With the adoption of the objective to do 500m over 4 WDM lanes on a single mode fiber and its nomenclature 800GBASE-FR4-500, "FR" is no longer limited to just represent 2km (e.g. FR-500). This introduces an inconsistency for 200GBASE-FR1 and 200GBASE-DR1 (DR1 is not FR1-500). In addition, when looking at 2km for 1, 2, 4, 8 fibers- a confusing "family" of PHYs emerges (200GBASE-FR1, 400GBASE-DR2-2, 800GBASE-DR4-2, and 1.6TBASE-DR8-2).

**Suggested Remedy**

Rename 200GBASE-FR1 to 200GBASE-DR1-2

**Response**

ACCEPT IN PRINCIPLE.

The following presentation was reviewed by the 802.3dj task force at the May Interim meeting.

https://www.ieee802.org/3/dj/public/24_05/dambrosia_3dj_02a_2405.pdf

Implement the suggested remedy with editorial license.

---

**Comment Type:** TR/technical required  
**Comment Status:** A

D'Ambrosia, John  
Futurewei, U.S. Subsidiary of Huawei

**Comment Type:** T  
**Comment Status:** A  
**Link fault signaling**

There sentence below the editor's note is a repeat of what is captured in 171.3.2. It is also not releated to link fault signaling as defined in 81.3.4, which is the topic of this subclause.

**Suggested Remedy**

Delete the sentence below the editor's note.

**Response**

ACCEPT IN PRINCIPLE.

Delete the sentence below the editor's note, and remove the Editor's note.

---

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

Nicholl, Gary  
Cisco

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

**List of interfaces**

This list of interface widths has been traditionally included in "new ethernet rate introduction" clauses since 10 Gb/s Ethernet. It seems unnecessary and present and extra burden to amend with each new interface added. The number of lanes is abundantly clear in each clause that defines and interface. The original intent was to point out that the structural detail of the specified interfaces are to be as specified while others that are not specified.

**Suggested Remedy**

Delete the paragraph and lists from page 155 line 47 to page 156 line 12.

**Response**

ACCEPT IN PRINCIPLE.

Retain the first sentence: "While this specification defines interfaces in terms of bits, octets, and frames, implementations may choose other data-path widths for implementation convenience."

Add a future-proof exception and delete the lettered-list of interfaces. Implement with editorial license.

---

**Comment Type:** TR/technical required  
**Comment Status:** R  
**(withdrawn)**

Slavick, Jeff  
Broadcom

**Comment Type:** T  
**Comment Status:** Z

**Response**

REJECT.

This comment was WITHDRAWN by the commenter.
### Comment Type: TR/Technical Required
#### Comment Status: A/Accepted

**174A.1**

- **Comment Type:** TR
- **Comment Status:** A
- **Type:** BER/FLR

The first subclause of Annex 174 is currently a mini "table of contents" of the clause. This isn't required.

Instead, an introduction to the annex would be helpful for readers. It should provide the relationship between bit error ratio as defined in the project's objective and the frame loss ratio, as well as the purpose of defining error requirements for internal interfaces within the physical layer.

**Suggested Remedy:**

A presentation with proposed content is planned.

**Response:**

- **Response Status:** C
- **Type:** ACCEPT IN PRINCIPLE.

The following presentation was reviewed by the IEEE 802.3dj task force as the May Interim meeting.

https://www.ieee802.org/3/dj/public/24_05/ran_3dj_04a_2405.pdf

Implement the following with editorial license.

- Update Annex 174A as proposed on slides 7 to 13 of ran_3dj_04a_2405 excluding option A in slides 11, 12, and 13.
- Update clauses/annexes 171, 178, 179, 179D, 179E, 180 to 183, 185, 187 appropriately.

[Editor's note: CC many]

---

**174A.2**

- **Comment Type:** TR
- **Comment Status:** A
- **Type:** BER/FLR

174A.2 "Frame loss ratio for RS to RS link" is empty.

Since this annex defines several performance metrics, the titles of specific subclauses should be based on the sub-link in question, while the specific requirement (FLR, BER, etc.) should preferably be in the subclause text.

**Suggested Remedy:**

A presentation with proposed content is planned.

**Response:**

- **Response Status:** C
- **Type:** ACCEPT IN PRINCIPLE.

Resolve using the response to comment #205.

---

**174A.3**

- **Comment Type:** TR
- **Comment Status:** A
- **Type:** BER/FLR

174A.3 "Frame loss ratio for a Physical Layer implementation" is empty.

I assume a "Physical Layer implementation" means the path between the RS and the MDI. It is unclear how frame loss ratio can be defined for this path, because the two interfaces are not equivalent; frames are defined only at the RS, and cannot be identified, checked for errors, or counted on the MDI. Similarly, the signals on the MDI cannot be compared to the data stream on the RS, so no other "error metric" can be defined.

This is in contrast to "RS to RS link" and other subclauses, in which such checking and counting is possible.

This subclause should be deleted.

**Suggested Remedy:**

Delete 174A.3.

**Response:**

- **Response Status:** C

- **Type:** ACCEPT.

---

**174A.4**

- **Comment Type:** TR
- **Comment Status:** A
- **Type:** BER/FLR

174A.4 "Frame loss ratio for an xMII Extender" is empty.

Since this annex defines several performance metrics, the titles of specific subclauses should be based on the sub-link in question, while the specific requirement (FLR, BER, etc.) should preferably be in the subclause text.

**Suggested Remedy:**

A presentation with proposed content is planned.

**Response:**

- **Response Status:** C
- **Type:** ACCEPT IN PRINCIPLE.

Resolve using the response to comment #205.
Since this annex defines several performance metrics, the titles of specific subclauses should be based on the sub-link in question, while the specific requirement (FLR, BER, etc.) should preferably be in the subclause text.

Suggested Remedy
A presentation with proposed content is planned.

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #205.

---

Has any thought been given to how to calculate the latency through the 1.6TBASE-R PCS, i.e. the path data delay values for the purposes of TimeSync? I do not see anything within the 1.6TBASE-R PCS that would prevent proper calculation of the path data delay values.

Clause 90.7.1 is instructive here, explaining that the path data delays should be "reported as if the DDMP is at the start of the FEC codeword". However, the existing language in 90.7.1 is awkward for PCSs with more than one FEC engine like the 1.6TBASE-R PCS, which has four FEC codewords in parallel.

Suggested Remedy
No proposed change to Clause 175.

Clause 90.7.1 could be cleaned up to account for when there are multiple FEC codewords in parallel, but I assume that is out-of-scope for the 802.3dj project? I'll submit a maintenance request.

REJECT.
The suggested remedy does not propose an actionable (within the draft) remedy.

This comment is related to the calculation of the path data delay values in Clause 90, and points out that Subclause 90.7.1 is not clear on how the path data delay values are calculated for PCSs with more than one FEC engine and interleaved FEC codewords. This applies to the 200GbE/400GbE PCS (Clause 119), the 800GbE PCS (Clause 172) as well as the new 1.6TbE PCS being added by this project (Clause 175). As pointed out in the suggested remedy it would be better to address this with a maintenance request that equally applies to all PCS clauses with multiple interleaved FEC codewords and all of their related PHYs (many of which are out of scope for 802.3dj).
Cl 176 SC 176.5.1.6.1 P 208 L 34 # 538

Rechtman, Zvi Nvidia

Comment Type TR Comment Status A Reorg
The comment refers to Figure 176.8uPMA receive symbol-pair lock state diagram
The state diagram is defined as single state machine per the entire PMA. However, each
PMA lane may have a different reference skew, leading to varying SLIP operation
requirements per PMA lane (e.g., one PMA lane doesn't require SLIP because all PCS
lanes of that lane are locked, but other PMA lane still need to skew to find the 20 symbol
bit boundaries); therefore the state diagram should be defined per PMA lane and not for per
PMA.

SuggestedRemedy
Modify the state diagram per PMA lane and not per PMA, this include change in the
variables to be defined per <y>:
gerstart_lock_demux<y>
symbol_pair_lock_demux<y>
start_symbol_pair_lock_counter_demux<y>
symbol_pair_lock_demux<y>

Response Response Status C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment # 80.

Cl 176 SC 176.6.1 P 213 L 5 # 80

Huber, Thomas Nokia

Comment Type T Comment Status A Reorg
The 800G 32:4 PMA, 400G 16:2 PMA and the 200G 8:1 PMA are basically the same, other
than the numbers of lanes. The 1.6T 16:8 is different since it has 40b deskew and 4-
symbol interleaving. All of the PMAs with the same number of lanes on both sides are
essentially the same. It would simplify maintenance and likely reader understanding as
well if the number of lanes were parameterized as m and n

SuggestedRemedy
Reorganize 176.5 through 176.8 into 3 clauses: one for 200/400/800 m:n PMAs, one for
1.6T m:n PMAs, and one for 200/400/800/1.6T m:m PMAs, and use a single set of text and
figures with the parameters m and n for the number of lanes. Include a table showing PHY
rates and the values of m an n (e.g., with columns PHY, m, and n, and rows 200GBASE-R,
8.1; 400GBASE-R, 16.2; etc.).

Response Response Status C
ACCEPT IN PRINCIPLE.
Reorganize the Clause to reduce repetition of text and figures, and make the state
diagrams more generic across the SM-PMAs.
Implement with editorial license.
IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

**Comment Type** | **Comment Status** | **Response Status** | **Response**
---|---|---|---
Cl 176 | SC 176.6.1.2.1 | P 215 | L 22 | # 486
Slavick, Jeff | Broadcom | Reorg
The deskew process doesn't need an exception since the referred texts says to do it across "ALL" PCSLs
**Suggested Remedy**
Remove the deskew across 16 lanes exception in 176.6.1.2.1
Remove the deskew across 32 lanes exception in 176.7.1.2.1
**Response**
ACCEPT IN PRINCIPLE.
Resolve using the response to comment # 80.

Cl 176 | SC 176.9.1.2 | P 242 | L 12 | # 540
Rechtman, Zvi | Nvidia | Precoding
The text currently refers to xAUI-n C2C. However, the adopted PMA baseline proposal stated that the precoding capability in all physically instantiated interfaces is \(\text{Tx: required, Rx: optional/optional} \) (per ran_3dj_01a_2303 slide 10). This specification should also encompass xAUI-n C2M.
**Suggested Remedy**
Add xAUI-n C2M
**Response**
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #21

Cl 176 | SC 176C | P 594 | L 1 | # 598
Loewenthal, Arnon | alphawave semi | Test Vectors
Annex 176C "SM-PMA test vectors" is currently empty.
**Suggested Remedy**
Add test vectors for 200GBASE-R 8:1, 400GBASE-R 16:2, 800GBASE-R 32:4, and 1.6TBASE-R 16:8 to Annex 176C based on supporting contribution on May interim.
**Response**
ACCEPT IN PRINCIPLE.
The CRG reviewed the presentation: https://www.ieee802.org/3/dj/public/24_06/loewenthal_3dj_01a_2406.pdf
The associated vector files located at: https://www.ieee802.org/3/dj/public/24_06/loewenthal_3dj_02_2406.zip
Add test vectors to Annex 176C with editorial license.
The annex title includes "Control function and start-up protocol", while in the subclauses and text there are alternative terms such as "interface control function", "Start-up protocol", and "training" (176A.9).

This mega-function requires nomenclature to describe it. It would be good to have an acronym-friendly name so that it can be included in tables of other clauses (e.g. Table 116-3, Table 179-1).

Suggested Remedy
A presentation with proposed nomenclature is planned.

Response Status: C

The use of the terms 'segment' and 'link' in Annexe 176A, for example in 176A.1 where it says, 'in single-segment or multiple-segment links', are problematic.

IEEE Std 802.3 subclause 1.4.505 'segment' defines it as 'The medium connection, including connectors, between Medium Dependent Interfaces (MDIs) in a CSMA/CD local area network.' Subclause 1.4.372 'link' defines it as 'The transmission path between any two interfaces of generic cabling. (From ISO/IEC 11801:).

As a result, I believe it would only be correct to call an electrical channel between two PMD sublayers a 'segment'. I do not believe that the electrical channel between any other combinations of sublayers is a 'segment'.

Suggested Remedy
I would suggest 'section' as an alternate to 'segment', but that was used for 'The portion of the link between the PSE Power Interface (PI) and the PD PI.' (see 1.4.378) when PoE had a similar definition problem. Alternatives, therefore, might be 'Division' and 'Sector'.

As another approach, the following is a rewording of 176A.1 to avoid the use of the terms 'segment' and 'link' without the use of a new term. I acknowledge, however, that such an approach would require a significant rewrite of the Annex.

The start-up protocol facilitates timing recovery and equalization of the electrical channel between adjacent sublayers, or chains of multiple adjacent sublayers while providing a mechanism through which the receiver can configure the transmitter to optimize performance. The protocol supports these functions through the continuous exchange of fixed-length training frames across the electrical channel between adjacent sublayers and the transport of end-to-end indications across chains of multiple adjacent sublayers.

Response Status: C

The following contribution was reviewed by the 802.3dj Task Force during the May 2024 Interim meeting https://www.ieee802.org/3/dj/public/24_05/law_3dj_01_2405.pdf

Implement the following with editorial license.

In Annex 176A (and other clauses where appropriate), replace "segment" with "section" and "link" with "path".
IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

Cl 176D SC 176D.3.4.4 P603 L 18 #425
Li, Tobey MediaTek

Comment Type TR Comment Status A
4th order Bessel-Thomson filter BW is TBD

SuggestedRemedy
Replace TBD with 62 GHz

Response Response Status C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #60.

Cl 176D SC 176D.4 P604 L 24 #430
Li, Tobey MediaTek

Comment Type TR Comment Status A
COM values in Table 176D-4 are TBD

SuggestedRemedy
Replace TBD with 3 dB in Table 176D-5 and in line 38 of page 604

Response Response Status C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

There are several comments on this topic. The editorial team prepared a proposal in slide 15 of https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01b_2406.pdf.

Use the CTLE parameters from Table 178-13 (which are identical to those in Table 179-16), without change, in Table 176D-6 and C2M (Table 176E-7 and COM parameters table).

Remove fLF from Table 176D-7.

Implement with editorial license.
### IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

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**TYPE:** TR/technical required  ER/editorial required  GR/general required  T/technical  E/editorial  G/general

**COMMENT STATUS:** D/dispatched  A/accepted  R/rejected  RESPONSE STATUS: O/open  W/written  C/closed  Z/withdrawn

**SORT ORDER:** Clause, Subclause, page, line

---

**Note:** The comments and responses are structured based on the IEEE P802.3dj D1.0 document format, which includes headings, comments, responses, and status updates. The comments and responses are numbered and referenced for tracking purposes.
Practical test fixtures may have discontinuities close to 0.2ns from the host-facing connection (mating interface). If the intent is to remove the test fixture discontinuities from the ERL calculations, we should adjust the 0.2ns.

Suggested Remedy

Change text to "...Tfx equal to twice the delay between the test fixture connector and the test fixture host-facing connection minus 0.2ns or as needed to remove test-fixture discontinuities from the ERL result"

Response

REJECT. Resolve using the response to comment #227.

BW is TBD

Suggested Remedy

propose to use 0.55*Baudrate=58.4375 GHz

Response

ACCEPT IN PRINCIPLE. Resolve using the response to comment #60.

The IL_dd for AUI C2M channel is a TBD

Suggested Remedy

Set IL_dd = 33 per https://www.ieee802.org/3/dj/public/24_01/lusted_3dj_03_2401.pdf

Response

REJECT. Resolve using the response to comment #130.
IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

The COM parameter values for the AUI C2M electrical interfaces in Annex 176E are different from the AUI C2C.

**Suggested Remedy**

Create a new COM parameter values table in 176E.4.2 and use the COM parameter values from https://www.ieee802.org/3/dj/public/24_03/lit_3dj_01a_2403.pdf slide 6 and 11, which are:

- $f_r = 0.58$
- $c(-2) = 0$ min, 0.12 max
- $c(-1) = -0.4$ min, 0 max
- $c(0) = 0.54$
- $c(1) = 0$
- $A_v = 0.413$
- $A_{fe} = 0.413$
- $A_{ne} = 0.45$
- $e_{fa} = 1.25e-8$
- $SNR_{TX} = 33$
- $sigma_{RJ} = 0.01$
- $A_{DD} = 0.02$
- $R_{LM} = 0.95$
- $d_w = 5$
- $N_{fix} = 10$
- $N_{g} = 1$
- $N_{f} = 4$
- $N_{max} = 60$
- $w_{max}(1) = 1$
- $w_{min}(1) = 0$
- $b_{max}(1) = 0.75$
- $b_{min}(1) = 0$

Additionally, set MLSE = 0 (not enabled)

**Response**

Implement with editorial license.

**COM CTLE parameters**

- **Li, Tobey** MediaTek

**Suggested Remedy**

Replace zero 1 frequency, $f_z1$, with $fb/2.5$ GHz
Replace zero 2 frequency, $f_z2$, with $fb/80$ GHz
Replace pole 1 frequency, $f_p1$, with $fb/2.5$ GHz
Replace pole 2 frequency, $f_p2$, with $fb$ GHz
Replace pole 3 frequency, $f_p3$, with $fb/80$ GHz

**Response**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #433.

**Inner FEC coding gain**

- **Liu, Cathy** Broadcom

**Suggested Remedy**

To specify the soft-decision decoder shall provide TBD dB (say 2dB) coding gain over end-end FEC provided that the error statistics are sufficiently random.

**Response**

REJECT.

Specifying the effectiveness of the Inner FEC is not as simple a coding gain. It needs include the relationship between the errors on the input, errors on the output, and the effect those errors have on the RS-FEC.

A consensus presentation to appropriately define the expected Inner FEC performance is encouraged.
EEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

**Comment**

Was there not a proposal to make the circular shift optional, in order to minimize latency?

**Suggested Remedy**

Consider removing the circular shift if it does offer not any worthwhile benefit.

**Response**

REJECT.

This comment was WITHDRAWN by the commenter.

**Comment**

I'm not convinced that the circular shift really adds any robustness. Yes, it distances bit-pairs belonging to the same RS-FEC codeword, but without the shift, the consecutive bit pairs (after 8:1 multiplexing) belonging to the same RS-FEC code words would each protected by different Inner FEC code words, would they not? So is the circular shift just protecting against uncorrected inner-FEC codewords that would all land on the same RS-FEC codeword? Seems overkill. Are there simulations/models showing the benefit of including circular shift?

**Suggested Remedy**

Consider removing the circular shift if it does not offer any worthwhile benefit.

**Response**

REJECT.

This comment was WITHDRAWN by the commenter.

**Comment**

The 128,120 Hamming code is very sensitive to error propagation since it can correct up to one error in hard decoding and three errors in soft decoding. Hence, precoding is required

**Suggested Remedy**

Add precoding, and use the same definition of precoding similar to 176.9.1.2.

**Response**

ACCEPT IN PRINCIPLE.

Background and proposed changes are provided on slides 4 to 10 in the following presentation:


Implement the proposed text on slides 8 and 9 of brown_3dj_02_2406.

Implement with editorial license.

**Comment**

Pre-coding was shown on riani_3dj_01a_2303 FECI baseline that when was adopted, and pre-coding is essential for FECi PMDs

**Suggested Remedy**

Please insert text for pre-coder in this sub-clause. as specified in 135.5.7.2, 120.5.7.2, and 173.5.7.2 that may be enabled or disabled as needed with OLT, without OLT the optical transmitter should enable 1/(1+D) mod 4 precoding to mitigate burst error.

See Ghiasi/Riani May-24 presentation on the need for pre-coder

**Response**

ACCEPT IN PRINCIPLE.

Resolve using response to comment #547
IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

**Comment Type** T  **Comment Status** A  **Precoding**
According to figure 177-2, the first process the receiver performs is PAM4 decoding (or soft-decision decoding).

**Suggested Remedy**
Add a subclause for the decoding process.

**Response**
**Response Status** C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #547.

**Comment Type** TR  **Comment Status** A  **Inner FEC Sync**
In Figure 177-8, the input variable of state FS_LOCK_INIT is not correct. It would cause a FS lock error.

**Suggested Remedy**
FS_LOCK_INIT state should be entered after all the 8 flows obtain their inner FEC codeword boundaries and inner FEC flow 0 is identified, when fs_lock is false.

Propose change:
Change the input variable from ' !all_synced ' to ' all_synced * !fs_lock '.

Change the definition of all_synced from
'A Boolean variable that is set to true when sync_flow<x> is true for all eight flows and is set to false when sync_flow<x> is false for any x.'
to
'A Boolean variable that is set to true when inner FEC flow 0 is identified and is set to false when sync_flow<x> is false for any x.'
(in page 258 line 48-50)

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

Background and proposed changes are provided on slides 4 and 5 in the following presentation:

Implement the proposed changes shown on slide 5 of nicholl_3dj_01_2406, with editorial license.

---

**Comment Type** TR  **Comment Status** A  **B-T filter BW**
The Bessel-Thomson filter should track fr. Between 0.5 fb and 0.6 fb have been shown in presenations.

**Suggested Remedy**
change TBD to 67GHz

**Response**
**Response Status** C
ACCEPT IN PRINCIPLE.
The comment addresses an open TBD and the suggested remedy is reasonable.

There are several comments on this topic. The editorial team prepared a proposal in slide 4 of https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01_2406.pdf.

Use 60 GHz for signal measurements in 178, 179, 176D, 176E. Replace all TBDs and the "40 GHz" that wasn't adopted.

---

**Comment Type** TR  **Comment Status** A  **B-T filter BW**
3dB BW is TBD

**Suggested Remedy**
Change it to 65 GHz.
Rational, considering the common and cost effective 1.85mm connector BW, and associated ~7% measurement error, give rise to this number.

**Response**
**Response Status** C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #60.

---

**Comment Type** TR  **Comment Status** A  **B-T filter BW**
Transmitter measurement bandwidth is TBD

**Suggested Remedy**
Replace TBD with 62 GHz

**Response**
**Response Status** C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #60.
IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

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

**Comment 178**

<table>
<thead>
<tr>
<th>Cl 178</th>
<th>SC 178.9.2</th>
<th>P 276</th>
<th>L 19</th>
<th># 231</th>
</tr>
</thead>
<tbody>
<tr>
<td>Li, Mike</td>
<td>Intel</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type:** TR  **Comment Status:** A  **ERL**

dERL (min) is TBD

**Suggested Remedy**

- Change it to -3 dB. See lim_3dj_01_2403a.

**Response**

<table>
<thead>
<tr>
<th>Response Status:</th>
<th>C</th>
</tr>
</thead>
</table>

**Response**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #29.

**Comment 178**

<table>
<thead>
<tr>
<th>Cl 178</th>
<th>SC 178.9.2.1.2</th>
<th>P 277</th>
<th>L 37</th>
<th># 28</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mellitz, Richard</td>
<td>Samtec</td>
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</tbody>
</table>

**Comment Type:** TR  **Comment Status:** A  **ERL**

scale ERL parameter form 0.3ck

**Suggested Remedy**

- in table 178-7 change TBD's as follows
  - Tr: 0.005 ns
  - x: 0 GHz
  - N: 400 UI

**Response**

<table>
<thead>
<tr>
<th>Response Status:</th>
<th>C</th>
</tr>
</thead>
</table>

**Response**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #29.

**Comment 178**

<table>
<thead>
<tr>
<th>Cl 178</th>
<th>SC 178.9.2.2</th>
<th>P 278</th>
<th>L 26</th>
<th># 237</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mellitz, Richard</td>
<td>Samtec</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type:** TR  **Comment Status:** A  **ERL**

scale ERL parameter form 0.3ck

**Suggested Remedy**

- in table 163-7 change TBD's as follows
  - Tr: 0.005 ns
  - x: 0 GHz
  - N: 400 UI

**Response**

<table>
<thead>
<tr>
<th>Response Status:</th>
<th>C</th>
</tr>
</thead>
</table>

**Response**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #29.

There are several comments on this topic. The editorial team prepared a proposal in slide 5 of https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01_2406.pdf.

For the ERL tables in the following subclauses:
- 178.9.2.2, 178.9.2.1.2, 178.10.3, 179.9.4.8, 179.11.3, 179B.4.2
- And the corresponding tables in annex 176D and annex 176E, use the following values:
  - Tr = 0.005 ns
  - beta_x = 0
  - rho_x = 0.618

Additionally, use the following values:
- 178.9.2.2: N=400, min dERL=-3 dB
- 178.9.2.1.2: N=400
- 178.10.3: N=7000, min ERL=11 dB
- 179.9.4.8: N=1600
- 179B.4.2: N=1600, tw=1, DER0=2e-5

**Comment 178**

<table>
<thead>
<tr>
<th>Cl 178</th>
<th>SC 178.9.2.2</th>
<th>P 278</th>
<th>L 26</th>
<th># 237</th>
</tr>
</thead>
<tbody>
<tr>
<td>Li, Mike</td>
<td>Intel</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type:** TR  **Comment Status:** A  **ERL**

Tr is TBD

**Suggested Remedy**

- replace it with 0.005 ns, see lim_3dj_01_2403a

**Response**

<table>
<thead>
<tr>
<th>Response Status:</th>
<th>C</th>
</tr>
</thead>
</table>

**Response**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #29.
<table>
<thead>
<tr>
<th>Cl 178</th>
<th>SC 178.9.2.2</th>
<th>P278</th>
<th>L27</th>
<th># 238</th>
</tr>
</thead>
</table>
| Li, Mike | Intel       | **Betax is TBD**
| **SuggestedRemedy** | | replace it with 0 GHz, see lim_3dj_01_2403a
| **Response** | | **ACCEPT IN PRINCIPLE.**
| | | Resolve using the response to comment #29. |

<table>
<thead>
<tr>
<th>Cl 178</th>
<th>SC 178.9.2.2</th>
<th>P278</th>
<th>L29</th>
<th># 239</th>
</tr>
</thead>
</table>
| Li, Mike | Intel       | **Rox is TBD**
| **SuggestedRemedy** | | replace it with 0.618, see lim_3dj_01_2403a
| **Response** | | **ACCEPT IN PRINCIPLE.**
| | | Resolve using the response to comment #29. |

<table>
<thead>
<tr>
<th>Cl 178</th>
<th>SC 178.9.2.2</th>
<th>P278</th>
<th>L31</th>
<th># 240</th>
</tr>
</thead>
</table>
| Li, Mike | Intel       | **N is TBD**
| **SuggestedRemedy** | | replace it with 400, see lim_3dj_01_2403a
| **Response** | | **ACCEPT IN PRINCIPLE.**
| | | Resolve using the response to comment #29. |

<table>
<thead>
<tr>
<th>Cl 178</th>
<th>SC 178.9.3</th>
<th>P280</th>
<th>L9</th>
<th># 244</th>
</tr>
</thead>
</table>
| Li, Mike | Intel       | **dERL is TBD**
| **SuggestedRemedy** | | replace it with -3dB, see lim_3dj_01_2403a
| **Response** | | **ACCEPT IN PRINCIPLE.**
| | | Resolve using the response to comment #29. |

<table>
<thead>
<tr>
<th>Cl 178</th>
<th>SC 178.9.3.3</th>
<th>P281</th>
<th>L40</th>
<th># 245</th>
</tr>
</thead>
</table>
| Li, Mike | Intel       | **3dB BW is TBD**
| **SuggestedRemedy** | | Change it to 65 GHz.
| | | Rational, considering the common and cost effective 1.85mm connector BW, and
| | | associated ~7% measurement error, give rise to this number
| **Response** | | **ACCEPT IN PRINCIPLE.**
| | | Resolve using the response to comment #60.
| | | [Editor's note: Page changed from 280 to 281]
The Bessel-Thomson filter should track BW which between 0.5 and 0.6 has been shown in presenations.

Suggested Remedy
change TBD to 67GHz

Response
Response Status: C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #60.

Li, Mike
Intel

Comment Type: TR
Comment Status: A
COM

COM for test1 and test2 are TBDs

Suggested Remedy
Replace both with 3 dB, see lim_3dj_01_2405

Response
Response Status: C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Li, Tobey
MediaTek

Comment Type: TR
Comment Status: A
COM

Use 3 dB as minimum COM as in .3ck or

Suggested Remedy
change TBD to 3 (same in 178.10.1 line 28)

Response
Response Status: C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Li, Mike
Intel

Comment Type: TR
Comment Status: A
COM

Use the value 3 dB for minimum COM for channels and for test setup calibration in Annex 176D.

Use the value 3 dB for minimum COM for channels and for test setup calibration in Clauses 178 and 179.

There are several comments on this topic. The editorial team prepared a proposal in slide 7 of https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01a_2406.pdf.
EEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

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

**Comment**

Channel ERL TBD

**Suggested Remedy**

Replaced it with 3 dB, see lim_3dj_01_2405

**Response**  **Response Status** C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #250.

---

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

**Comment**

Multiple COM parameters

The COM parameter values for the 200GBASE-KR1, 400GBASE-KR2, 800GBASE-KR4 and 1.6TBASE-KR8 PMDs are TBDs

**Suggested Remedy**

In table 178-13, use the COM parameter values from https://www.ieee802.org/3/dj/public/24_01/healey_3dj_01_2401.pdf slide 18, which are:

- $f_r = 0.58$
- $c(-3) = 0$
- $c(-2) = 0$
- $c(-1) = 0$
- $c(0) = 1$
- $c(1) = 0$
- $A_v = 0.413$
- $A_{le} = 0.413$
- $A_{ne} = 0.45$
- $eta_0 = 6e-9$
- $SNR_{TX} = 33$
- $sigma_{RJ} = 0.01$
- $A_{DD} = 0.02$
- $R_{LM} = 0.95$
- $d_w = 5$
- $Nfix = 10$
- $N_g = 0$
- $N_f = 0$
- $N_{max} = 0$
- $b_{max}(1) = 0.85$
- $b_{min}(1) = 0$

Additionally, set MLSE = 0 (not enabled)

**Response**  **Response Status** Z

REJECT.

This comment was WITHDRAWN by the commenter.
<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Suggested Remedy</th>
<th>Response</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>178</td>
<td>178.10.1</td>
<td>286</td>
<td>32</td>
<td>264</td>
<td>TR</td>
<td>R</td>
<td>g2 inherited from 802.3ck, no simod support, not appropriate</td>
<td>REJECT</td>
<td>R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Replace them w -5:0, 1 (min, max, step) see lim_3dj_01_2405, slide 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TR</td>
<td>R</td>
<td>f1, f2 from 802.3ck, no simod support, not appropriate</td>
<td>REJECT</td>
<td>R</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Replace them w fb/4.223, fb/80 (f1, f2) see lim_3dj_01_2405, slide 5</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>TR</td>
<td>R</td>
<td>g1 inherited from 802.3ck, no simod support, not appropriate</td>
<td>REJECT</td>
<td>R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Replace them w -15:0, 1 (min, max, step) see lim_3dj_01_2405, slide 5</td>
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<td></td>
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<td></td>
<td></td>
<td>TR</td>
<td>R</td>
<td>f1, f2, f3 from 802.3ck, no simod support, not appropriate</td>
<td>REJECT</td>
<td>R</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Replace them w fb/1.8973, fb/2.6562, fb/80 (f1, f2, f3) see lim_3dj_01_2405, slide 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following presentation was reviewed by the task force at the May 2024 interim meeting:

The comment and the presentation do not provide sufficient justification to support the suggested remedy.

There are several comments on this topic. The editorial team prepared a proposal in slide 15 of https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01b_2406.pdf.

There was no consensus to make the suggested change.
### Comment 269

**Comment Type**: TR
**Comment Status**: R
**Suggested Remedy**: Replace it with 5e-9 V^2/GHz
see lim_3dj_01_2405, slide 5

**Response**: REJECT.

The following presentation was reviewed by the task force at the May 2024 interim meeting:

The presentation is based on COM4.50draft3 using MLSE. The MLSE implementation within that code is however tentative and has not been fully debugged. Making a decision on the critical eta0 parameter is therefore premature. The comment and the presentation do not provide sufficient justification to support the suggested remedy.

Although Straw Poll #7 in the May 2024 meeting showed consensus for the value 1e-8 for C2C and C2M, CR/KR were not addressed. The values 5e-9 and 6e-9 are suggested in other comments. Further analysis and consensus building are encouraged.

### Comment 274

**Comment Type**: TR
**Comment Status**: R
**Suggested Remedy**: Replace TBD with 6e-9 V^2/GHz

**Response**: REJECT.

Resolve using the response to comment #269.

### Comment 275

**Comment Type**: TR
**Comment Status**: R
**Suggested Remedy**: Replace it with 24, see lim_3dj_01_2405, slide 5

**Response**: REJECT.

There is no consensus to implement the suggested remedy. Further contributions on this topic are encouraged.
Comment Type | TR  | Comment Status | R  | COM ref Rx
---|---|---|---|---
Ng TBD | Replace it w 4, see lim_3dj_01_2405, slide 5 | REJECT.
The following presentation was reviewed by the task force at the May 2024 interim meeting: https://www.ieee802.org/3/dj/public/24_05/lim_3dj_01_2405.pdf
The comment and the presentation do not provide sufficient justification to support the suggested remedy.
There is no consensus to implement the suggested remedy. Further contributions on this topic are encouraged.

Response | Response Status | C
---|---|---

Comment Type | TR  | Comment Status | R  | COM ref Rx
---|---|---|---|---
Nmax TBD | Replace it w 5, see lim_3dj_01_2405, slide 5 | REJECT.
The following presentation was reviewed by the task force at the May 2024 interim meeting: https://www.ieee802.org/3/dj/public/24_05/lim_3dj_01_2405.pdf
The comment and the presentation do not provide sufficient justification to support the suggested remedy.
There is no consensus to implement the suggested remedy. Further contributions on this topic are encouraged.

Response | Response Status | C
---|---|---

Comment Type | TR  | Comment Status | R  | COM ref Rx
---|---|---|---|---
Nf TBD | Replace it w 60, see lim_3dj_01_2405, slide 5 | REJECT.
The following presentation was reviewed by the task force at the May 2024 interim meeting: https://www.ieee802.org/3/dj/public/24_05/lim_3dj_01_2405.pdf
The comment and the presentation do not provide sufficient justification to support the suggested remedy.
There is no consensus to implement the suggested remedy. Further contributions on this topic are encouraged.

Response | Response Status | C
---|---|---

Comment Type | TR  | Comment Status | R  | Multiple COM parameters
---|---|---|---|---
Nf 3, 4, 5 | Nmax 40 60 120 | Wmax(j)=1 | Wmin(-1,0,1)=-0.5 | bmax(1) = 0.5 0.75 0 85 | bmin(1) = -0.5 -0.75 -0.5 85
The suggested remedy does not propose an actionable (within the draft) remedy.
Proposed changes should preferably be backed by technical justification and not just straw polls.

Response | Response Status | C
---|---|---

Cl 178 SC 178.10.2 P 287 L 16 # 277
Li, Mike Intel
Comment Type | TR  | Comment Status | R  | Multiple COM parameters
---|---|---|---|---
Nf 3, 4, 5 | Nmax 40 60 120 | Wmax(j)=1 | Wmin(-1,0,1)=-0.5 | bmax(1) = 0.5 0.75 0 85 | bmin(1) = -0.5 -0.75 -0.5 85
The suggested remedy does not propose an actionable (within the draft) remedy.
Proposed changes should preferably be backed by technical justification and not just straw polls.

Response | Response Status | C
---|---|---
IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comment

**Comment Type**: TR  **Comment Status**: A  **平方米**: TR  **Parameter form 0.3ck**

**SuggestedRemedy**

- in table 178-14 change TBD's as follows
- Tr 0.005 ns
- ?x 0 GHz
- □x 0.618
- N 7000 UI

**Response**  **Response Status**: C  **采纳**

- ACCEPT IN PRINCIPLE.
- Resolve using the response to comment #29.

---

**Comment Type**: T  **Comment Status**: A  **DER0**

**SuggestedRemedy**

- Slide 5 of <https://www.ieee802.org/3/dj/public/23_11/healey_3dj_01a_2311.pdf> suggest expressions for relationship between detector error ratio, "PAM-L symbol error ratio", and "bit error ratio" is not documented and, as a result, not generally understood. While these quantities are related, they are not interchangeable. Prior assumptions that they are interchangeable has led to errors in the translation between COM results and expected (measured) receiver performance. This new annex gives us an opportunity to clarify the relationship between DER0 and other terms or to replace DER0 with a more generally understood term.

**Response**  **Response Status**: C

- ACCEPT IN PRINCIPLE.
- Implement the changes on slide 29 of ran_3dj_01b_2406, with editorial license.

---

**Comment Type**: TR  **Comment Status**: A  **DER0 EQ is wrong**

**SuggestedRemedy**

- change P(y0)= DER0  to 1-P(y0) =DER0, see slide 3 of lim_3dj_02_2405, see also a marked version in the support data sheet.

**Response**  **Response Status**: C

- ACCEPT IN PRINCIPLE.
- Resolve using the response to comment #362.

---

**Comment Type**: TR  **Comment Status**: A  **COM methodology MLSD_PAM**

**SuggestedRemedy**

- Update the equation per slide 4 of lim_3dj_02_2405, see also a marked version in the support data sheet.

**Response**  **Response Status**: C

- ACCEPT IN PRINCIPLE.
- Resolve using the response to comment #362.
Comment Type: T  Comment Status: A  CM methodology MLSD_PAM

The factor 2/3 in equation (178A-36) is specific to PAM4. This change does not apply if the equation is rewritten.
See contributions lim_3dj_02_2405.pdf and shakiba_3dj_01_2405.pdf.

SuggestedRemedy
Change 2/3 to L/2(L-1) to make it general. Note that L=4 still yields 2/3. Please refer to contribution tbd.

Response  Response Status  C
ACCEPT IN PRINCIPLE.

The following contribution was reviewed at the May 2024 interim meeting:

The modifications to Equations (178A-36) and (178A-37) are also influenced by the responses to comments #285 and #362.

Resolve using the response to comment #362.

[Editor's note: changed subclause  to 178A.1.11.]

Comment Type: T  Comment Status: A  CM methodology MLSD_PAM

The factor 3/4 in equation (178A-37), as is or rewritten, is specific to PAM4.
See contributions lim_3dj_02_2405.pdf and shakiba_3dj_01_2405.pdf.

SuggestedRemedy
Change 3/4 to (L-1)/L to make it general. Note that L=4 still yields 3/4. Please refer to contribution tbd.

Response  Response Status  C
ACCEPT IN PRINCIPLE.

The following contributions were reviewed at the May 2024 interim meeting:

The modifications to Equations (178A-36) and (178A-37) are also influenced by the responses to comments #285 and #362.

Resolve using the response to comment #362.

[Editor's note: changed subclause to 178A.1.11.]

Comment Type: T  Comment Status: A  CM methodology MLSD_PAM

Adopted baseline https://www.ieee802.org/3/dj/public/24_01/ran_3dj_01a_2401.pdf has BT filter bandwidth as TBD but D1.0 has 40GHz. 3dB bandwidth of 40GHz is insufficient for 200Gbps/lane PAM4

SuggestedRemedy

Response  Response Status  C
ACCEPT IN PRINCIPLE.
The value 40 GHz is a leftover from an older clause and has not been adopted.
Resolve using the response to comment #60.
EEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comment

Comment Type: T, Comment Status: A

Transmitter signal measurement filter bandwidth description.

"Unless specified otherwise, transmitter signal measurements are made for each lane separately using a fourth-order Bessel-Thomson low-pass response with 3 dB bandwidth of 40 GHz, with AC-coupled connection from TP2 to the test equipment."

The 4th-BW filter BW should be "TBD GHz", the same as for CL178.9.2, AN176D.3.3 and AN176E.3.3, as the Nyquist frequency of the signal is 53.125GHz and 40GHz is too low.

Suggested Remedy
Change 40GHz to TBD GHz.

Response
Response Status: C
ACCEPT IN PRINCIPLE.
The value 40 GHz is a leftover from an older clause and has not been adopted.
Resolve using the response to comment #60.

Comment Type: TR

"4th order Bessel-Thomson filter with 3 dB bandwidth of 40 GHz" is inconsistent with Clause 178.9.2, Annex 176D.3.3, and Annex 176E.3.3.

Suggested Remedy
Change "40 GHz" to either "TBD" or "62 GHz"

Response
Response Status: C
ACCEPT IN PRINCIPLE.
The value 40 GHz is a leftover from an older clause and has not been adopted.
Resolve using the response to comment #60.

Response
Response Status: C
ACCEPT IN PRINCIPLE.
It is assumed that, based on the subclause/page/line, the suggested remedy is asking to change Table 179-9.
Resolve using the response to comment #29.
EEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

**Comment Type**: TR  **Comment Status**: A  **COM**

The COM values need to be set to make progress. Until a more comprehensive proposal is presented use what is in 0.3ck and many other prior standards.

**Suggested Remedy**
- set COM to 3 dB

**Response**
- **Response Status**: C
- ACCEPT IN PRINCIPLE.
- Resolve using the response to comment #250.

**Comment Type**: TR  **Comment Status**: A  **COM**

COM values in Table 179û11 are TBD

**Suggested Remedy**
- Replace TBD with 3 dB

**Response**
- **Response Status**: C
- ACCEPT IN PRINCIPLE.
- Resolve using the response to comment #250.

**Comment Type**: TR  **Comment Status**: A  **B-T filter BW**

4th order Bessel-Thomson filter BW is TBD

**Suggested Remedy**
- Replace TBD with 62 GHz

**Response**
- **Response Status**: C
- ACCEPT IN PRINCIPLE.
- Resolve using the response to comment #60.

**Comment Type**: TR  **Comment Status**: R  **ERL Tfx**

Practical test fixtures may have discontinuities close to 0.2ns from the host-facing connection (mating interface). If the intent is to remove the test fixture discontinuities from the ERL calculations, we should adjust the 0.2ns.

**Suggested Remedy**
- Change text to "...Tfx equal to twice the delay between the test fixture connector and the test fixture host-facing connection minus 0.2ns or as needed to remove test-fixture discontinuities from the ERL result"

**Response**
- **Response Status**: C
- REJECT.
- Resolve using the response to comment #227.

**Comment Type**: TR  **Comment Status**: A  **COM**

Minimum COM is TBD

**Suggested Remedy**
- set COM to 3 dB

**Response**
- **Response Status**: C
- ACCEPT IN PRINCIPLE.
- Resolve using the response to comment #250.

**Comment Type**: TR  **Comment Status**: A  **COM**

Minimum COM is TBD

**Suggested Remedy**
- Replace TBD with 3 dB in Table 179û13 and in line 41 of page 330

**Response**
- **Response Status**: C
- ACCEPT IN PRINCIPLE.
- Resolve using the response to comment #250.
EEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comment

**Comment Type** T  Comment Status A
Comment: The maximum frequency of 40GHz is insufficient for 200Gbps/lane PAM4

**Suggested Remedy**

**Response**
ACCEPT IN PRINCIPLE.
The value 40 GHz is a leftover from an older clause and has not been adopted.
Resolve using the response to comment #60.

**Comment Type** T  Comment Status A
Comment: Practical test fixtures may have discontinuities close to 0.2ns from the host-facing connection (mating interface). If the intent is to remove the test fixture discontinuities from the ERL calculations, we should adjust the 0.2ns

**Suggested Remedy**
Change text to "...Tfx equal to twice the delay between the test fixture connector and the test fixture host-facing connection minus 0.2ns or as needed to remove test-fixture discontinuities from the ERL result"

**Response**
REJECT.
Resolve using the response to comment #227.
## EEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comment

### Comment Type: TR/technical required

**Comment Status:** R

**Multiple COM parameters**

- The COM parameter values for the 200GBASE-CR1, 400GBASE-CR2, 800GBASE-CR4 and 1.6TBASE-CR8 PMDs are TBDs

**Suggested Remedy**

In table 179-16, use the COM parameter values from https://www.ieee802.org/3/dj/public/24_01/healey_3dj_01_2401.pdf slide 18, which are:

- \( f_r = 0.58 \)
- \( c(-3) = 0 \)
- \( c(-2) = 0 \)
- \( c(-1) = 0 \)
- \( c(0) = 1 \)
- \( c(1) = 0 \)
- \( A_v = 0.413 \)
- \( A_{fe} = 0.413 \)
- \( A_{ne} = 0.45 \)
- \( \eta_0 = 6e-9 \)
- \( SNR_{TX} = 33 \)
- \( \sigma_{RJ} = 0.01 \)
- \( A_{DD} = 0.02 \)
- \( R_{LM} = 0.95 \)
- \( d_w = 5 \)
- \( Nfix = 10 \)
- \( N_g = 0 \)
- \( N_f = 0 \)
- \( N_{max} = 0 \)
- \( b_{max}(1) = 0.85 \)
- \( b_{min}(1) = 0 \)

Additionally, set MLSE = 0 (not enabled)

**Response Status:** Z

This comment was WITHDRAWN by the commenter.

---

### Comment Type: TR/technical required

**Comment Status:** R

**COM eta0**

- Li, Tobey
  - MediaTek

**Suggested Remedy**

Replace TBD with \( 6e-9 \) V^2/GHz

**Response**

- **Response Status:** C
  - REJECT.
  - Resolve using the response to comment #269.

---

### Comment Type: TR/technical required

**Comment Status:** R

**Multiple COM parameters**

- Mellitz, Richard
  - Samtec

**Suggested Remedy**

- Use straw polls from the following
  - Dw 4, 6, or 8
  - Nfix 10, 15, 24
  - Nf 1, 2, 3
  - Ng 3, 4, 5
  - Nmax 40 60 120
  - Wmax[j]=1
  - Wmin(-1,0,1)=0, otherwise -0.5
  - bmax(1) = 0.5 0.75 0.85
  - bmin(1)= 0.5 -0.5 -0.75 -0.85

**Response**

- **Response Status:** C
  - REJECT.
  - Resolve using the response to comment #42.
The COM values need to be set to make progress. Until a more comprehensive proposal is presented use what is in 0.3ck and many other prior standards.

**Suggested Remedy**
- set COM to 3 dB

**Response**
- **Response Status**: C
- **Accept In Principle**
- Resolve using the response to comment #250.

In Table 178-14 change TBD’s as follows:
- Tr 0.005 ns
- ?x 0.618
- N 1600 UI
- Tfx 0
- tw 1
- DER0 2e-5

**Suggested Remedy**
- It is assumed that, based on the subclause/page/line, the suggested remedy is asking to change Table 179B-1.

**Response**
- **Response Status**: C
- **Accept In Principle**
- Resolve using the response to comment #29.

Propose changing "Average launch power, each lane (min)" in Table 180-7 from -2.8 dBm to -3.3 dBm.

**Response**
- **Response Status**: C
- **Accept In Principle**
- Change "Average launch power, each lane (min)" in Table 180-7 from -2.8 dBm to -3.3 dBm.

In Table 180-7, add a footnote to the value "-3.3" on the row for "Average launch power, each lane (min)" with the following text:
"Average launch power of -3.3 dBm corresponds to an OMA of -0.3 dBm with an infinite extinction ratio."

Implement with editorial license.
IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

In 802.3db we acknowledged that single-lane PMDs are often packaged in multilane modules, and subject to much the same crosstalk as multilane PMDs.

**Suggested Remedy**
Delete footnote e, "No aggressors needed for 200GBASE-DR1." In 180.8.13 Stressed receiver sensitivity, add "For a receiver in a multilane device, the OMA outer of the aggressor lanes is specified in Table 180-8."

**Response**

ACCEPT IN PRINCIPLE.

- Change footnote e, to "No aggressors needed for 200GBASE-DR1 in a single lane device.
- With editorial license.

---

**Comment Type**: T  
**Comment Status**: A  
**RX specs**

Footnote b did not clarify what's the compisiton of total 3.5dB allocation for penalties.

**Suggested Remedy**
Recommend to add "Allocations to penalties for DRx series including penalties due to dispersion 3.4dB, DGD and MPI 0.1dB" to footnote b.

**Response**

ACCEPT IN PRINCIPLE.

- Resolve using the response to comment #127.

---

**Comment Type**: T  
**Comment Status**: A  
**power budget**

The power budget does not explicitly say what the penalty allocation is for MPI and DGD. It's implied by the difference between Allocation for penalties (for max TDECQ) and TDECQ(max). This makes it hard for average readers to understand the power budget.

**Suggested Remedy**
Add to Table 180-9, footnote (b), "This value includes an allocation of 0.1 dB for MPI and DGD penalties."

**Response**

ACCEPT IN PRINCIPLE.
- Implement the suggested remedy with editorial license.

---

**Comment Type**: T  
**Comment Status**: A  
**Connector labeling**

To support breakout, loopback, and OAN/OLT connectro should be labled

**Suggested Remedy**
- DR2-2 connector should be labled as Tx1Tx2 ------ Rx2Rx1

**Response**

ACCEPT IN PRINCIPLE.
- While the labeling modification as proposed was not part of the adopted Baseline Proposal for Optical Link Training "OLT", it is necessary to support the adopted baseline.

- Implement suggested remedy with editorial license.

---

**Comment Type**: T  
**Comment Status**: A  
**Connector labeling**

To support breakout, loopback, and OAN/OLT connectro should be labled

**Suggested Remedy**
- DR4 connector should be labled as Tx1Tx2Tx3Tx4 ------ Rx4Rx3Rx2Rx1

**Response**

ACCEPT IN PRINCIPLE.
- Resolve using the response to comment #590.

---

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

**SORT ORDER**: Clause, Subclause, page, line
### Connector labeling

**Comment Type:** T  **Comment Status:** A  **Connector labeling**

To support breakout, loopback, and OAN/OLT connec tro should be labeled

**Suggested Remedy:**

DR2-8 connector should be labeled as Tx1Tx2Tx3Tx4Tx5Tx6Tx7 Tx8 Rx8Rx7Rx6Rx5Rx4Rx3Rx2Rx1

**Response**  **Response Status:** C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #590.

---

### IEC revision

**Comment Type:** T  **Comment Status:** A  **IEC revision**

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

**Suggested Remedy:**

Change "IEC 61753-1-1" to "IEC 61753-1".

**Response**  **Response Status:** C

ACCEPT IN PRINCIPLE.

Change "IEC 61753-1-1" to "IEC 61753-1" in the PMD clause.

Add "IEC 61753-1, Fibre optic interconnecting devices and passive components - Performance standard - Part 1: General and guidance" to 1.3 Normative references.

With editorial license.
121.8.5.2 Table 121-11 specifies ORL of 21.4dB be applied for TX testing. For 200GBASE-DR1, this needs to be 15.1dB.

Suggested Remedy:
- The optical return loss is as given in Table 180-6.

Response:
- ACCEPT IN PRINCIPLE.

Add a new exception to the list in 180.8.5:
- The optical return loss is as given in Table 180-7.

Implement with editorial license.

---

The current method for optimizing the tap weights of equalizer in the TDECQ reference receiver is described in clause 121.8.5. The equalizer tap coefficients are iteratively adjusted to effectively minimize the TDECQ penalty. Although not explicitly stated, one way to view this is that ANY combination of tap weights is valid and that ALL combinations should be tried to ensure the optimum tap weight combination is used when calculating TDECQ. As the equalizer length has been increased from 5 taps to 15 taps, the time required to verify all possible tap weights is likely problematic. This issue was managed in the 802.3 db project, where a 9 tap virtual equalizer is used for TDECQ. The following text was added to clause the definition of the TDECQ method:

> The lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibration. Note that the MMSE optimization method is used in almost all TDECQ measurements performed today.

Suggested Remedy:
- Add the following text at line 36 (end of exceptions list):

> The lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibration.

Response:
- ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.
EEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comment

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<td>364</td>
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<td>324</td>
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<td>Current baseline proposal is lacking tap weight restrictions, which were indicated as TBD when adopted.</td>
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<tr>
<td>Suggested Remedy</td>
<td>Propose adopting the TDECQ tap weight restrictions as presented in welch_3dj_01_0524.</td>
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<td>The following presentation was reviewed by the 802.3dj task force at the May Interim meeting:</td>
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<tr>
<td>Implement slide 7 of the presentation with editorial license with the following exceptions:</td>
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<tr>
<td>n = -1 and n = 1 being TBD for the min values.</td>
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<td>A</td>
<td>RIN-OMA</td>
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<tr>
<td>&quot;The upper -3 dB limit of the measurement apparatus is to be approximately equal to the signaling rate&quot;: I believe this dates back at least to the first Fibre Channel, ~1 Gb/s, long before adaptive equalisers that optimise the receiver bandwidth. We have a RIN spec to help the accuracy of the TDECQ spec, which is the actual assessment of signal quality. Gigabit Ethernet now uses 937.5 MHz, 75% of the signalling rate. Measuring a peaky noise spectrum in too much bandwidth gives a flattering average, which is not what we want.</td>
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<tr>
<td>Suggested Remedy</td>
<td>Change the bandwidth for RIN measurement to be the same as the TDECQ receiver's BT4 filter (50% of signalling rate ~ 53.1 GHz) or 75%, or something in between.</td>
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<tr>
<td>The following presentation was reviewed by the 802.3dj task force at the May Interim meeting:</td>
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<tr>
<td>Implement slides 8 and 9 of the presentation with editorial license.</td>
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<td>IEC revision</td>
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<tr>
<td>IEC 60950-1 has been superseded by IEC 62368-1.</td>
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<td>Suggested Remedy</td>
<td>Change &quot;IEC 60950-1&quot; to &quot;IEC 62368-1&quot;.</td>
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<tr>
<td>Change &quot;IEC 60950-1&quot; to &quot;IEC 62368-1&quot; in the PMD clause.</td>
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<td>Ghiasi Quantum/Marvell</td>
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<td>Comment Type</td>
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<td>A</td>
<td>Precoding</td>
</tr>
<tr>
<td>Prior to 181.4 add section for PMA function to support precoder to mitigate burst errors</td>
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<tr>
<td>Suggested Remedy</td>
<td>The transmitter need to supports 1/(1+D) mod 4 precoding, as specified in 135.5.7.2, 120.5.7.2, and 173.5.7.2, 6 and 176.9.1.2, that may be enabled or disabled as needed with OLT, without OLT the optical transmitter should enable 1/(1+D) mod 4 precoding to mitigate burst error.</td>
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<tr>
<td>Resolve using the response to comment #21</td>
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### IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

#### 181.6.1 Total average launch power (max) in Table 181-5 is TBD for 800GBASE-FR4-500.

**Suggested Remedy**

Replace TBD with a value equal to the Average launch power, each lane (max) + 6 dB, which is 4.9 + 6 = 10.9 dB. This methodology is consistent with previous FR4 PMDs (clauses 122, 151).

**Response**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.

---

#### 181.6.1 In later 100GFL specs (ie, 400GBASE-FR4) the difference between OMA(min) and Pave(min) was 3dB, to reflect the case of infinite extinction ratio. In the adopted baselines this narrowed to 2.6 dB as it was not updated to reflect the changes to effective TDECQ(min).

**Suggested Remedy**

Propose changing "Average launch power, each lane (min)" in Table 181-5 from -1.8 dBm to -2.2 dBm.

**Response**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #162.

---

#### 181.6.1 Difference in launch power between any two lanes (OMAouter) (max) in Table 181-5 is TBD for 800GBASE-FR4-500.

**Suggested Remedy**

Replace TBD with a value of OMAouter(max) minus OMAouter(min) or 4 dB, whichever is smaller, consistent with other FRn/LRn clauses (122, 151).

**Response**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.
IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comment

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<tr>
<td>Suggested Remedy</td>
<td>RX specs</td>
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<tr>
<td>The delta between 'Tx_Pavg(min)' and 'Rx_Pavg(min)' should equal to 'Channel insertion loss' (3.5dB for FR4-500)</td>
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<tr>
<td>Response</td>
<td>ACCEPT IN PRINCIPLE.</td>
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<tr>
<td>In Table 181-6, change the value for &quot;Average receive power, each lane (min)&quot; to -5.7.</td>
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<tr>
<td>Difference in receive power between any two lanes (OMAouter) (max) in Table 181-6 is TBD for 800GBASE-FR4-500.</td>
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<tr>
<td>Implement the suggested remedy with editorial license.</td>
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<td>The power budget does not explicitly say what the penalty allocation is for MPI and DGD. It's implied by the difference between Allocation for penalties (for max TDECQ) and TDECQ(max). This makes it hard for average readers to understand the power budget.</td>
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<tr>
<td>Response</td>
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<tr>
<td>Implement the suggested remedy with editorial license.</td>
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<tr>
<td>181</td>
<td>SC 181.6.3</td>
<td>P381</td>
<td>48</td>
<td>169</td>
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<tr>
<td>Yu, Rang-chen</td>
<td>InnoLight</td>
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<tr>
<td>Suggested Remedy</td>
<td>power budget</td>
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<tr>
<td>Footnote d did not clarify what's the composition of total 3.9dB allocation for penalties.</td>
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<tr>
<td>181</td>
<td>SC 181.7</td>
<td>P383</td>
<td>16</td>
<td>173</td>
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<tr>
<td>Yu, Rang-chen</td>
<td>InnoLight</td>
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<td>Comment Type</td>
<td>T</td>
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<td>Comment Status</td>
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</tr>
<tr>
<td>Suggested Remedy</td>
<td>power budget</td>
<td></td>
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</tr>
<tr>
<td>Power budget (for maximum TDECQ) for 800GBASE-FR4-500 in Table 181-7 could be incorrect. It should be equal to channel IL + allocation for penalties (for maximum TDECQ).</td>
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<tr>
<td>Response</td>
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</tr>
<tr>
<td>Implement proposed remedy with editorial license.</td>
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</tbody>
</table>
IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

Cl 181  SC 181.7.1  P383  L 26  # 336
Ferretti, Vince  Corning

Comment Type  TR  Comment Status  A

ITU-T G.652.B cabled fiber attenuation is only specified for 1310 nm and 1550 nm wavelengths. It is not specified for wavelengths between 1260 nm and 1310 nm and not meant to be used in xWDM applications

Suggested Remedy
Remove ITU-T G.652.B (dispersion unshifted) as a fiber option.

Response  Response Status  C
ACCEPT IN PRINCIPLE.

Improve suggested remedy.

Implement the same change in clause 183.7.1.

With editorial license

Cl 181  SC 181.7.3  P384  L 43  # 343
Lambert, Angie  Corning

Comment Type  T  Comment Status  A

IEC 61753-021-02 has been superseded by IEC 61753-021-02.

Suggested Remedy
Change "IEC 61753-021-02" to "IEC 61753-021-02-02".

Response  Response Status  C
ACCEPT IN PRINCIPLE.

Resolve using the response to comment #339.

Cl 181  SC 181.8.5  P386  L 41  # 386
LeCheminant, Greg  Keysight Technologies

Comment Type  T  Comment Status  A

The current method for optimizing the tap weights of equalizer in the TDECQ reference receiver is described in clause 121.8.5. The equalizer tap coefficients are iteratively adjusted to effectively minimize the TDECQ penalty. Although not explicitly stated, one way to view this is that ANY combination of tap weights is valid and that ALL combinations should be tried to ensure the optimum tap weight combination is used when calculating TDECQ. As the equalizer length has been increased from 5 taps to 15 taps, the time required to verify all possible tap weights is likely problematic. This issue was managed in the 802.3 db project, where a 9 tap virtual equalizer is used for TDECQ. The following text was added to clause the definition of the TDECQ method: 6The lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibration.6. Note that the MMSE optimization method is used in almost all TDECQ measurements performed today

Suggested Remedy
Add the following text at line 53 (end of exceptions list): The lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibration

Response  Response Status  C
ACCEPT IN PRINCIPLE.

Resolve using the response to comment #17

Cl 181  SC 181.8.5  P387  L 3  # 355
Welch, Brian  Cisco

Comment Type  TR  Comment Status  A

Current baseline proposal is lacking tap weight restrictions, which were indicated as TBD when adopted.

Suggested Remedy
Propose adopting the TDECQ tap weight restrictions as presented in welch_3dj_01_0524.

Response  Response Status  C
ACCEPT IN PRINCIPLE.

Resolve using the response to comment #324.
EEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comment

**Table 181.8.5.1**

<table>
<thead>
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<th>Cl</th>
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<th>P 387</th>
<th>L 19</th>
<th># 207</th>
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<tr>
<td>Parsons, Earl</td>
<td>CommScope</td>
<td>optical channel specs</td>
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<tr>
<td><strong>Comment Type</strong></td>
<td><strong>Comment Status</strong></td>
<td><strong>Suggested Remedy</strong></td>
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<td></td>
</tr>
<tr>
<td>T</td>
<td>A</td>
<td>The maximum and minimum dispersion values in this table should be replaced by equations similar to ones found in previous clauses (i.e. Table 151-12). This method is sometimes called &quot;CM1&quot;.</td>
<td></td>
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<td><strong>Comment Status</strong></td>
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<td><strong>Response</strong></td>
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<td>Implement suggested remedy with editorial license.</td>
<td></td>
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</tr>
<tr>
<td>Note that &quot;?&quot; in the suggested remedy is the lambda symbol.</td>
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**Table 182.4**

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<th>P 397</th>
<th>L 20</th>
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<tr>
<td>Ghiasi, Ali</td>
<td>Ghiasi Quantum/Marvell</td>
<td>Precoding</td>
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<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td><strong>Comment Status</strong></td>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>A</td>
<td>Prior to 182.4 add section for PMA function to support precoder to mitigate burst errors</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Response</strong></td>
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<tr>
<td></td>
<td></td>
<td>ACCEPT IN PRINCIPLE.</td>
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<tr>
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<td>Resolve using response to comment #547.</td>
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**Table 182.6.1**

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<th>L 21</th>
<th># 228</th>
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<tr>
<td>Welch, Brian</td>
<td>Cisco</td>
<td>TX specs</td>
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<tr>
<td><strong>Comment Type</strong></td>
<td><strong>Comment Status</strong></td>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TR</td>
<td>A</td>
<td>In later 100GPL specs (ie, 100GBASE-FR1) the difference between OMA(min) and Pave(min) was 3dB, to reflect the case of infinite extinction ratio. In the adopted baselines this narrowed to 2.5 dB as it was not updated to reflect the changes to effective TDECQ(min).</td>
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<td></td>
<td></td>
<td><strong>Response</strong></td>
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<tr>
<td></td>
<td></td>
<td>ACCEPT IN PRINCIPLE.</td>
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<tr>
<td></td>
<td></td>
<td>Change &quot;Average launch power, each lane (min)&quot; in Table 182-7 from -2.1 dBm to -2.6 dBm.</td>
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<tr>
<td></td>
<td></td>
<td>In Table 182-7, add a footnote to the value &quot;-2.6&quot; on the row for &quot;Average launch power, each lane (min)&quot; with the following text: &quot;Average launch power of -2.6 dBm corresponds to an OMA of 0.4 dBm with an infinite extinction ratio.&quot;</td>
<td></td>
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<td></td>
<td></td>
<td>Implement with editorial license.</td>
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</tbody>
</table>
Comment Type T Comment Status A

Although TDECQmax is still TBD. However, the footnote b should also indicate the allocation for penalties, just leave dispersion section as TBD for future update.

SuggestedRemedy
Recommend to add "Allocations to penalties for DRx-2 series including penalties due to dispersion TBDb, DGD and MPI 0.4dB" to footnote b.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #128 with the exception that the value is 0.4dB and not 0.5dB.

Implement with editorial license.

Comment Type TR

ITU-T G.652.B cabled fiber attenuation is only specified for 1310 nm and 1550 nm wavelengths. It is not specified for wavelengths between 1260 nm and 1310 nm and not meant to be used in xWDM applications

SuggestedRemedy
Remove ITU-T G.652.B (dispersion unshifted) as a fiber option.

Response Response Status C

REJECT.

There is no xWDM in this PMD clause.

Comment Type T Comment Status A

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy
Change "IEC 61753-1-1" to "IEC 61753-1-02".

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #338.

Comment Type T Comment Status A

Dr OR 4 connector should be labeled as Tx1Tx2Tx3Tx4 ----- Rx4Rx3Rx2Rx1

SuggestedRemedy
Dr OR 4 connector should be labeled as Tx1Tx2Tx3Tx4 ----- Rx4Rx3Rx2Rx1

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #590.
To support breakout, loopback, and OAN/OLT conntector should be labled

**SuggestedRemedy**

DR2-8 connector should be labled as Tx1Tx2Tx3Tx4Tx5Tx6Tx7Tx8Rx8Rx7Rx6Rx5Rx4Rx3Rx2Rx1

**Response**  
**Response Status** C  
ACCEPT IN PRINCIPLE.  
Resolve using the response to comment #590.

---

IEC 61753-1-1 has been superseded by IEC 61753-1.

**SuggestedRemedy**

Change "IEC 61753-1-1" to "IEC 61753-1".

**Response**  
**Response Status** C  
ACCEPT IN PRINCIPLE.  
Resolve using the response to comment #338.

---

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

**SuggestedRemedy**

Change "IEC 61753-021-2" to "IEC 61753-021-02".

**Response**  
**Response Status** C  
ACCEPT IN PRINCIPLE.  
Resolve using the response to comment #339.

---

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

**SuggestedRemedy**

Create new subclause 182.8.5.1 and refer to it instead of 121.8.5.2. Create 182.5.2.1 with contents along the lines of 124.8.5.1 from 802.3df with the same compliance channel. Develop with editorial license

**Response**  
**Response Status** C  
ACCEPT IN PRINCIPLE.  
Implement the suggested remedy with editorial license.
IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

Comment Type: TR/technical required  ER/editorial required  GR/general required  T/technical  E/editorial  G/general

Comment Status: D/dispatched  A/accepted  R/rejected  O/open  W/written  C/closed  Z/withdrawn

SORT ORDER: Clause, Subclause, page, line

Cl 182  SC 182.8.5  P 411  L 30  # 19
LeCheminant, Greg  Keysight Technologies

Comment Type: T  Comment Status: A  TDECQ

The current method for optimizing the tap weights of equalizer in the TDECQ reference receiver is described in clause 121.8.5. The equalizer tap coefficients are iteratively adjusted to effectively minimize the TDECQ penalty. Although not explicitly stated, one way to view this is that ANY combination of tap weights is valid and that ALL combinations should be tried to ensure the optimum tap combination is used when calculating TDECQ. As the equalizer length has been increased from 5 taps to 15 taps, the time required to verify all possible tap weights is likely problematic. This issue was managed in the 802.3 db project, where a 9 tap virtual equalizer is used for TDECQ. The following text was added to clause the definition of the TDECQ method: "The lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibration. Note that the MMSE optimization method is used in almost all TDECQ measurements performed today.

Suggested Remedy
Add the following text at line 44 (end of exceptions list): The lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibration.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #17.

Cl 182  SC 182.8.11  P 413  L 10  # 15
LeCheminant, Greg  Keysight Technologies

Comment Type: T  Comment Status: A  RIN-OMA

The required -3dB BW for the measurement system is not achievable with existing technology. (State of the art power meters with a maximum 120 GHz bandwidth, would require the bandwidth of the photodetector to be substantially higher than 120 GHz to achieve the current system bandwidth required for the test system, as defined in clause 52).

Suggested Remedy
The bandwidth of the RIN-OMA test system should be based on the expected bandwidth of the system receivers and consider the expected noise spectrum of transmitters. Spec limits for RIN OMA may need adjustment to adapt to any changes in the test method.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #518

Cl 182  SC 182.9.1  P 413  L 43  # 50
Lambert, Angie  Corning

Comment Type: T  Comment Status: A  IEC revision
IEC 60950-1 has been superseded by IEC 62368-1.

Suggested Remedy
Change "IEC 60950-1" to "IEC 62368-1."

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #342.

Cl 183  SC 183.4  P 420  L 37  # 48
Ghiasi, Ali  Ghiasi Quantum/Marvell

Comment Type: T  Comment Status: A  Precoding
Prior to 183.4 add section for PMA function to support precoder to mitigate burst errors

Suggested Remedy
The transmitter need to supports 1/(1+D) mod 4 precoding, as specified in 135.5.7.2, 120.5.7.2, and 173.5.7.2, 6 and 176.9.1.2, that may be enabled or disabled as needed with OLT, without OLT the optical transmitter should enable 1/(1+D) mod 4 precoding to mitigate burst errors.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Resolve using response to comment #547.
Comment Type: T  Comment Status: A  TX specs

Total average launch power (max) in Table 183-6 is TBD for 800BASE-FR4.

Suggested Remedy:
Replace TBD with a value equal to the Average launch power, each lane (max) + 6 dB, which is 4.9 + 6 = 10.9 dB. This methodology is consistent with previous FR4 PMDs (clauses 122, 151) and 800BASE-LR4 in this Table.

Response: imple

Implement the suggested remedy with editorial license.

Comment Type: TR  Comment Status: A  TX specs

In later 100GPL specs (ie, 400BASE-FR4) the difference between OMA(min) and Pave(min) was 3dB, to reflect the case of infinite extinction ratio. In the adopted baselines this narrowed to 2.6 dB as it was not updated to reflect the changes to effective TDECQ(min).

Suggested Remedy:
Propose changing "Average launch power, each lane (min)" in Table 183-6 from -1.8 dBm to -2.2 dBm.

Response: imple

Implement the suggested remedy with editorial license.

Comment Type: TR  Comment Status: A  TX specs

Recommended relationship between 'Tx_OMAout (min)' and 'Tx_Pavg (min)' for 800G LR4 (in Table 183-6) should follow 400G FR4, with delta=3dB, assuming max. OER infinite.

Suggested Remedy:
With 'OMAout (min)'=0.8dBm, then 'Average launch power, each lane (min)' in Table 183-6 should be changed to -2.2dBm.

Response: imple

Implement the suggested remedy with editorial license.

In Table 183-6 for LR4 change "Average launch power, each lane (min)" from -1.8 to -2.2 dBm.

In Table 183-6, add a footnote to the value "-2.2" on the row for "Average launch power, each lane (min)" with the following text:
"Average launch power of -2.2 dBm corresponds to an OMA of 0.8 dBm with an infinite extinction ratio."

With editorial license.
IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

---

**Comment Status:** A
**Response Status:** C

**Comment Type:** T
**Comment Status:** A
**TX specs**

The TX must be compliant over the full range of fiber length (dispersion), so the use of TDECQ alone is insufficient to determine Outer Optical Modulation Amplitude (OMAouter), each lane (min) in Table 183-6 for 800GBASE-FR4/LR4.

**Suggested Remedy:**
Replace TDECQ with max(TECQ, TDECQ) for both PMDs, as has been done in all other PMDs in Clauses 180-182. Note that max(TECQ, TDECQ) is already in Equation 183-1. For consistency, replace "Equation 183-1" with "-0.1 + max(TECQ, TDECQ)" in Table 183-6, and delete Equation 183-1 on page 435, line 20. Also update Figures 183-3, 183-5, 183-6 and surrounding text with max(TECQ, TDECQ).

**Response:**
Accept in principle. Implement suggested remedy with editorial license.

---

**Comment Status:** A
**Response Status:** C

**Comment Type:** T
**Comment Status:** A
**TX specs**

Difference in launch power between any two lanes (OMAouter) (max) in Table 183-6 is TBD for 800GBASE-FR4.

**Suggested Remedy:**
Replace TBD with a value of 4.1 dB, consistent with other FR4 PMDs (Cl. 122, 151)

**Response:**
Accept in principle. Implement the suggested remedy with editorial license.

---

**Comment Status:** A
**Response Status:** C

**Comment Type:** T
**Comment Status:** A
**TX specs**

The delta between 'Tx_Pavg(min)' and 'Rx_Pavg(min)' should equal to 'Channel insertion loss' (4.0dB for FR4)

**Suggested Remedy:**
Rx_Pavg (min)' in Table 183-7 should be -2.2dBm-4.0dB=-6.2dBm

**Response:**
Accept in principle.

For Table 183-7, in the 800GBASE-FR4 column, change the value for "Average receive power, each lane (min)" to -6.2.

---

**Comment Status:** A
**Response Status:** C

**Comment Type:** T
**Comment Status:** A
**TX specs**

The delta between 'Tx_Pavg(min)' and 'Rx_Pavg(min)' for 800G LR4 should equal to 'Channel insertion loss' (6.3dB for LR4)

**Suggested Remedy:**
Rx_Pavg (min)' for 800G LR4 in Table 183-7 should be -1.1dBm-6.3dB=-7.4dBm

**Response:**
Accept in principle.

For Table 183-7, in the 800GBASE-LR4 column, change the value for "Average receive power, each lane (min)" to -7.4.

---

**Comment Status:** A
**Response Status:** C

**Comment Type:** T
**Comment Status:** A
**TX specs**

Difference in launch power between any two lanes (OMAouter) (max) in Table 183-6 is TBD for 800GBASE-FR4.

**Suggested Remedy:**
Replace TBD with a value of 4.1 dB, consistent with other FR4 PMDs (Cl. 122, 151)

**Response:**
Accept in principle. Implement the suggested remedy with editorial license.

---

**Comment Status:** A
**Response Status:** C

**Comment Type:** T
**Comment Status:** A
**TX specs**

The delta between 'Tx_Pavg(min)' and 'Rx_Pavg(min)' should equal to 'Channel insertion loss' (4.0dB for FR4)

**Suggested Remedy:**
Rx_Pavg (min)' in Table 183-7 should be -2.2dBm-4.0dB=-6.2dBm

**Response:**
Accept in principle.

For Table 183-7, in the 800GBASE-FR4 column, change the value for "Average receive power, each lane (min)" to -6.2.

---

**Comment Status:** A
**Response Status:** C

**Comment Type:** T
**Comment Status:** A
**TX specs**

The delta between 'Tx_Pavg(min)' and 'Rx_Pavg(min)' for 800G LR4 should equal to 'Channel insertion loss' (6.3dB for LR4)

**Suggested Remedy:**
Rx_Pavg (min)' for 800G LR4 in Table 183-7 should be -1.1dBm-6.3dB=-7.4dBm

**Response:**
Accept in principle.

For Table 183-7, in the 800GBASE-LR4 column, change the value for "Average receive power, each lane (min)" to -7.4.

---

**Comment Status:** A
**Response Status:** C

**Comment Type:** T
**Comment Status:** A
**TX specs**

The delta between 'Tx_Pavg(min)' and 'Rx_Pavg(min)' should equal to 'Channel insertion loss' (4.0dB for FR4)

**Suggested Remedy:**
Rx_Pavg (min)' in Table 183-7 should be -2.2dBm-4.0dB=-6.2dBm

**Response:**
Accept in principle.

For Table 183-7, in the 800GBASE-FR4 column, change the value for "Average receive power, each lane (min)" to -6.2.

---

**Comment Status:** A
**Response Status:** C

**Comment Type:** T
**Comment Status:** A
**TX specs**

The delta between 'Tx_Pavg(min)' and 'Rx_Pavg(min)' for 800G LR4 should equal to 'Channel insertion loss' (6.3dB for LR4)

**Suggested Remedy:**
Rx_Pavg (min)' for 800G LR4 in Table 183-7 should be -1.1dBm-6.3dB=-7.4dBm

**Response:**
Accept in principle.

For Table 183-7, in the 800GBASE-LR4 column, change the value for "Average receive power, each lane (min)" to -7.4.
<table>
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<tr>
<th>Cl 183</th>
<th>SC 183.6.3</th>
<th>P 429</th>
<th>L 6</th>
<th># 168</th>
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<tr>
<td>Rodes, Roberto</td>
<td>Coherent</td>
<td>power budget</td>
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<td></td>
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<tr>
<td>Comment Type</td>
<td>T</td>
<td>Comment Status</td>
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<tr>
<td>Adding explanation on allocation for penalties calculation.</td>
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<td>Implement suggested remedy with editorial license.</td>
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<th>SC 183.6.3</th>
<th>P 429</th>
<th>L 6</th>
<th># 172</th>
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<tr>
<td>Yu, Rang-chen</td>
<td>InnoLight</td>
<td>power budget</td>
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<tr>
<td>Footnote e did not clarify what's the composition of total 5dB allocation for penalties.</td>
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<tr>
<td>SuggestedRemedy</td>
<td>Recommend to add &quot;Allocations to penalties for 800G-LR4 including penalties due to dispersion TBDdB, DGD 0.7dB and MPI 0.4dB&quot; to footnote e.</td>
<td></td>
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<tr>
<td>Resolve using the response to comment #502.</td>
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<th>SC 183.7.1</th>
<th>P 431</th>
<th>L 31</th>
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<td>Johnson, John</td>
<td>Broadcom</td>
<td>optical channel specs</td>
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<td>Clause 183.7.1 is TBD.</td>
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<tr>
<td>SuggestedRemedy</td>
<td>Use the same text and table as given in 182.7.1. Since this sub-clause only reiterates fiber cable specs from external standards, not 802.3 specific specs, this should not be controversial.</td>
<td></td>
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<tr>
<td>Response</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
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<td>Implement the suggested remedy with editorial license.</td>
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<tr>
<td>SuggestedRemedy</td>
<td>Use the same text as given in 182.7.2: &quot;An optical fiber connection, as shown in Figure 183.7.2, consists of a mated pair of optical connectors.&quot; Since this is a basic definition of terms, it should not be controversial.</td>
<td></td>
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<tr>
<td>Response</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Implement the suggested remedy with editorial license.</td>
<td></td>
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</tr>
</tbody>
</table>
IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

Comment Type: T  Comment Status: A  IEC revision
IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy
Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #339.

Comment Type: T  Comment Status: A

LeCheminant, Greg  Keysight Technologies

The current method for optimizing the tap weights of equalizer in the TDECQ reference receiver is described in clause 121.8.5. The equalizer tap coefficients are iteratively adjusted to effectively minimize the TDECQ penalty. Although not explicitly stated, one way to view this is that ANY combination of tap weights is valid and that ALL combinations should be tried to ensure the optimal tap weight combination is used when calculating TDECQ. As the equalizer length has been increased from 5 taps to 15 taps, the time required to verify all possible tap weights is likely problematic. This issue was managed in the 802.3 db project, where a 9 tap virtual equalizer is used for TDECQ. The following text was added to clause the definition of the TDECQ method:

The lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibration.

SuggestedRemedy
Add the following text at line 40 (end of exceptions list): The lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibration.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #178.

Comment Type: T  Comment Status: A  RIN-OMA

LeCheminant, Greg  Keysight Technologies

The required -3dB BW for the measurement system is not achievable with existing technology. (State of the art power meters with a maximum 120 GHz bandwidth, would require the bandwidth of the photodetector to be substantially higher than 120 GHz to achieve the current system bandwidth required for the test system, as defined in clause 52)

SuggestedRemedy
The bandwidth of the RIN-OMA test system should be based on the expected bandwidth of the system receivers and consider the expected noise spectrum of transmitters. Spec limits for RIN OMA may need adjustment to adapt to any changes in the test method.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #518.

Comment Type: T  Comment Status: A  Functional (bucket1p)
Brown, Matt  Alphawave Semi

The process provided in 184.4.1 "Alignment lock and deskew" merely maps bits on the FEC service interface to vectors; it does not include and RS-FEC symbol alignment. The process in 184.4.2 remaps the vectors such that there is alignment to the RS-FEC symbols and the lanes are properly ordered.

SuggestedRemedy
Either combine the two subclauses and process into one subclause or move the RS-FEC symbol alignment process in 184.4.2 to 184.4.1.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Implement the following with editorial license.
Move the RS-FEC symbol alignment process in 184.4.2 to 184.4.1.

Comment Type: T  Comment Status: A  Reorder (bucket1p)
Huber, Thomas  Nokia

It is not clear why this description is needed. Other clauses about reordering don't have this.

SuggestedRemedy
Delete the last paragraph.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Resolve using the response to comment #178.
This figure is not clear, nor is the relationship of the figure to the pseudocode beneath it. I think the columns 0-3 are just numbers that relate to the post-FEC distribution process. I have no idea why there are 32 sets of 4 symbols, as the algorithm doesn't do anything on a four-symbol basis. The function is simply reversing flow1 and flow0 every two columns, so that each lane has interleaved symbols from all four codewords. This could be described more simply by using blocks of 16 symbols in the figure (i.e., block 0 would be lanes 0-15 in column 0, block 1 would be lanes 16-31 in column 0, etc.).

Suggested Remedy
Revise the figure as suggested. The input side would look like this (where each row here is corresponding to 16 PCS lanes in the figure):  
0 2 4 6  
1 3 5 7  
and the output would be  
0 2 5 7  
1 3 4 6  
This will remove any confusion about whether the 32 blocks are supposed to be somehow related to the 32 PCS lanes, and it will be easier to see what is changing between the figures.

Response
ACCEPT IN PRINCIPLE.

Change:
"The lane permutation function distributes RS-FEC symbols from the four RS(544,514) codewords present in the 32 PCS lanes as shown in Figure 184-3." to:  
"The lane permutation function distributes RS-FEC symbols from the four RS(544,514) codewords present in the 32 PCS lanes as defined by the following pseudocode and illustrated in Figure 184-3."

Move the pseudo-code before Figure 184-3.

Update Figure 184-3 to make it more clear per the suggested remedy and remain consistent with the pseudocode.

Implement with editorial license.
The algorithm relating the convolutional interleaver output to its input doesn’t work when \( i<36 \) - it refers to negative block numbers for the input (permo) while the delay lines are filling, and those negative numbers need to be ignored as the process starts up. In other words, given the input sequence of 40-bit blocks 0, 1, 2, 3, \( \ldots \), the convolutional interleaver is supposed to produce the output sequence 0, 3, 6, 9, 12, 15, 18, 1, 21, 4, 24, 7, 27, 10, 30, 13, 16, then 36, 19, 2, and then each successive set of 3 is 3 more than the previous (so it continues 39, 22, 5, 42, 25, 8, \ldots). The algorithm says that output 0 is input 0-18 \( x \) (0 mod 3), so that produces 0 as expected, but output 1 is then supposed to be input 1-18 \( x \) (1 mod 3), which is -17, not 3.

**Suggested Remedy**

The text above figure 184-4 already provides an algorithmic description of how the interleaver works. Rather than a second algorithmic description, it might be better to show the worked example as noted in the comment - i.e., show a table of input blocks from 0 to 42, and the corresponding output blocks.

**Response**

ACCEPT IN PRINCIPLE.

Implement using the response to comment #613.

The variable \( p \) is being overloaded - it is used at line 35 as a lane index, and at line 40 as the parity polynomial. Since the BCH encoding is done per lane, there is really no need to have a variable related to the lane number. The text can simply state that the algorithm is applied to each lane individually.

**Suggested Remedy**

Change the line above the dashed list to say "The BCH encoding is done separately on each lane. The encoding of each BCH codeword \( u \) is defined as follows:

At the top of page 449, remove the 'for p à' loop from the pseudocode.

**Response**

ACCEPT IN PRINCIPLE.

The algorithm is correct as written, and reflects the adopted baseline. However, "\( p \)" is used for another purpose in the previous subclause.

Change the flow index from \( p \) to \( q \) and implement with editorial license.

Clarify that the circular shift is applied per lane.

**Suggested Remedy**

Make similar changes to what was suggested in previous sections - remove the unnecessary variable \( p \) and associated for loop in the pseudocode, and add a sentence stating that the circular shift process is performed on each lane individually.

**Response**

REJECT.

The algorithm is correct and unambiguous as written, and reflects the adopted baseline.
He, Xiang  
Huawei

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

**Suggested Remedy:**

It is possible that one polarization is locked but the other polarization can not get locked. With the current variable list and state diagrams this can not be identified or reported. (This is a little different from AM lock process across PCS lanes, where it is way up in the sublayers higher than the pilot sequence lock, and it may not be a problem.)

**Response**

ACCEPT IN PRINCIPLE.

The DSP lock state diagram is implemented per polarization, so there is an indication of sync per polarization. There are no timers defined for alarm indications in the standard. Add a status variable with mapping to MDIO address, to allow the user reading the status of the synchronization process per polarization.

[Editor's note: CC 184 45]

---

Bruckman, Leon  
Huawei

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

**Suggested Remedy:**

Set TBD values of N and M

N (the number of consecutive PS symbols matching the expected value for a given polarization stream required to enter frame lock), and M (the number of consecutive PS symbols that don't match the expected value for a given polarization stream required to exit frame lock) used in Figure 184.9 'DSP lock state diagram' aren't defined in subclause 184.6 'Inner FEC state diagrams' or its subclauses.

Suggest that these values should be defined in one place (I assume in subclause 184.5.4 'DSP frame synchronization and pilot removal' which includes the text 'The values of N and M are TBD'), with a pointer to this subclause elsewhere.

**Response**

ACCEPT IN PRINCIPLE.

The following presentation (referenced in the suggested remedy) was reviewed by the 802.3dj task force at the May Interim meeting: https://www.ieee802.org/3/dj/public/24_05/bruckman_3dj_01a_2405.pdf

Implement the suggested remedy with editorial license.

---

Law, David  
HPE

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

**Suggested Remedy:**

[1] Insert a new subclause 184.6.5 'Constants' as follows, renumbering the following subclause.

184.6.5 Constants

M  
The number of consecutive PS symbols that fail to match the expected value for a given polarization stream required to exit frame lock (see 184.5.4). M = 8.

N  
The number of consecutive PS symbols matching the expected value for a given polarization stream required to enter frame lock (see 184.5.4). N=12.

---

In the first paragraph of clause 184.5.4 remove: "The values of N and M are TBD."

Insert new subclause 184.6.5 "Constants" after subclause 184.6.4 as follows, renumbering the subsequent subclause:

184.6.5 Constants

M  
The number of consecutive PS symbols that fail to match the expected value for a given polarization stream required to exit frame lock (see 184.5.4). M = 8.

N  
The number of consecutive PS symbols matching the expected value for a given polarization stream required to enter frame lock (see 184.5.4). N=12.

---

In subclause 184.6.2 'Variables', change the text 'It is set to true when TBD PS symbols ...' to read 'It is set to true when M PS symbols ...' in the variable 'restart_lock' description.

RESPONSE STATUS: C
EEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comment

"It is set to true when TBD PS symbols ..." to: "It is set to true when M PS symbols ...

Implement with editorial license.

He, Xiang
Huawei

Comment Type: TR
Comment Status: A

Only "alignment_valid" is reported, not individual "dsp_lock<x>" variables.

Suggested Remedy
It is recommended to report both "dsp_lock<x>" in Table 184-7, as we did for PCS lane lock where we reported "Lane x aligned" for all PCS lanes.

Response
Resolve using the response to comment #372.

Stassar, Peter
Huawei Technologies

Comment Type: T
Comment Status: A

The TBDs need to be replaced by values. Follow the same methodology as in 154 and latest draft D3.0 of P802.3cw

Suggested Remedy
Replace contents by The sum of the transmit and receive delays at one end of the link contributed by the 800GBASE-LR1 PMD including 2 m of fiber in one direction shall be no more than 16 384 bit times (32 pause_quanta or 20.48 ns). A description of overall system delay constraints and the definitions for bit times and pause_quanta can be found in 169.4 and its references.

Response
Implement the suggested remedy and update Table 169-4 with editorial license.

Stassar, Peter
Huawei Technologies

Comment Type: T
Comment Status: A

800GBASE-LR1 is being defined to allow unlocked lasers with frequency errors larger than the DSP digital acquisition range. Additional parameters are required for the Tx laser to accommodate this. Values will be provided after further study, but the new parameters can be added to Table 185-4. A supporting contribution will be provided.

Suggested Remedy
Add the following parameters to Table 185-4:

Maximum Tx laser frequency slew rate: Preacquisition [Units GHz/s]

Maximum Tx laser frequency slew rate: Post acquisition [Units GHz/ms]

Laser Relative Frequency tracking accuracy [Units GHz]

Response
Implement suggest remedy with editorial license.
EEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comment

Comment Type: T  Comment Status: R  TQM

TQM is currently undefined. Recommend adopting RSNR Penalty as a TQM. Supporting Contribution to be provided.

SuggestedRemedy
Replace TQM with RSNR Penalty

Response  Response Status: C
REJECT.

The following presentation was reviewed by the 802.3dj task force at the May Interim meeting:

No agreement yet on an appropriate quality metric therefore no consensus to make a change.

Comment Type: TR  Comment Status: R (withdrawn)

Minimum transmit power specification has a big impact on coherent module designs. This has been defined in the initial proposals as a specification on the average power following other coherent physical layer specifications defined for DWDM systems. However, there is opportunity for a 800GBASE-LR1 PMD to change this in a way which can relax module transmit specifications

SuggestedRemedy
Define the minimum transmit power specification to be defined per lane instead of average. See https://grouper.ieee.org/groups/802/3/dj/public/23_11/kota_3dj_01a_2311.pdf for an initial proposal based on this concept. Defining the power per lane provides an opportunity to relax lane mismatch specs.

Response  Response Status: Z
REJECT.

This comment was WITHDRAWN by the commenter.

Comment Type: TR  Comment Status: R (withdrawn)

Average receiver power (min) and the per-lane transmit power (min) specifications should be tied to an appropriate transmit quality metric similar to the TDECQ specifications in other IMDD clauses

SuggestedRemedy
See https://grouper.ieee.org/groups/802/3/dj/public/24_01/kota_3dj_01a_2401.pdf and https://grouper.ieee.org/groups/802/3/dj/public/23_11/kota_3dj_01a_2311.pdf for initial proposals on how to tie the RX sensitivity and TX power specifications with a transmit quality metric. This provides flexibility to allow module designers to explore design tradeoffs to simplify designs in ways which can benefit end users.

Response  Response Status: Z
REJECT.

This comment was WITHDRAWN by the commenter.
EEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comment

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<th>SuggestedRemedy</th>
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<tbody>
<tr>
<td>185</td>
<td>185.5.3</td>
<td>478</td>
<td>43</td>
<td>382</td>
<td>T</td>
<td>A</td>
<td>A value of -27dB is appropriate for Maximum discrete reflectance</td>
<td>Replace TBD for Maximum discrete reflectance with -27</td>
<td>ACCEPT.</td>
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<tr>
<td>185</td>
<td>185.6</td>
<td>479</td>
<td>51</td>
<td>383</td>
<td>T</td>
<td>A</td>
<td>A value of 24dB is appropriate for Optical Return Loss</td>
<td>Replace TBD in Table 185-7 with 24</td>
<td>ACCEPT.</td>
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<tr>
<td>185</td>
<td>185.6.3</td>
<td>480</td>
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<td>A</td>
<td>IEC 61753-021-2 has been superseded by IEC 61753-021-02.</td>
<td>Change &quot;IEC 61753-021-2&quot; to &quot;IEC 61753-021-02&quot;.</td>
<td>ACCEPT IN PRINCIPLE. Implement the suggested remedy and update Table 169-4 with editorial license.</td>
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<tr>
<td>185</td>
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<td>490</td>
<td>27</td>
<td>353</td>
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<td>A</td>
<td>IEC 61753-021-2 has been superseded by IEC 61753-021-02.</td>
<td>Change &quot;IEC 61753-021-2&quot; to &quot;IEC 61753-021-02&quot;.</td>
<td>ACCEPT IN PRINCIPLE. Resolve using the response to comment #339.</td>
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<tbody>
<tr>
<td>187</td>
<td>187.3</td>
<td>497</td>
<td>31</td>
<td>115</td>
<td>T</td>
<td>A</td>
<td>The TBDs need to be replaced by values. Follow the same methodology as in 154 and latest draft D3.0 of P802.3cw</td>
<td>Replace contents by The sum of the transmit and receive delays at one end of the link contributed by the 800GBASE-LR1 PMD including 2 m of fiber in one direction shall be no more than 16 384 bit times (32 pause_quanta or 20.48 ns). A description of overall system delay constraints and the definitions for bit times and pause_quanta can be found in 169.4 and its references.</td>
<td>ACCEPT IN PRINCIPLE.</td>
</tr>
<tr>
<td>187</td>
<td>187.5</td>
<td>502</td>
<td>17</td>
<td>117</td>
<td>T</td>
<td>A</td>
<td>Previously for Clause 154 and draft Clause 156 in D3.0 for P802.3cw 20 dB maximum receiver reflectance has been used, which is a common value in the industry and in draft Clause 155.5.2</td>
<td>For Receiver reflectance (max) replace TBD by 20 dB for both ER1-20 and ER1</td>
<td>ACCEPT.</td>
</tr>
<tr>
<td>187</td>
<td>187.5.1</td>
<td>501</td>
<td>8</td>
<td>109</td>
<td>T</td>
<td>A</td>
<td>The ppm value for this PMD should be 20 ppm</td>
<td>Replace TBD with 20</td>
<td>ACCEPT IN PRINCIPLE. Implement suggest remedy with editorial license.</td>
</tr>
</tbody>
</table>

TYPE: TR/technical required ER/editorial required GR/general required T/technical  E/editorial  G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line
### IEEE P802.3dj D1.0 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 1st Task Force review comments

#### Comment: The ppm value for this PMD should be 20 ppm

**Suggested Remedy:** Replace TBD with 20

**Response:**
- **Response Status:** C
- **Response:** ACCEPT IN PRINCIPLE. Implement suggest remedy with editorial license.

---

#### Comment: Negative dispersion does not occur around 1550 nm. 0 ps/nm is the minimum. Only need min and max dispersion as in draft D3.0 of P802.3cw. A safe upper limit of 20 ps/nm.km can be used for a wavelength close to 1550 nm

**Suggested Remedy:**
- Replace "Positive dispersion (max)" by "Chromatic dispersion (max)" with value 400 ps/nm for ER1-20 and 800 ps/nm for ER1. Replace "Negative dispersion (min)" by "Chromatic dispersion (min)" with value 0 ps/nm for both ER1-20 and for ER1.

**Response:**
- **Response Status:** C
- **Response:** ACCEPT IN PRINCIPLE. Implement suggest remedy with editorial license.

---

#### Comment: IEC 61753-021-2 has been superseded by IEC 61753-021-02.

**Suggested Remedy:** Change "IEC 61753-021-2" to "IEC 61753-021-02".

**Response:**
- **Response Status:** C
- **Response:** ACCEPT IN PRINCIPLE. Resolve using the response to comment #339.