers   Agilent

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

Footnote to each "receive characteristics" table says "Measured with a transmit signal having a (x) dB extinction ratio."   This appears to be a carry-over from clause 38 which is a mean-power based specification, where the footnote explains how the measurement may be corrected for extinction ratio: effectively they were using OMA without saying it. In our clause it should go without saying that the receiver has to achieve the OMA sensitivity over the range of extinction ratios, wavelengths and anything else which the transmitter is allowed. We don't wish to invite the implementers to tie themselves in knots trying to measure at precisely, or only, this extinction ratio.

SuggestedRemedy

Delete this footnote in tables 52-9, 14, 18.

Response   *Response Status* **C**

ACCEPT.

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause   Page 62 of 64

RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *Cl* **52**   *SC* **Table 52-9**

Cl **52**　　　*SC* **Table 52-9**　　　　*P* **458**　　　*L* **45**　　　# 148

Dudek, Mike　　　　　　　　　　　Cielo Communications

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

My comment # 97 to draft 4.0 was accepted in principle. However the unallocated margins have not been changed. For 850nm they are still 0.7dB larger than for 1300nm. These should be more equal.

SuggestedRemedy

Change Receiver sensitivity from "0.077(-11.1)" to 0.085(-10.7) and Stressed receiver sensitity from 0.18(-7.5) to 0.195(-7.1)
In table 52-10 Change the link power budget to 6.9 and reduce the allocations for penalties by 0.4dB.

Response　　　　　　*Response Status*　**C**

REJECT. Until effect of TDP specification change for 10GBASE-S is better understood, the unallocated margin should not be reduced.

8:2

Cl **53**　　　*SC*　　　　　*P*　　　　*L*　　　　# 165

Lindsay, Tom　　　　　　　　　　Stratos Lightwave

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

The transmit eye test also requires data flowing in all other data paths.

SuggestedRemedy

1. Add a paragraph: "The transmit optical waveform is tested with the receive section in operation. Any of the test patterns specified in Annex 48A, or valid 8B10B encoded data, may be sent to the receive section of the transmitter under test. The data being received must be asynchronous to the transmitted data."

2. Be sure it is clear that ALL transmit and receive lanes are to be running.

3. I disagree with suggesting ANY of the 48A patterns. I would restrict it to CRPAT or CJPAT. The short patterns have very little low frequency content.

Response　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

Add a paragraph at the end of section 53.9.7 to read

For each lane, the transmit optical waveform is tested with the receive section in operation on all four lanes and with the transmit lanes not under test in operation. CJPAT, CRPAT, or valid 8B10B encoded data, may be sent to the receive section of the transmitter under test. The data being received must be asynchronous to the transmitted data."

Cl **53**　　　*SC* **53.1**　　　　*P* **497**　　　*L*　　　　# 73

Dawe, Piers　　　　　　　　　　　Agilent

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

Is there a PMD loopback or not? There seems to be one, but with no way of controlling it?

SuggestedRemedy

?

Response　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

See Response in Comment 38

Cl **53**　　　*SC* **53.1.2.3**　　　　*P* **497**　　　*L* **39**　　　# 38

Turner, Ed　　　　　　　　　　　Lattice Semiconductor

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

There is no longer a PMD loopback and the text in this section should be modified accordingly.

Also 53.1.3.2.

SuggestedRemedy

Modify accordingly.

Response　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

Change Section 53.1.2.3 to the following

"Upon receipt of this primitive, the PMD converts the specified stream of bits into the appropriate signals on the MDI."

Change section 53.1.3.2 to the following

"The PMD continuously sends stream of bits to the PMA corresponding to the signals received from the MDI."

Cl **53**   *SC* **53.7.1**   *P* **504**   *L* **19**   **#** **196**

Paul Kolesar   OFS

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

120 ps rise and fall time results in ISI penalty at 300 m exceeding 3.6 dB. I believe the link model presently on the IEEE 802.3ae web site predicts 4 dB of ISI. Since the development of 1000BASE-LX, we have imposed an unwritten limit of 3.6 dB for good engieering practice. All other PMDs comply with this limit.

SuggestedRemedy

Reduce rise and fall spec to a value that results in no more than 3.6 dB ISI. For the model on the web site, this translates into 100 ps rise and fall time.

Response   *Response Status* **W**

ACCEPT IN PRINCIPLE.

The link model posted on the web is not up to date. The current link model does reflect a worst case ISI penalty of less than 3.6dB given the LX4 specification in Draft 4.1. Therefore, the suggested remedy by the commenter is not necessary.

However, it is recommended that the link model posted on the web be updated after each draft to reflect any possible changes in the link performance. This suggestion has been forwarded to committee.

Cl **53**   *SC* **53.9.10.1**   *P* **513**   *L* **34**   **#** **163**

Lindsay, Tom   Stratos Lightwave

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

Received data must be asynchronous. The test also requires data flowing in all other data paths.

SuggestedRemedy

1. Add a sentence to the end of the paragraph: "The data being received must be asynchronous to the transmitted data."

2. Be sure it is clear that ALL transmit and receive lanes are to be running.

3. I disagree with suggesting ANY of the 48A patterns. I would restrict it to CRPAT or CJPAT. The short patterns have very little low frequency content.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove last paragraph of section 5.9.10.1 and replace with the following:

"For each lane, the transmit jitter is tested with the receive section in operation on all four lanes and with the transmit lanes not under test in operation. CJPAT, CRPAT, or valid 8B10B encoded data, may be sent to the receive section of the transmitter under test. The data being received must be asynchronous to the transmitted data."

Cl **53**   *SC* **53.9.12.4**   *P* **517**   *L* **5**   **#** **164**

Lindsay, Tom   Stratos Lightwave

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

Asynchronous data must be used. The test also requires data flowing in all other data paths.

SuggestedRemedy

1. Add a sentence to the end of the paragraph: "The data being transmitted must be asynchronous to the receieved data."

2. Be sure it is clear that ALL transmit and receive lanes are to be running.

3. I disagree with suggesting ANY of the 48A patterns. I would restrict it to CRPAT or CJPAT. The short patterns have very little low frequency content.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove last paragraph of section 5.9.12.4 and replace with the following:

"For each lane, the receive jitter tolerance is tested with the transmit section in operation on all four lanes and with the receive lanes not under test in operation. CJPAT, CRPAT, or valid 8B10B encoded data, may be sent from the transmit section of the receiver under test. The data being transmitted must be asynchronous to the received data."

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Clause, Page, Line, Subclause   Page 64 of 64

RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied   Z/withdrawn   *Cl* **53**   *SC* **53.9.12.4**