Comment 1

**Comment Type:** E  
**Comment Status:** D  
**Suggested Remedy:** Misspelling

**Proposed Response**

**Response Status:** W

Comment 2

**Comment Type:** E  
**Comment Status:** D  
**Suggested Remedy:** Misspelling

**Proposed Response**

**Response Status:** W

Comment 3

**Comment Type:** E  
**Comment Status:** D  
**Suggested Remedy:** Wrong figure font

**Proposed Response**

**Response Status:** W

Comment 4

**Comment Type:** E  
**Comment Status:** D  
**Suggested Remedy:** Misleading capitalization

**Proposed Response**

**Response Status:** W

Comment 5

**Comment Type:** E  
**Comment Status:** D  
**Suggested Remedy:** Misleading capitalization

**Proposed Response**

**Response Status:** W

Comment 6

**Comment Type:** E  
**Comment Status:** D  
**Suggested Remedy:** Misleading capitalization

**Proposed Response**

**Response Status:** W

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**Comment Status:** D/dispatched  A/accepted  R/rejected  
**Response Status:** O/open  W/written  C/closed  U/unsatisfied  Z/withdrawn  
**Sort Order:** comment ID

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**Comment Type:** TR/technical required  ER/editorial required  GR/general required  
**Comment Status:** D/dispatched  A/accepted  R/rejected  
**Response Status:** O/open  W/written  C/closed  U/unsatisfied  Z/withdrawn  
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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COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: comment ID
Comment #13

Cl 28 SC 28.2.1.1.2 P7 L17

Comment Type E Comment Status D

DVJ-13
Wrong figure font.

Suggested Remedy
Use 8-point Arial, here and throughout.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 17.

Comment #14

Cl 28 SC 28.2.1.1.2 P7 L9

Comment Type E Comment Status D

DVJ-14
Misleading capitalization

Suggested Remedy
Clock Pulse

==>
clock pulse
(multiple instances)

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 180.

Comment #15

Cl 28 SC 28.2.1.2 P7 L20

Comment Type E Comment Status D

DVJ-15
Misleading capitalization

Suggested Remedy

FLP Burst

==>
FLP burst
(multiple instances)

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 180.

Comment #16

Cl 28 SC 28.2.1.2 P8 L6

Comment Type E Comment Status D

DVJ-16
Wrong figure font.

Suggested Remedy
Use 8-point Arial, here and throughout.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 17.

Comment #17

Cl 28 SC 28.2.2.1 P10 L20

Comment Type E Comment Status D

DVJ-17
Wrong figure font.

Suggested Remedy
Use 8-point Arial, here and throughout.

Proposed Response Response Status W

PROPOSED REJECT.

The IEEE P802.3REVam Task Force believes that this comment is one on editorial style, and does not affect the technical integrity of the standard. In addition, the Task Force believes this comment is beyond the scope of our project.

Comment #18

Cl 28 SC 28.2.2.1 P10 L45

Comment Type E Comment Status D

DVJ-18
Wrong figure font.

Suggested Remedy
Use 8-point Arial, here and throughout.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 17.
IEEE P802.3an Comments

Cl 28 SC 28.2.2.1 P 11 L 3 Comment # 19
David V James JGG

Comment Type E Comment Status D
DVJ-19
Wrong figure font.

SuggestedRemedy
Use 8-point Arial, here and throughout.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 17.

Cl 28 SC 28.2.3.4.1 P 14 L 5 Comment # 22
David V James JGG

Comment Type E Comment Status D
DVJ-22
Wrong figure font.

SuggestedRemedy
Use 8-point Arial, here and throughout.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 17.

Cl 28 SC 28.2.2.1 P 11 L 4 Comment # 20
David V James JGG

Comment Type E Comment Status D
DVJ-20
Misleading capitalization

SuggestedRemedy
FLP Burst
==>
FLP burst (here and throughout)

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 180.

Cl 28 SC 28.2.3.4.1 P 14 L 19 Comment # 23
David V James JGG

Comment Type E Comment Status D
DVJ-23
Wrong figure font.

SuggestedRemedy
Use 8-point Arial, here and throughout.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 17.

Cl 28 SC 28.2.3.4.1 P 13 L 45 Comment # 21
David V James JGG

Comment Type E Comment Status D
DVJ-21
Wrong figure font.

SuggestedRemedy
Use 8-point Arial, here and throughout.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 17.

Cl 28 SC 28.2.3.4.1 P 14 L 15 Comment # 24
David V James JGG

Comment Type T Comment Status D
DVJ-24
Consistency in names is important.

SuggestedRemedy
Pick and use only one of:
message code field
Message code field
Message Code Field
---Also, develop a nomenclature strategy, and enforce this for all uses of similar field names.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
Will use consistent naming throughout clause.
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<th>Response Status</th>
<th>Suggested Remedy</th>
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<td>W</td>
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Suggested Remedy
- Use 8-point Arial, here and throughout.
- Management Interface => Management Interface
- Auto-Negotiation Arbitration Function => Auto-negotiation arbitration function
- Auto-Negotiation Transmit Function => Auto-negotiation transmit function
- Technology Dependent Function => Technology dependent function
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<th>P 18</th>
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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 U/unsatisfied Z/withdrawn
SORT ORDER: comment ID
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<td>See response to comment 180.</td>
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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  U/unsatisfied  Z/withdrawn  
**SORT ORDER:** comment ID

5/18/2005  9:44:44 AM
IEEE P802.3an Comments

Comment #43

Cl 28  SC 28.5.4.2  P34  L25
David V James  JGG
Comment Type: E  Comment Status: D
DVJ-43
Small values are supposed to be centered.
SuggestedRemedy
Center the following columns:
Item, Subclause, Status, Value/comment
Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 180.

Comment #44

Cl 28  SC 28.5.4.3  P35  L7
David V James  JGG
Comment Type: E  Comment Status: D
DVJ-44
Small values are supposed to be centered.
SuggestedRemedy
Center the following columns:
Item, Subclause, Status, Value/comment
Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 180.

Comment #45

Cl 28  SC 28.5.4.3  P36  L7
David V James  JGG
Comment Type: E  Comment Status: D
DVJ-45
Small values are supposed to be centered.
SuggestedRemedy
Center the following columns:
Item, Subclause, Status, Value/comment
Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 180.

Comment #46

Cl 28  SC 28.5.4.3  P36  L29
David V James  JGG
Comment Type: E  Comment Status: D
DVJ-46
Small values are supposed to be centered.
SuggestedRemedy
Center the following columns:
Item, Subclause, Status, Value/comment
Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 180.

Comment #47

Cl 28  SC 28.5.4.3  P37  L5
David V James  JGG
Comment Type: E  Comment Status: D
DVJ-47
Small values are supposed to be centered.
SuggestedRemedy
Center the following columns:
Item, Subclause, Status, Value/comment
Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 180.

Comment #48

Cl 28  SC 28.5.4.5  P40  L29
David V James  JGG
Comment Type: E  Comment Status: D
DVJ-48
Small values are supposed to be centered.
SuggestedRemedy
Center the following columns:
Item, Subclause, Status, Value/comment
Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 180.
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<td>52</td>
<td>E</td>
<td>D</td>
<td>small values centered</td>
<td>DVJ-52</td>
<td></td>
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<tr>
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<td>D</td>
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<td>DVJ-50</td>
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<td>D</td>
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<td>DVJ-51</td>
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<td>28</td>
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<td>D</td>
<td>small values centered</td>
<td>DVJ-54</td>
<td></td>
</tr>
</tbody>
</table>

Comment: Small values are supposed to be centered.

Suggested Remedy:
Center the following columns:
- Item, Subclause, Status, Value/comment

Proposed Response:
PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 180.
IEEE P802.3an Comments

Comment #55

Cl 28B SC 28B.3 P 49 L 34 Comment Type E Comment Status D

David V James JGG

DVJ-55
Small values are supposed to be centered.

SuggestedRemedy
Center the following columns:
PAUSE, ASM_DIR, PAUSE, ASM_DIR

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 180.

Comment #56

Cl 28B SC 28B.3 P 51 L 23 Comment Type T Comment Status D

David V James JGG

DVJ-56
Consistency is needed.

SuggestedRemedy
Pick only one of the following, used throughout:
Message Code Field
Message code field

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Will be consistent throughout clause.

Comment #57

Cl 28B SC 28B.3 P 51 L 32 Comment Type E Comment Status D

David V James JGG

DVJ-57
Small values are supposed to be centered.

SuggestedRemedy
Center the following columns:
Message Code #, M10, ... M0

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 180.

Comment #58

Cl 28B SC 28B.3 P 51 L 31 Comment Type E Comment Status D

David V James JGG

DVJ-58
Misleading capitalization

SuggestedRemedy
Message Code Description
==>
Message Code description

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 180.

Comment #59

Cl 28D SC 28D.5 P 54 L 18 Comment Type E Comment Status D

David V James JGG

DVJ-59
Unclear what is meant by the parenthesis, particularly when bits are identified with such numbers

SuggestedRemedy
(40.5.1)

==>
(see 40.5.1).

Search for other similar instances and update accordingly.

Proposed Response Response Status W

PROPOSED REJECT.

This is beyond the scope of our project.

Comment #60

Cl 28D SC 28D.5 P 54 L 19 Comment Type E Comment Status D

David V James JGG

DVJ-60
Excess period.

SuggestedRemedy
messages.

==>
messages

Proposed Response Response Status W

PROPOSED REJECT.

See response to comment 180.
<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>Comment #</th>
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<th>Comment Status</th>
<th>Proposed Response</th>
<th>Response Status</th>
</tr>
</thead>
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<td>30B.2</td>
<td>72</td>
<td>5</td>
<td>61</td>
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<td>D</td>
<td>DVJ-61 Illegal character code.</td>
<td>PROPOSED REJECT.</td>
</tr>
<tr>
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<td>44.1.4.1</td>
<td>77</td>
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<td>E</td>
<td>D</td>
<td>DVJ-62 Misleading capitalization</td>
<td>PROPOSED REJECT.</td>
</tr>
<tr>
<td>44</td>
<td>44.1.4.1</td>
<td>77</td>
<td>7</td>
<td>63</td>
<td>E</td>
<td>D</td>
<td>DVJ-63 Misleading capitalization</td>
<td>PROPOSED REJECT.</td>
</tr>
<tr>
<td>45</td>
<td>45.2</td>
<td>84</td>
<td>12</td>
<td>64</td>
<td>E</td>
<td>D</td>
<td>Looks bad.</td>
<td>PROPOSED REJECT.</td>
</tr>
<tr>
<td>45</td>
<td>Table 45-2</td>
<td>85</td>
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<td>E</td>
<td>D</td>
<td>Small values are supposed to be centered.</td>
<td>PROPOSED REJECT.</td>
</tr>
<tr>
<td>45</td>
<td>45.2.1.6</td>
<td>86</td>
<td>7</td>
<td>66</td>
<td>E</td>
<td>D</td>
<td>Looks bad.</td>
<td>PROPOSED REJECT.</td>
</tr>
</tbody>
</table>
Use thin line at bottom of pages, preferably using a good template that does this automatically. There is a reason for this, which is that it makes it clearer that the table is continued.

**Suggested Remedy**
Fix it, here and throughout.

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

This will be fixed by the professional IEEE editorial staff prior to publication.

---

This is nonsense. A constant 4-bit value is never assigned a variable value, as the equals sign implies.

**Suggested Remedy**
Either:
Put a header here and eliminate the '=' sign.
OR
Expand this into a distinct following table.

**Proposed Response**
PROPOSED REJECT.

Consistent with other sections of 802.3

---

This footnote is nonsense. There are two distinct meanings for R/W, used the header and used in the cells.

**Suggested Remedy**
Put RW in the cell, and use the footnote to describe it.

**Proposed Response**
PROPOSED REJECT.

Consistent with other sections of 802.3

---

Move the footnote to the RO entry, where it applies, not the header.

**Suggested Remedy**

**Proposed Response**
PROPOSED REJECT.

Consistent with other sections of 802.3

---

This footnote is nonsense. There are two distinct meanings for R/W, used the header and used in the cells.

**Suggested Remedy**
Center the following columns:
Bit(s), R/W

**Proposed Response**
PROPOSED REJECT.

See comment #180

---
<table>
<thead>
<tr>
<th>Comment #</th>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Suggested Remedy</th>
<th>Proposed Response</th>
<th>Response Status</th>
</tr>
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<tbody>
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<td>SC 45.2.1.59.1</td>
<td>P91</td>
<td>10</td>
<td>E</td>
<td>D</td>
<td>Misspelling</td>
<td>PROPOSED ACCEPT.</td>
<td>W</td>
</tr>
<tr>
<td>76</td>
<td>45</td>
<td>SC 45.2.1.59.1</td>
<td>P91</td>
<td>11</td>
<td>T</td>
<td>D</td>
<td>Bit(s)</td>
<td>PROPOSED REJECT.</td>
<td>W</td>
</tr>
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<td>77</td>
<td>45</td>
<td>SC 45.2.1.59.1</td>
<td>P91</td>
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<td>T</td>
<td>D</td>
<td>Footnote</td>
<td>PROPOSED REJECT.</td>
<td>W</td>
</tr>
</tbody>
</table>

**Comment Type:** E = Editorial Required  T = Technical Required  G = General Required  D = Dispatched  A = Accepted  R = Rejected

**Comment Status:** D = dispatched  A = accepted  R = rejected

**Response Status:** O = open  W = written  C = closed  U = unsatisfied  Z = withdrawn

**Sort Order:** comment ID

---

**Comment #73:**

- **Cl:** 45  
- **SC:** SC 45.2.1.59.1  
- **P:** P91  
- **L:** 10  
- **Comment Type:** E  
- **Comment Status:** D  
- **Suggested Remedy:** Misspelling

- **Proposed Response:** PROPOSED ACCEPT.

**Comment #76:**

- **Cl:** 45  
- **SC:** SC 45.2.1.59.1  
- **P:** P91  
- **L:** 16  
- **Comment Type:** T  
- **Comment Status:** D  
- **Suggested Remedy:** Move the footnote to the RO entry, where it applies, not the header.

- **Proposed Response:** PROPOSED REJECT.

**Comment #77:**

- **Cl:** 45  
- **SC:** SC 45.2.1.59.1  
- **P:** P91  
- **L:** 11  
- **Comment Type:** T  
- **Comment Status:** D  
- **Suggested Remedy:** Small values are supposed to be centered.

- **Proposed Response:** PROPOSED REJECT.

---

**Comment #78:**

- **Cl:** 45  
- **SC:** SC 45.2.1.59.1  
- **P:** P91  
- **L:** 31  
- **Comment Type:** E  
- **Comment Status:** D  
- **Suggested Remedy:** Use fixed templates, or manually force to very-thin.

- **Proposed Response:** PROPOSED REJECT.

---

**Comment #79:**

- **Cl:** 45  
- **SC:** SC 45.2.1.59.1  
- **P:** P91  
- **L:** 46  
- **Comment Type:** T  
- **Comment Status:** D  
- **Suggested Remedy:** The clear line on the bottom makes it look like this row is continued.

- **Proposed Response:** PROPOSED ACCEPT IN PRINCIPLE.

---

**Comment #80:**

- **Cl:** 45  
- **SC:** SC 45.2.1.59.1  
- **P:** P91  
- **L:** 37  
- **Comment Type:** E  
- **Comment Status:** D  
- **Suggested Remedy:** Small values are supposed to be centered.

- **Proposed Response:** PROPOSED REJECT.

---

**Comment #81:**

- **Cl:** 45  
- **SC:** SC 45.2.1.59.1  
- **P:** P91  
- **L:** 31  
- **Comment Type:** E  
- **Comment Status:** D  
- **Suggested Remedy:** Center the following columns:

- Bit(s), R/W

- **Proposed Response:** PROPOSED REJECT.

---

**Comment #82:**

- **Cl:** 45  
- **SC:** SC 45.2.1.59.1  
- **P:** P91  
- **L:** 11  
- **Comment Type:** T  
- **Comment Status:** D  
- **Suggested Remedy:** Center the following columns:

- Bit(s), R/W

- **Proposed Response:** PROPOSED REJECT.
IEEE P802.3an Comments

**Comment #79**

**Cl 45 SC P92 L16**

David V James  
JGG  

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

**Footnote**  
DVJ-79  
Move the footnote to the RO entry, where it applies, not the header.

**Suggested Remedy**  
No Remedy Supplied

**Proposed Response**  
**Response Status** W  
PROPOSED REJECT.

Consistant with other sections of 802.3

**Comment #80**

**Cl 45 SC 45.2.1.61.4 P94 L7**

David V James  
JGG  

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

**Numbering**  
DVJ-80  
This inconsistency is very confusing. Most lists start from 0.

**Suggested Remedy**  
Here and throughout, list the 0 value first and start counting upwards.

**Proposed Response**  
**Response Status** W  
PROPOSED REJECT.

Bit definition registers are consistant with style used throughout 802.3

**Comment #81**

**Cl 45 SC 45.2.1.61.4 P94 L8**

David V James  
JGG  

**Comment Type** E  
**Comment Status** D  

**Centering**  
DVJ-81  
Small values are supposed to be centered.

**Suggested Remedy**  
Center the following columns:
Bit(s), R/W

**Proposed Response**  
**Response Status** W  
PROPOSED REJECT.

See comment #180

**Comment #82**

**Cl 45 SC 45.2.1.61.4 P94 L5**

David V James  
JGG  

**Comment Type** E  
**Comment Status** D  

**Spelling**  
DVJ-82  
Double parenthesis.

**Suggested Remedy**  
Bit(s))  
=> Bit(s)

**Proposed Response**  
**Response Status** W  
PROPOSED ACCEPT.

Consistant with other sections of 802.3

**Comment #83**

**Cl 45 SC 45.2.1.62 P96 L49**

David V James  
JGG  

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

**Numbering**  
DVJ-83  
Move the footnote to the cell entry, where it applies, not the header.
Also, change the cell entry to RW.

**Suggested Remedy**  
Do it.

**Proposed Response**  
**Response Status** W  
PROPOSED REJECT.

Consistant with other sections of 802.3

**Comment #84**

**Cl 45 SC 45.2.1.62 P96 L32**

David V James  
JGG  

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

**Numbering**  
DVJ-84  
This inconsistency is very confusing. Most lists start from 0.

**Suggested Remedy**  
Here and throughout, list the 0 value first and start counting upwards.

**Proposed Response**  
**Response Status** W  
PROPOSED REJECT.

Bit definition registers are consistant with style used throughout 802.3
<table>
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<th>Line</th>
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<th>Response Status</th>
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<td>W</td>
</tr>
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<td>D</td>
<td>T</td>
<td>DVJ-87</td>
<td>W</td>
</tr>
<tr>
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<td>45</td>
<td>98</td>
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<td>E</td>
<td>DVJ-88</td>
<td>W</td>
</tr>
<tr>
<td>89</td>
<td>45</td>
<td>100</td>
<td>36</td>
<td>D</td>
<td>T</td>
<td>DVJ-89</td>
<td>W</td>
</tr>
</tbody>
</table>

**Comment Details:**

- **Comment #85**
  - **Comment Type:** E
  - **Comment Status:** D
  - **DVJ-85:** Small values are supposed to be centered.
  - **Suggested Remedy:** Center the following columns: Bit(s), R/W
  - **Proposed Response:** PROPOSED REJECT.
  - **Response Status:** W
  - *See comment #180*

- **Comment #86**
  - **Comment Type:** E
  - **Comment Status:** D
  - **DVJ-86:** Misleading capitalization
  - **Suggested Remedy:** Transmitter Test Frequencies
  - **Proposed Response:** PROPOSED ACCEPT.
  - **Response Status:** W

- **Comment #87**
  - **Comment Type:** T
  - **Comment Status:** D
  - **DVJ-87:** The clear line on the bottom makes it look like this row is continued.
  - **Suggested Remedy:** Use fixed templates, or manually force to very-thin.
  - **Proposed Response:** PROPOSED ACCEPT IN PRINCIPLE.
  - **Response Status:** W
  - *This will be fixed by the professional IEEE editorial staff prior to publication.*

- **Comment #88**
  - **Comment Type:** E
  - **Comment Status:** D
  - **DVJ-88:** Small values are supposed to be centered.
  - **Suggested Remedy:** Center the following columns: Register address
  - **Proposed Response:** PROPOSED REJECT.
  - **Response Status:** W
  - *See comment #180*

- **Comment #89**
  - **Comment Type:** T
  - **Comment Status:** D
  - **DVJ-89:** This inconsistency is very confusing. Most lists start from 0.
  - **Suggested Remedy:** Here and throughout, list the 0 value first and start counting upwards.
  - **Proposed Response:** PROPOSED REJECT.
  - **Response Status:** W
  - *Bit definition registers are consistant with style used throughout 802.3*

- **Comment #90**
  - **Comment Type:** E
  - **Comment Status:** D
  - **DVJ-90:** Small values are supposed to be centered.
  - **Suggested Remedy:** Center the following columns: Bit(s), R/W
  - **Proposed Response:** PROPOSED REJECT.
  - **Response Status:** W
  - *See comment #180*
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Page Number</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment Text</th>
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<td>This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.</td>
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<tr>
<td>#92</td>
<td>P101</td>
<td>E</td>
<td>D</td>
<td>Small values are supposed to be centered.</td>
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<tr>
<td>#93</td>
<td>P101</td>
<td>T</td>
<td>D</td>
<td>This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.</td>
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<tr>
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<tr>
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<td>P102</td>
<td>E</td>
<td>D</td>
<td>Small values are supposed to be centered.</td>
</tr>
</tbody>
</table>

Suggested Remedy:
- Here and throughout, list the 0 value first and start counting upwards.
- Bit definition registers are consistent with style used throughout 802.3

Proposed Response:
- PROPOSED REJECT.

See comment #180
IEEE P802.3an Comments

<table>
<thead>
<tr>
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<th>Cl</th>
<th>SC</th>
<th>P</th>
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<td>W</td>
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<td>Center the following columns:</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
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<td>D</td>
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<td></td>
<td>D</td>
<td>W</td>
<td>PROPOSED REJECT.</td>
<td>Here and throughout, list the 0 value first and start counting upwards.</td>
</tr>
<tr>
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<td></td>
<td>D</td>
<td>W</td>
<td>PROPOSED REJECT.</td>
<td>See comment #180</td>
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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 U/unsatisfied Z/withdrawn
Sort Order: comment ID

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**Comment #103**

Cl 45  SC 45.2.7.6  
David V James JGG

**Comment Type** E  **Comment Status** D

**DVJ-103**
Small values are supposed to be centered.

**SuggestedRemedy**
Center the following columns:
Bit(s), R/W

**Proposed Response**  **Response Status** W
PROPOSED REJECT.

See comment #180

**Comment #104**

Cl 45  SC 45.2.7.7  
David V James JGG

**Comment Type** E  **Comment Status** D

**DVJ-104**
Small values are supposed to be centered.

**SuggestedRemedy**
Center the following columns:
Bit(s), R/W

**Proposed Response**  **Response Status** W
PROPOSED REJECT.

See comment #180

**Comment #105**

Cl 45  SC 45.2.7.8  
David V James JGG

**Comment Type** E  **Comment Status** D

**DVJ-105**
Small values are supposed to be centered.

**SuggestedRemedy**
Center the following columns:
Bit(s), R/W

**Proposed Response**  **Response Status** W
PROPOSED REJECT.

See comment #180

**Comment #106**

Cl 45  SC Table 45-123  
David V James JGG

**Comment Type** E  **Comment Status** D

**DVJ-106**
Small values are supposed to be centered.

**SuggestedRemedy**
Center the following columns:
Bit(s), R/W

**Proposed Response**  **Response Status** W
PROPOSED REJECT.

See comment #180

**Comment #107**

Cl 45  SC 45.2.7.10  
David V James JGG

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

**DVJ-107**
This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

**SuggestedRemedy**
Here and throughout, list the 0 value first and start counting upwards.

**Proposed Response**  **Response Status** W
PROPOSED REJECT.

Bit definition registers are consistant with style used throughout 802.3

See comment #180

**Comment #108**

Cl 45  SC 45.2.7.10  
David V James JGG

**Comment Type** E  **Comment Status** D

**DVJ-108**
Small values are supposed to be centered.

**SuggestedRemedy**
Center the following columns:
Bit(s), R/W

**Proposed Response**  **Response Status** W
PROPOSED REJECT.

See comment #180
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Page</th>
<th>Comment</th>
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<th>Suggested Remedy</th>
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<td></td>
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<td>112</td>
<td>Cl 45 SC 45.2.7.10</td>
<td>0112</td>
<td>L 29</td>
<td>DVJ-110</td>
<td>Misleading capitalization</td>
<td></td>
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<td>Cl 45 SC 45.2.7.10</td>
<td>0112</td>
<td>L 29</td>
<td>DVJ-112</td>
<td>Small values are supposed to be centered.</td>
<td></td>
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<td>Cl 45 SC 45.2.7.11</td>
<td>0113</td>
<td>L 29</td>
<td>DVJ-113</td>
<td>Its unclear if this is an ROLLSC value.</td>
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<td>114</td>
<td>112</td>
<td>Cl 45 SC 45.2.7.11</td>
<td>0114</td>
<td>L 22</td>
<td>DVJ-114</td>
<td>This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.</td>
<td></td>
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<td>Cl 45 SC 45.2.7.11</td>
<td>0115</td>
<td>L 22</td>
<td>DVJ-115</td>
<td>This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.</td>
<td></td>
<td>W</td>
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<tr>
<td>116</td>
<td>112</td>
<td>Cl 45 SC 45.2.7.12</td>
<td>0116</td>
<td>L 22</td>
<td>DVJ-116</td>
<td>This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.</td>
<td></td>
<td>W</td>
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</tr>
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</table>

**Comment #109**: Misleading capitalization

- **Proposed Response**: Latching High => Latching high

- **Comment Status**: D

- **Response Status**: W

**Comment #110**: Misleading capitalization

- **Proposed Response**: Read/Write => read/write

- **Comment Status**: D

- **Response Status**: W

**Comment #112**: Its unclear if this is an ROLLSC value.

- **Proposed Response**: RO, LL, SC

- **Comment Status**: D

- **Response Status**: W

**Comment #113**: This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

- **Proposed Response**: Here and throughout, list the 0 value first and start counting upwards.

- **Comment Status**: D

- **Response Status**: W

**Comment #114**: This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

- **Proposed Response**: Bit definition registers are consistent with style used throughout 802.3

- **Comment Status**: D

- **Response Status**: W

**Comment #115**: This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

- **Proposed Response**: Bit definition registers are consistent with style used throughout 802.3

- **Comment Status**: D

- **Response Status**: W

**Comment #116**: This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

- **Proposed Response**: Bit definition registers are consistent with style used throughout 802.3

- **Comment Status**: D

- **Response Status**: W

**Comment #117**: This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

- **Proposed Response**: Bit definition registers are consistent with style used throughout 802.3

- **Comment Status**: D

- **Response Status**: W
IEEE P802.3an Comments

Comment #115
Cl 45 SC 45.2.7.12 P 116 L 14
David V James JGG
Comment Type E Comment Status D Centering
DVJ-115
Small values are supposed to be centered.
SuggestedRemedy
Center the following columns:
Bit(s), R/W
Proposed Response Response Status W PROPOSED REJECT.
See comment #180

Comment #116
Cl 45 SC 45.5.8 P 118 L 5
David V James JGG
Comment Type E Comment Status D Centering
DVJ-116
The title of this subclause is too long, which forces error-prone manual manipulation during the otherwise automatic TOC generation.
SuggestedRemedy
Change the title to:
55.12 Protocol implementation conformance statement (PICS) proforma for Clause 45
Proposed Response Response Status W PROPOSED REJECT.
Out of scope.

Comment #117
Cl 45 SC 45.5.9.3 P 119 L 6
David V James JGG
Comment Type E Comment Status D Centering
DVJ-117
Small values are supposed to be centered.
SuggestedRemedy
Center the following columns:
Item, Subclause, Status, Support
Proposed Response Response Status W PROPOSED REJECT.
See comment #180

Comment #118
Cl 45 SC 45.5.10.1 P 119 L 38
David V James JGG
Comment Type E Comment Status D Centering
DVJ-118
Small values are supposed to be centered.
SuggestedRemedy
Center the following columns:
Item, Subclause, Status, Support
Proposed Response Response Status W PROPOSED REJECT.
See comment #180

Comment #119
Cl 45 SC 45.5.10.2 P 120 L 7
David V James JGG
Comment Type E Comment Status D Centering
DVJ-119
Small values are supposed to be centered.
SuggestedRemedy
Center the following columns:
Item, Subclause, Status, Support
Proposed Response Response Status W PROPOSED REJECT.
See comment #180

Comment #120
Cl 45 SC 45.5.10.3 P 121 L 8
David V James JGG
Comment Type E Comment Status D Centering
DVJ-120
Small values are supposed to be centered.
SuggestedRemedy
Center the following columns:
Item, Subclause, Status, Support
Proposed Response Response Status W PROPOSED REJECT.
See comment #180
IEEE P802.3an Comments

Cl 45  SC 45.5.10.6  P127  L7  Comment #121
David V James  JGG
Comment Type  E  Comment Status  D  Centering
DVJ-121
Small values are supposed to be centered.
Suggested Remedy
Center the following columns:
Item, Subclause, Status, Support
Proposed Response  Response Status  W
PROPOSED REJECT.
See comment #180

Cl 45  SC 45.5.10.8  P132  L8  Comment #122
David V James  JGG
Comment Type  E  Comment Status  D  Centering
DVJ-122
Small values are supposed to be centered.
Suggested Remedy
Center the following columns:
Item, Subclause, Status, Support
Proposed Response  Response Status  W
PROPOSED REJECT.
See comment #180

Cl 45  SC 45.5.10.9  P132  L16  Comment #123
David V James  JGG
Comment Type  E  Comment Status  D  Centering
DVJ-123
Small values are supposed to be centered.
Suggested Remedy
Center the following columns:
Item, Subclause, Status, Support
Proposed Response  Response Status  W
PROPOSED REJECT.
See comment #180

Cl 55  SC 55.1.2  P138  L31  Comment #124
David V James  JGG
Comment Type  E  Comment Status  D  Centering
DVJ-124
Callouts can be ALL CAPS or Some caps, but not both.
Suggested Remedy
Eliminate mixture by converting ALL CAPS to lower case.
Proposed Response  Response Status  W
PROPOSED REJECT.
The IEEE P802.3an Task Force believes that this comment is one on editorial style, and does not affect the technical integrity of the standard. Editing does not take place during the balloting period, and will be done prior to publication by the professional editorial staff of the IEEE.

Cl 55  SC 55.1.3  P138  L45  Comment #125
David V James  JGG
Comment Type  E  Comment Status  D  Centering
DVJ-125
Be consistent with acronyms.
Suggested Remedy
Double SQuare => double square
Proposed Response  Response Status  W
See #124

Cl 55  SC 55.1.2  P138  L6  Comment #126
David V James  JGG
Comment Type  E  Comment Status  D  Centering
DVJ-126
Misleading capitalization
Suggested Remedy
Clause 4 Media Access Control (MAC) => Clause 4 Media access control (MAC)
Proposed Response  Response Status  W
See #124

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 U/unsatisfied Z/withdrawn
SORT ORDER: comment ID
Comment #127

Cl 55  SC 55.1.3  P 139  L 16  
David V James  JGG

Comment Type  E  Comment Status  D

DVJ-127
Callouts can be ALL CAPS or Some caps, but not both.

Suggested Remedy
Eliminate mixture by converting HYBRID to lower case.

Proposed Response  Response Status  W
See #124

Comment #128

Cl 55  SC 55.1.3.2  P 141  L 54  
David V James  JGG

Comment Type  E  Comment Status  D

DVJ-128
Misleading capitalization

Suggested Remedy
Tomlinson Harashima Precoder
==>
Tomlinson Harashima precoder

Proposed Response  Response Status  W
See #124

Comment #129

Cl 55  SC 55.2  P 143  L 16  
David V James  JGG

Comment Type  E  Comment Status  D

DVJ-129
Misleading capitalization

Suggested Remedy
10GBASE-T Service Primitives and Interfaces
==>
10GBASE-T Service primitives and interfaces

Proposed Response  Response Status  W
PROPOSED ACCEPT.

Comment #130

Cl 55  SC 55.2  P 143  L 23  
David V James  JGG

Comment Type  E  Comment Status  D

DVJ-130
Misleading capitalization

Suggested Remedy
Medium Dependent Interface (MDI)
==>
Medium dependent interface (MDI)

As per 802.3REV acronyms

Proposed Response  Response Status  W
PROPOSED ACCEPT.

Comment #131

Cl 55  SC 55.2.2  P 145  L 35  
David V James  JGG

Comment Type  E  Comment Status  D

DVJ-131
Don't mix ALL CAPS and Some caps conventions in one figure.

Suggested Remedy
MEDIUM DEPENDENT INTERFACE
==>
Medium dependent interface
(and similar changes for nonspecial words)

Proposed Response  Response Status  W
PROPOSED REJECT.

Comment #132

Cl 55  SC 55.3.2  P 150  L 35  
David V James  JGG

Comment Type  E  Comment Status  D

DVJ-132
Callouts can be ALL CAPS or Some caps, but not both.

Suggested Remedy
Eliminate mixture by converting ALL CAPS to lower case.

Proposed Response  Response Status  W
See #124
IEEE P802.3an Comments

Comment #133

Cl 55 SC 55.3.2.2 P 151 L 20

David V James JGG

Comment Type E Comment Status D

DVJ-133

Be consistent with acronyms.

Suggested Remedy

DSQ (Double Square)

=> double square (DSQ)

Proposed Response Response Status W

See #124

Comment #134

Cl 55 SC 55.3.2.2 P 151 L 19

David V James JGG

Comment Type E Comment Status D

DVJ-134

Be consistent with acronyms.

Suggested Remedy

Low Density Parity Check (LDPC)

=> low density parity check (LDPC)

Proposed Response Response Status W

See #124

Comment #135

Cl 55 SC 55.3.4.1 P 152 L 46

David V James JGG

Comment Type T Comment Status D

DVJ-135

This bit-swap for a bit-swap definition is highly confusing.

Suggested Remedy

from left to right as 01111000.

=> from right-to-left as 00011110.

Proposed Response Response Status W

PROPOSED REJECT.

The change will not make it any clearer and is consistent with other 802.3 standards

Comment #136

Cl 55 SC 55.3.4.2 P 155 L 30

David V James JGG

Comment Type E Comment Status D

DVJ-136

Misleading capitalization

Suggested Remedy

PCS Detailed Transmit Bit Ordering

=> PCS detailed transmit bit ordering

Proposed Response Response Status W

PROPOSED REJECT.

See #124

Comment #137

Cl 55 SC 55.3.4.2 P 155 L 10

David V James JGG

Comment Type E Comment Status D

DVJ-137

Not supposed to use color in IEEE docs.

Suggested Remedy

Change illustration to black and white. Also, eliminate cross-hatching in favor of shading.

Proposed Response Response Status W

PROPOSED ACCEPT.

Comment #138

Cl 55 SC 55.3.4.4 P 156 L 19

David V James JGG

Comment Type E Comment Status D

DVJ-138

Misleading capitalization

Suggested Remedy

Input Data => Input data

Proposed Response Response Status W

PROPOSED REJECT.

See #124
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**Comment Status:**
- D/dispatched
- A/accepted
- R/rejected

**Response Status:**
- O/open
- W/written
- C/closed
- U/unsatisfied
- Z/withdrawn

**Sort Order:**
- comment ID

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

5/18/2005  9:44:44 AM
IEEE P802.3an Comments

Comment #145

Cl 55 SC 55.3.4.4 P 156 L 28

David V James JGG

Comment Type T Comment Status D

DVJ-145

This document uses both lower-case and upper-case hex codes. Must use only one.

SuggestedRemedy

I prefer to use upper case, as in 0x2D.
Whatever you do, add a notation clause so that this is done consistently in the future.

Proposed Response PROPOSED ACCEPT IN PRINCIPLE.

Comment #146

Cl 55 SC 55.3.4.7 P 158 L 9

David V James JGG

Comment Type E Comment Status D

DVJ-146

Misleading capitalization

SuggestedRemedy

Control Character

Control character

Proposed Response PROPOSED REJECT.

See #124

Comment #147

Cl 55 SC 55.3.4.7 P 158 L 9

David V James JGG

Comment Type E Comment Status D

DVJ-147

Misleading capitalization

SuggestedRemedy

XGMII Control Code

XGMII control code

Proposed Response PROPOSED REJECT.

See #124

Comment #148

Cl 55 SC 55.3.4.7 P 158 L 9

David V James JGG

Comment Type E Comment Status D

DVJ-148

Misleading capitalization

SuggestedRemedy

10GBASE-T Control Code

10GBASE-T control code

Proposed Response PROPOSED REJECT.

See #124

Comment #149

Cl 55 SC 55.3.4.7 P 158 L 9

David V James JGG

Comment Type E Comment Status D

DVJ-149

Misleading capitalization

SuggestedRemedy

10GBASE-T O Code

10GBASE-T O code

Proposed Response PROPOSED REJECT.

See #124

Comment #150

Cl 55 SC 55.3.4.7 P 158 L 9

David V James JGG

Comment Type E Comment Status D

DVJ-150

Misleading capitalization

SuggestedRemedy

8B/10B Code

8B/10B code

Proposed Response PROPOSED REJECT.

See #124

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 U/unsatisfied Z/withdrawn
SORT ORDER: comment ID

IEEE P802.3an Comments

**Comment #151**

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<td>158</td>
<td>13</td>
<td>151</td>
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</table>

**Comment Type**: E
**Comment Status**: D

DVJ-151
Nonstandard table lines.

**Suggested Remedy**
Thin on the outside.
Very-thin on the inside.

**Proposed Response**: PROPOSED REJECT.

See #124

**Comment #152**

<table>
<thead>
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**Comment Type**: E
**Comment Status**: D

DVJ-152
Misleading capitalization

**Suggested Remedy**
Serial Data Input

Serial data input

**Proposed Response**: PROPOSED REJECT.

See #124

**Comment #153**

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**Comment Type**: E
**Comment Status**: D

DVJ-153
Misleading capitalization

**Suggested Remedy**
CRC8 Output

CRC8 output

**Proposed Response**: PROPOSED REJECT.

See #124

**Comment #154**

<table>
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<td>154</td>
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</table>

**Comment Type**: E
**Comment Status**: D

DVJ-154
Unneeded hyphen.

**Suggested Remedy**

65-bits

65 bits

**Proposed Response**: PROPOSED REJECT.

See #124

**Comment #155**

<table>
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<tr>
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<td>155</td>
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</table>

**Comment Type**: E
**Comment Status**: D

DVJ-155
Misleading capitalization

**Suggested Remedy**

Scrambled Data Input

Scrambled data input

**Proposed Response**: PROPOSED REJECT.

See #124

**Comment #156**

<table>
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<tr>
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**Comment Type**: E
**Comment Status**: D

DVJ-156
Misleading capitalization

**Suggested Remedy**

Scrambled Data Input

Scrambled data input

**Proposed Response**: PROPOSED REJECT.

See #124

**Comment #157**

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</table>

**Comment Type**: E
**Comment Status**: D

DVJ-157
Misleading capitalization

**Suggested Remedy**

Scrambled Data Input

Scrambled data input

**Proposed Response**: PROPOSED REJECT.

See #124

**Comment #158**

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<td>164</td>
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<td>158</td>
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</tbody>
</table>

**Comment Type**: E
**Comment Status**: D

DVJ-158
Unneeded hyphen.

**Suggested Remedy**

65-bits

65 bits

**Proposed Response**: PROPOSED ACCEPT.

See #124

**Comment #159**

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<tr>
<td>55</td>
<td>55</td>
<td>164</td>
<td>21</td>
<td>159</td>
</tr>
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</table>

**Comment Type**: E
**Comment Status**: D

DVJ-160
Misleading capitalization

**Suggested Remedy**

Scrambled Data Input

Scrambled data input

**Proposed Response**: PROPOSED REJECT.

See #124

**Comment #160**

<table>
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**Comment Type**: E
**Comment Status**: D

DVJ-161
Misleading capitalization

**Suggested Remedy**

Scrambled Data Input

Scrambled data input

**Proposed Response**: PROPOSED REJECT.

See #124

**Comment #161**

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**Comment Type**: E
**Comment Status**: D

DVJ-162
Misleading capitalization

**Suggested Remedy**

CRC8 Output

CRC8 output

**Proposed Response**: PROPOSED REJECT.

See #124

**Comment #162**

<table>
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**Comment Type**: E
**Comment Status**: D

DVJ-163
Unneeded hyphen.
Comment # 157

Cl 55  SC 55.3.16  P 164  L 15  Comment # 157
David V James  JGG

Comment Type  E  Comment Status  D
DVJ-157
Misleading capitalization

Suggested Remedy
Serial Data Output
==> Serial data output

Proposed Response  Response Status  W
PROPOSED REJECT.
Currently follows capitalization rules of other 802.3 Clauses

Comment # 158

Cl 55  SC 55.3.16  P 164  L 30  Comment # 158
David V James  JGG

Comment Type  E  Comment Status  D
DVJ-158
Misleading capitalization

Suggested Remedy
Serial Data Output
==> Serial data output

Proposed Response  Response Status  W
PROPOSED REJECT.
See #157

Comment # 159

Cl 55  SC 55.3.16  P 164  L 32  Comment # 159
David V James  JGG

Comment Type  E  Comment Status  D
DVJ-159
Misleading capitalization

Suggested Remedy
Master and Slave PCS Descramblers
==> Master and slave PCS descramblers

Proposed Response  Response Status  W
PROPOSED REJECT.
See #157
DVJ-163
State machines in the base document sometimes use underscores, sometimes not.

Suggested Remedy
Use underscores in the state names, so that they can be more easily parsed when used elsewhere. Do this everywhere.

Proposed Response  Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

DVJ-164
Small values are supposed to be centered.

Suggested Remedy
Center the following columns:
1.132.15m 1.132.14, 1.132..13

Proposed Response  Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Will be done later by the professional editorial staff of the IEEE

DVJ-165
Small values are supposed to be centered.

Suggested Remedy
Center the following columns:
1.132.12, 1.132.11, 1.132.10

Proposed Response  Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Will be done later by the professional editorial staff of the IEEE
IEEE P802.3an Comments

Comment #169

Cl 55 SC 55.5.2.1 P 188 L 10

David V James JGG

Comment Type E Comment Status D

DVJ-169

Misleading capitalization

SuggestedRemedy

Transmitter Under Test

Transmitter under test

Proposed Response Response Status W

PROPOSED ACCEPT.

Comment #170

Cl 55 SC 55.5.2.1 P 188 L 32

David V James JGG

Comment Type E Comment Status D

DVJ-170

Misleading capitalization

SuggestedRemedy

Transmitter Under Test

Transmitter under test

Proposed Response Response Status W

PROPOSED ACCEPT.

Comment #171

Cl 55 SC 55.5.2.1 P 188 L 32

David V James JGG

Comment Type E Comment Status D

DVJ-171

Misleading capitalization

SuggestedRemedy

Spectrum Analyzer

Spectrum analyzer

Proposed Response Response Status W

PROPOSED ACCEPT.

Comment #172

Cl 55 SC 55.5.2.1 P 188 L 8

David V James JGG

Comment Type E Comment Status D

DVJ-172

Inconsistent figure fonts.

SuggestedRemedy

Use 8-point Arial.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Comment #173

Cl 55 SC 55.5.2.1 P 188 L 30

David V James JGG

Comment Type E Comment Status D

DVJ-173

Inconsistent figure fonts.

SuggestedRemedy

Use 8-point Arial.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Comment #174

Cl 55 SC 55.5.2.1 P 189 L 6

David V James JGG

Comment Type E Comment Status D

DVJ-174

Misleading capitalization

SuggestedRemedy

Transceiver in Test

Transceiver in test

Proposed Response Response Status W

PROPOSED ACCEPT.
IEEE P802.3an Comments

Comment Type: Misleading capitalization

Suggested Remedy:
- Transceiver under test (Configured to transmit 200 MHz signal)

Proposed Response:
- PROPOSED ACCEPT.

Comment Type: Misleading capitalization

Suggested Remedy:
- Bandlimited Jitter Analyzer

Proposed Response:
- PROPOSED ACCEPT.

Comment Type: Inconsistent figure fonts.

Suggested Remedy:
- Use 8-point Arial.

Proposed Response:
- PROPOSED ACCEPT IN PRINCIPLE.

Comment Type: Inconsistent figure fonts.

Suggested Remedy:
- Use 8-point Arial.

Proposed Response:
- PROPOSED ACCEPT IN PRINCIPLE.

Comment Type: Small values are supposed to be centered.

Suggested Remedy:
- Center the following columns: Register, Bit, Type

Proposed Response:
- PROPOSED ACCEPT IN PRINCIPLE.

The IEEE 10GBASE-T Task Force believes that this comment is one on editorial style, and does not affect the technical integrity of the standard. Editing does not take place during the balloting period, and will be done prior to publication by the professional editorial staff of the IEEE.
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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 U/unsatisfied Z/withdrawn
SORT ORDER: comment ID

Page 31 of 141
<table>
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**Suggested Remedy**
- Multiple-Disturber Power Sum Equal Level Far-End Crosstalk (PS ELFEXT) loss
  -> Multiple-disturber power sum equal level far-end crosstalk (PS ELFEXT) loss

For IEEE editorial staff. Capitalization consistent with 1000BASE-T

<table>
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<th>P205</th>
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**Suggested Remedy**
- Multiple Disturber Alien Near-End Crosstalk (MDANEXT) loss
  -> Multiple disturber alien near-end crosstalk (MDANEXT) loss

For IEEE editorial staff. Capitalization consistent with 1000BASE-T

<table>
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**Suggested Remedy**
- Near-End Crosstalk (NEXT) loss
  -> Near-end crosstalk (NEXT) loss

For IEEE editorial staff. Capitalization consistent with 1000BASE-T

<table>
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**Suggested Remedy**
- Cabling types, distance and PS ANEXT Constants
  -> Cabling types, distance and PS ANEXT constants

For IEEE editorial staff. Capitalization consistent with 1000BASE-T

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**Suggested Remedy**
- Insertion Loss at 250 MHz
  -> Insertion loss at 250 MHz

For IEEE editorial staff. Capitalization consistent with 1000BASE-T

---

**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  U/Unsatisfied  Z/Withdrawn

**Sort Order:** Comment ID

---

5/18/2005  9:44:45 AM
IEEE P802.3an Comments

**Comment #193**

**Cl 55 SC 55.7.3.2 P 207 L 43**

David V James  
JGG

**Comment Type:** E  
**Comment Status:** D  
**Suggested Remedy:**

- Misleading capitalization

**Proposed Response:** PROPOSED REJECT.

For IEEE editorial staff. Capitalization consistent with 1000BASE-T

---

**Comment #194**

**Cl 55 SC 55.7.3.2.1 P 207 L 51**

David V James  
JGG

**Comment Type:** E  
**Comment Status:** D  
**Suggested Remedy:**

- Multiple Disturber Alien Far-End Crosstalk (MDAFEXT) loss
- Multiple disturbance alien far-end crosstalk (MDAFEXT) loss

**Proposed Response:** PROPOSED REJECT.

For IEEE editorial staff. Capitalization consistent with 1000BASE-T

---

**Comment #195**

**Cl 55 SC 55.7.3.1.2 P 207 L 21**

David V James  
JGG

**Comment Type:** E  
**Comment Status:** D  
**Suggested Remedy:**

- Nonstandard table lines.
- Thin on the outside.
- Very-thin on the inside.

**Proposed Response:** PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 180

---

**Comment #196**

**Cl 55 SC 55.7.3.2.1 P 208 L 22**

David V James  
JGG

**Comment Type:** E  
**Comment Status:** D  
**Suggested Remedy:**

- Small values are supposed to be centered.

**Proposed Response:** PROPOSED ACCEPT IN PRINCIPLE.

Will be done later by the professional editorial staff of the IEEE

---

**Comment #197**

**Cl 55 SC 55.7.3.2.2 P 208 L 9**

David V James  
JGG

**Comment Type:** E  
**Comment Status:** D  
**Suggested Remedy:**

- Nonstandard math. EL(f)i looks like a product of two numbers.

**Proposed Response:** PROPOSED ACCEPT IN PRINCIPLE.

Change to ELi(f)

---

**Comment #198**

**Cl 55 SC 55.7.3.2.2 P 209 L 12**

David V James  
JGG

**Comment Type:** E  
**Comment Status:** D  
**Suggested Remedy:**

- Misleading capitalization

**Proposed Response:** PROPOSED REJECT.

For IEEE editorial staff. Capitalization consistent with 1000BASE-T
IEEE P802.3an Comments

Comment # 199

Cl 55 SC 55.7.3.2.2 P 209 L 15

Comment Type E Comment Status D cabling

DVJ-199
Misleading capitalization

Suggested Remedy
- Insertion Loss at 250 MHz
  ==> Insertion loss at 250 MHz

Proposed Response Response Status W
PROPOSED REJECT.

For IEEE editorial staff. Capitalization consistent with 1000BASE-T

Comment # 200

Cl 55 SC 55.7.4 P 209 L 53

Comment Type E Comment Status D cabling

DVJ-200
Misleading capitalization

Suggested Remedy
- Near-End Crosstalk
  ==> Near-end crosstalk

Proposed Response Response Status W
PROPOSED REJECT.

For IEEE editorial staff. Capitalization consistent with 1000BASE-T

Comment # 201

Cl 55 SC 55.7.3.2.2 P 209 L 10

Comment Type E Comment Status D cabling

DVJ-201
Extraneous period.

Suggested Remedy
- Table
  ==> Table

Proposed Response Response Status W
PROPOSED ACCEPT.
Same as comment 391

Comment # 202

Cl 55 SC 55.7.4 P 210 L 18

Comment Type E Comment Status D cabling

DVJ-202
Small values are supposed to be centered.

Suggested Remedy
- Center the following columns:
  right three columns

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 180

Comment # 203

Cl 55 SC 55.7.4 P 210 L 5

Comment Type E Comment Status D cabling

DVJ-203
Misleading capitalization

Suggested Remedy
- Far-End Crosstalk
  ==> Far-end crosstalk

Proposed Response Response Status W
PROPOSED REJECT.

For IEEE editorial staff. Capitalization consistent with 1000BASE-T

Comment # 204

Cl 55 SC 55.7.4 P 210 L 8

Comment Type E Comment Status D cabling

DVJ-204
Misleading capitalization

Suggested Remedy
- Inter-Symbol Interference
  ==> Inter-symbol interference

Proposed Response Response Status W
PROPOSED REJECT.

For IEEE editorial staff. Capitalization consistent with 1000BASE-T

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 U/unsatisfied Z/withdrawn
SORT ORDER: comment ID

5/18/2005 9:44:45 AM
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<th>Comment</th>
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<th>Response Status</th>
<th>Suggested Remedy</th>
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<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
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TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
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SORT ORDER: comment ID
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</table>

Small values are supposed to be centered.

**Suggested Remedy**
- Center the following columns:
  - Item
  - Subclause
  - Status
  - Support

**Proposed Response**
See #124

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<tbody>
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<td>E</td>
<td>D</td>
<td>DVJ-212</td>
</tr>
</tbody>
</table>

The title of this subclause is too long, which forces error-prone manual manipulation during the otherwise automatic TOC generation.

**Suggested Remedy**
- Change the title to:
  - 55.12 Protocol implementation conformance statement (PICS) proforma for Clause 55
  - Update the first sentence in the following paragraph:
    - The supplier of a protocol implementation that is claimed to conform to this clause shall complete the Protocol Implementation Conformance Statement (PICS) proforma listed in the following subclauses.
    - The supplier of a protocol implementation that is claimed to conform to Clause 55, Physical coding sublayer (PCS), physical medium attachment (PMA) sublayer and baseband medium, type 10GBASE-T shall complete the Protocol Implementation Conformance Statement (PICS) proforma listed in the following subclauses.

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

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<tr>
<td>E</td>
<td>D</td>
<td>DVJ-213</td>
</tr>
</tbody>
</table>

Extraneous blank rown

**Suggested Remedy**
- Eliminate them.

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.
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<tr>
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<td>222</td>
<td>54</td>
<td>219</td>
<td>E</td>
<td>D</td>
<td>The bottom line of a table that is continued should be very-thin. This is particularly true when tables have no titles, as its hard to tell what is a continued table.</td>
<td>See #124</td>
<td>D</td>
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<td>55.12.5.1</td>
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<td>D</td>
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<td>D</td>
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<td>D</td>
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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 U/unsatisfied Z/withdrawn
SORT ORDER: comment ID
Comment #223

Cl 55  SC 55.12.6.1  P 225  L 14  Comment # 223
David V James  JGG

Comment Type  E  Comment Status  D
DVJ-223
Misleading capitalization

SuggestedRemedy
10GBASE-T Specific Auto-Negotiation Requirements
10GBASE-T specific auto-negotiation requirements

Proposed Response  Response Status  W

PROPOSED ACCEPT IN PRINCIPLE.

Auto-Negotiation is used in C28
auto-negotiation is used in C45
Auto-Negotiation is used in C55

Comment #226

Cl 55  SC 55.12.7  P 226  L 7  Comment # 226
David V James  JGG

Comment Type  E  Comment Status  D
DVJ-224
Small values are supposed to be centered.

SuggestedRemedy
Center the following columns:
Item, Subclause, Status, Support

Proposed Response  Response Status  W

See #124

Comment #227

Cl 55  SC 55.12.9  P 231  L 8  Comment # 227
David V James  JGG

Comment Type  E  Comment Status  D
DVJ-227
Small values are supposed to be centered.

SuggestedRemedy
Center the following columns:
Item, Subclause, Status, Support

Proposed Response  Response Status  W

See #124

Comment #228

Cl 55  SC 55.12.9  P 233  L 44  Comment # 228
David V James  JGG

Comment Type  E  Comment Status  D
DVJ-228
Wrong font size.

SuggestedRemedy
Apply standard font size to right column.

Proposed Response  Response Status  W

PROPOSED ACCEPT.
<table>
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<tr>
<th>Comment Type</th>
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<tr>
<td>T</td>
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<tr>
<td>T</td>
<td>D</td>
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<td>sterminal usage.</td>
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<td>DVJ-234</td>
<td>PROPOSED ACCEPT.</td>
<td>W</td>
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</table>

**DVJ-229**

What does PME?? mean.

**DVJ-230**
The continuation of the feature cell test in the Value/Comment cell is highly irregular and confusing. Also, the capitalization in the right column obfuscates even this too subtle usage.

**DVJ-231**
The small values are supposed to be centered.

**DVJ-234**

All references belong in the references or bibliography clauses.

Move this Gallager reference to the Bibliography, with a cross-reference here.

Not clear what is wrong.

Center the following columns:
- Item
- Subclause
- Status
- Support

See #124
IEEE P802.3an Comments

Cl 55 SC 55.12.11 P237 L7 Comment # 235
David V James JGG
Comment Type E Comment Status D
DVJ-235
Misleading capitalization
SuggestedRemedy
The Parity Check Matrix
The parity check matrix
Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 44 SC 44.3 P79 L28-29 Comment # 236
Shimon Muller Sun Microsystems, Inc.
Comment Type TR Comment Status D delay
The delay constraints specified for 10GBASE-T are at least an order of magnitude greater than what would be acceptable for many applications that are intended to be deployed using this technology. Furthermore, I do not recall any contributions made to the Task Force that justify such a high latency in the PHY. See my presentation (muller_1_0304.pdf) for latency considerations for the 10GBASE-T PHY
SuggestedRemedy
Change the 10GBASE-T entry in Table 44-2 such that the round-trip latency does not exceed 20480 bit times or 40 pause_quanta.
Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Cl 45 SC 45.2.7.10 P112 L22-25 Comment # 237
Shimon Muller Sun Microsystems, Inc.
Comment Type T Comment Status D FD45
Bit 7.32.12 makes no sense whatsoever, at least the way it is described. 10-GE is defined for full duplex operation only. Therefore, there is no need to negotiate this capability.
SuggestedRemedy
Delete this bit from Table 45-124.
Proposed Response Response Status W
PROPOSED ACCEPT.
Remove 45.2.7.10.4, bit 7.33.11 from Table 45-125 and 45.2.7.11.5 also.

Cl 45 SC 45.2.7.10.4 P113 L1-6 Comment # 238
Shimon Muller Sun Microsystems, Inc.
Comment Type T Comment Status D FD45
See my comment against 45.2.7.10.
SuggestedRemedy
Delete this sub-clause.
Proposed Response Response Status W
PROPOSED ACCEPT.
See #237, 461

Cl 45 SC 45.2.7.11 P113 L41-45 Comment # 239
Shimon Muller Sun Microsystems, Inc.
Comment Type T Comment Status D FD45
See my comment against 45.2.7.10.
SuggestedRemedy
Delete this bit from Table 45-125.
Proposed Response Response Status W
PROPOSED ACCEPT.
See #237

Related delay comments are:
236, 242, 369
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<td>See my comment against 44.3.</td>
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**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  U/unsatisfied  Z/withdrawn**

**SORT ORDER: comment ID**
ISO/IEC and TIA cabling standards include a maximum value (62 dB for PS NEXT), mainly to assure reliable measurements. Without this change, supporting cabling standards are not in full agreement with IEEE 802.3an 10GBASE-T.

**Suggested Remedy**

Add the same maximum value as in relevant cabling standards, following equation 55-14.

**Proposed Response**

PROPOSED ACCEPT.

Add Text: Calculations that result in NEXT loss values greater than 62 dB shall revert to a requirement of 62 dB minimum.

---

**Comment #246**

Cl 55 SC 55.7.3.1.1 P 205 L 14
Koeman, Henricus Fluke Networks

**Comment Type** TR **Comment Status** D **cabling**

Depending on the number of disturber links measured, there is a need to raise the lower end of the test frequency range. Assuming a 100 dB measurement floor for each PS AXtalk measurement, for each doubling of the number of disturber links, the measurement floor declines by 3 dB. At 1 MHz, the pass/fail limit may be at 82 dB for Class E cabling and 62 dB for Augmented Class E cabling. Just the measurement floor without any PS AXtalk reaches the pass/fail limit with 64 disturber link measurements. Likely one needs at least a 10 - 12 dB measurement floor above the stated pass/fail limit. Assuming a maximum 64 disturber link measurement, this translates into a lower 10 MHz test frequency. Without this change, verification of performance at low frequencies becomes practically impossible.

**Suggested Remedy**

Change the lower frequency of the PS AELFEXT requirement to 10 MHz in equation 55.29.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Rather than truncate specification at 10 MHz, allowing unspecified performance, specify PS AELFEXT below 10 MHz consistent with measurement floor accuracies.
IEEE P802.3an Comments

Comment #249
Cl 55 SC 55.7.3.2.1 P 208 L 26
Koeman, Henricus Fluke Networks

Comment Type TR Comment Status D cabling
See previous comments. Without this change, verification of performance at low frequencies becomes practically impossible.

SuggestedRemedy
Change the lower frequency of the PS AELFEXT requirement to 10 MHz in equation 55.30.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Rather than truncate specification at 10MHz allowing unspecified performance, specify PS AELFEXT below 10 MHz consistent with measurement floor accuracies.

Comment #250
Cl 55 SC 55.1.1 P 137 L 35
Brown, Kevin Broadcom

Comment Type TR Comment Status D length
Subclause 55.1.1 Objective f) is imprecisely specified. Specifying "at least 55 m to 100 m" does not make sense.

The minimum specified distance should be essentially zero distance. If a PHY that works over "at least 55 m" is compliant, then any distance specification is redundant. "at least 55 m to 100 m" has no meaningful difference from "at least 55 m to 90 m" or "at least 55 m to 110 m", if 55 m is the minimum requirement

SuggestedRemedy
f) Define a single 10Gb/s PHY that would support links of 0.1 m to 55 m on four pair balancec copper cabling.

Proposed Response Response Status W
Working group to discuss

Comment #251
Cl 55 SC 55.4.2.3 P 201 L 28
Brown, Kevin Broadcom

Comment Type TR Comment Status D length
The first sentence in not technically accurate. "At least 55 meters" of cable is not required to provide a reliable medium. Any distance less than 55 meters should provide a reliable medium.

SuggestedRemedy
A 10GBASE-T link segment consisting of at least 0.1 meters to at most 55 meters of Class E, or at least 0.1 meters to at most 100 meters of Class F which meet the transmission parameters of this subclause will provide a reliable medium.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Change language consistent with 1000BASE-T-40.7.2 Link transmission parameters. "The transmission parameters contained in this subclause are specified to ensure that a Category 5 link segment of up to at least 100 m will provide a reliable medium. The transmission parameters of the link segment include insertion loss, delay parameters, characteristic impedance, NEXT loss, ELFEXT loss, and returnloss."

Recommended remedy: Replace first sentence of 55.7.2 with "A 10GBASE-T link segment consisting of up to at least 55 to 100 meters of Class E or up to 100 meters of Class F which meets the transmission parameters of this subclause will provide a reliable medium."

Comment #252
Cl 55 SC 55.7.2 P 137 L 35
Szczepanek, Andre Texas Instruments

Comment Type E Comment Status D alignment
55.7.2.6 provides a specification for the maximum skew between any two duplex channels that is equivalent to 8UI. Where is this inter-lane skew removed ?. There is no mention of channel alignment in either the PMA or PCS sections of the document.

In XAUI this is a PCS function, however the PCS-PMA interface implies deskewed data. So by implication it is a PMA function. However the PMA receive section does not mention deskew or channel alignment as one of its functions, or how it should be achieved.

I have classed this "editorial" as 1000Base-T does not indicate where channel alignment occurs either.

SuggestedRemedy
Add the requirement to align channels to the general requirements text in 55.4.2.3

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Add text to 55.4.2.3 saying
"The delay skew is removed by computing the relative received delay of the four known transmit patterns described in 55.3.16"
The sentence "1723 bits are encoded using a systematic ... adds 325 LDPC check bits" is out of sequence, and is a fragment of the sentence that starts on line 16 that contains exactly the same text.

Suggested Remedy: remove line 13

Proposed Response: PROPOSED ACCEPT.

See #639

In Description column "Link partner setting four" is indicated for all link partner settings

Suggested Remedy: replace four with corresponding number from the name column

Proposed Response: PROPOSED ACCEPT IN PRINCIPLE.

See 478

"The DECODE function shall decode the block as specified in 55.3.16".

55.3.16 is the side-stream scrambler clause.

Suggested Remedy: "The DECODE function shall decode the block as specified in 55.3.15"

Proposed Response: PROPOSED ACCEPT.
Maybe I missed something but I note changes to the table show insertion of item 9 and changes to numbering underlined for 10,11,12,...15 but 16 is shown as it was originally there and the original item 15 appears to be deleted but it not shown with strike-through.

Item 15:  
15 Acknowledge bit set. Next Page to be sent

Set to logic one in the transmitted Link Code Word after the reception of at least three consecutive and consistent FLP Bursts and the current receive Link Code Word is saved

Resolve my question by either pointing to my failure to properly interpret the document, or insert item 15 back in the table and renumber.

Good catch. The original item 15 was mistakenly overwritten. It will be added back and the rest will be renumbered accordingly.

THP is an undefined acronym. This might create confusion for a reader of the document.

Define THP (Tomlinson Harashima Precoding) in advance of using it.

The reference to "normal mode" appears before normal mode is described or defined.

Move lines 39-41 "In addition...interface." up in front of this paragraph.
Cl 55 SC 55.1.3.1 P 141 L 59 Comment # 264
Dove, Daniel HP ProCurve Networki

Comment Type ER Comment Status D cleanup
Tomlinson Harishima Precoder (THP) finally gets defined, but the horse is out of the barn long ago.

SuggestedRemedy
Per my other comment, move this definition up before the first instance of THP.

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 55 SC 55.1.4 P 142 L 47 Comment # 265
Dove, Daniel HP ProCurve Networki

Comment Type E Comment Status D
Basically, I have a problem with the insertion of the word "basic" in this sentence, since it has no value.

SuggestedRemedy
Remove basic from this sentence and do a global search to basically ensure that unnecessary repetition is not used.

Oh... :)

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 55 SC 55.3.4.2 P 155 L 1 Comment # 266
Dove, Daniel HP ProCurve Networki

Comment Type E Comment Status D colors
Funky colors are not necessarily improving the information value of this illustration.

SuggestedRemedy
Is there a better way to do this without the coloring?

Proposed Response Response Status W
PROPOSED ACCEPT.
IEEE P802.3an Comments

Comment # 269

Cl 55 SC 55.5.3.1 P 189 L 38 Comment Status D
Dove, Daniel HP ProCurve Networki

Comment Type TR

To be honest, I can not figure out what this says. It is not clear.

SuggestedRemedy
Please reword this so it is understandable, or provide an illustration with the text to improve readability.

Specifically, I have trouble with the part "over a period of .08uS measured after a settling time of 10nS after the zero crossing shall be less than 10% of the initial value."

Why use .08uS in one part, and 10nS in the other? Why not use 80nS and 10nS?

Are you saying that relative to the zero crossing in time, the difference between the voltage at 10nS and the voltage at 90nS shall be within 10% of each other?

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Change .08microsec to 80ns for consistency.

Dan's interpretation is correct. Discuss need for adding illustration. Rational for starting 10ns after zero crossing is to make the measurement repeatable - there can be errors in measurement if you try to measure starting much closer to the transition.

Relevant comments: 269, 494

Comment # 270

Cl 55 SC 55.5.3.2 P 189 L 54 Comment Status D
Dove, Daniel HP ProCurve Networki

Comment Type ER

SFDR.. what does this stand for? "Simply Fabulous Data Rate"?

SuggestedRemedy
Please define all acronyms prior to using them.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

SFDR stands for spur free dynamic range

Text on page 190 top currently reads:

The SFDR of the transmitter, for dual tone inputs, producing output with peak to peak transmit amplitude, shall meet the requirement that:

\[ SFDR \geq (2.5 + \min(52, 58-20\log_{10}(f/25)) (55-7) \]

where \( f \) is in MHz and SFDR is in dB and the spurs are the intermodulation products in the frequency range of 1 to 400MHz.

Change to:

The intermodulation products (IMD) of the transmitter, for dual tone inputs, producing output with peak to peak transmit amplitude, shall meet the requirement that:

\[ \text{Signal level - IMD} \geq (2.5 + \min(52, 58-20\log_{10}(f/25)) (55-7) \]

where \( f \) is the frequency of the IMD product in MHz in the frequency range of 1 to 400MHz and the signal level and IMD are in dB.

Comment # 271

Cl 55 SC 55.5.3.3 P 190 L 17 Comment Status D
Dove, Daniel HP ProCurve Networki

Comment Type TR

"the transmitter output shall...

SuggestedRemedy
Change the word "shall" to "will" as it is not necessary to define it this strictly in the text. Also change the "shall" on line 28 and do a global review of the term "shall" to make sure you are not unnecessarily using the term.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Make specific changes identified from "shall" to "will" and review usage of "shall" globally.
The range of allowable PSD seems extraordinarily wide open. from -86dBm to -77dBm at 0Hz and getting wider. Why?

Suggested Remedy
Either tighten up the spec or provide a pointer to the analysis that this is reasonable and will still meet system functional/BER requirements.

Proposed Response
Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

The range actually is -84 to -78 at low frequencies.

The output power constraint imposes a tighter requirement than PSD

Relevant comments: 272, 592, 672, 692, 696

This sentence is highly redundant with 55.5.2’s Note.

Suggested Remedy
Remove the note or accept the redundancy.

Proposed Response
Response Status: W
PROPOSED ACCEPT.

What kind of common-mode voltage? This is too vague.

Suggested Remedy
Insert the word “sinusoidal” before “common mode voltage” and I will be satisfied.

Proposed Response
Response Status: W
PROPOSED ACCEPT.

I noticed the fonts are different on some equations than on others

Suggested Remedy
Use a consistent font on all equations, tables, etc.

Proposed Response
Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

The word “shall” appropriate here? If so, I think the location is not appropriate.

Suggested Remedy
Remove the word "shall" and replace with "should".
Define the coupler more clearly. Simply saying it does not significantly alter the link segment characteristics is a bit too fuzzy.
Also, I question if a flat response is realistic. Typically, noise sources on UTP have a frequency dependent gain function consistent with the balance characteristics of UTP cable.
Perhaps a better approach would be to define a 1000T spectrum run through a 1st order high-pass filter?

Proposed Response
Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

1) replace "shall" with "should"
2) Coupler definition needs to be clarified
3) See jones_1_0305.pdf for justification for using a flat noise source. This noise represents the sum of different noise sources - some high pass some low pass, which add up close to a flat spectrum. The decision to use flat was approved by the group - see resolution on comment 46 in comments_2_0105.pdf and resolution on comment 58 in comments_2_0305.pdf

See response to comment 354

Will insert the word "sinusoidal" before "common mode voltage"
This paragraph has a few editorial problems.

It says the "loss is limited" but isn't it the ANEXT and AFEXT that are limited? (syntactic) and on line 36 you should change "...(MDANEXT) and multiple" to "(MDANEXT) loss and multiple" and change "is specified" to "are specified".

SuggestedRemedy
Please make suggested changes.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

The subclause 55.7.3 "Coupling parameters between link segments" needs to be clearer in regard to the 10GBASE-T cabling types and distances and the usage of insertion loss scaling. Recommended remedy: (1). In 55.7.3, provide a table of supported cabling types and distances with references to applicable cabling standards. Note: For Augmented Category 6 and Class F the cabling is specified "by design" to support 10GBASE-T operation. For Category 6 UTP, it's expected that 10GBASE-T will operate on a "worse case" 6-around-1 cabling configuration up to at least 55 meters. For lengths >55m or where the IL is > 19.8 dB @250 MHz - see the proposed ANNEX 55X (reference: TIA/EIA/ -TSB-155). For Class E UTP cabling longer than 55 meters mitigation considerations may apply. In all cases the alien crosstalk to insertion loss specifications of 55.7.3.1.2. and 55.7.3.2.2. must be met.
IEEE P802.3an Comments

**Comment # 279**

**Cl 55 SC 55.8.3.3 P 213 L 29**

Dove, Daniel
HP ProCurve Networki

**Comment Type TR**
**Comment Status D**

mdi - common mode output

15mV is an impractical and unnecessary limit.

EMI compliance is not directly related to the common-mode voltage on the MDI, but rather, to the frequency/amplitude vector and is outside the scope of this standard.

**Suggested Remedy**

Change to 50mV to remain consistent with earlier standards.

**Proposed Response Response Status W**

PROPOSED ACCEPT IN PRINCIPLE.

See tcobb for voltage level. Since there has not been a demonstrated need for this requirement change from "shall" to a "should" and clarify that the voltage is related to the common mode that is created by the balance of clause 55.8.3.2. Change measurement method to a 4 port analyzer.

Related comments: 279, 355, 423, 457, 501

**Comment # 280**

**Cl 45 SC 45.2.1.60 P 91-92 L 36-46**

Lee Sendelbach
IBM

**Comment Type ER**
**Comment Status D**

THP45

The table uses setting 4 in the text in the column for every case in the description. This flows on to the same table on the next page also.

**Suggested Remedy**

Put the proper setting values in there.

**Proposed Response Response Status W**

PROPOSED REJECT.

See 478

**Comment # 281**

**Cl 45 SC 45.2.1.61.4 P 94 L 6-45**

Lee Sendelbach
IBM

**Comment Type E**
**Comment Status D**

Table 45-51 the power level setting uses 0 sometimes and uses one/two/three sometimes. This should be made consistent.

**Suggested Remedy**

Use text or digital numbers consistently.

**Proposed Response Response Status W**

PROPOSED ACCEPT IN PRINCIPLE.

See 480

**Comment # 282**

**Cl 55 SC 55.1.1 P 137 L 42**

Reviriego, Pedro
Agere Systems

**Comment Type E**
**Comment Status D**

cleanup

The draft should include the following objective:

1) Comply with the specifications for the XGMII (Clause 46)

**Suggested Remedy**

Include the above objective.

**Proposed Response Response Status W**

PROPOSED REJECT.

Is covered by 55.1.1 items c

Also we don't explicitly call out an optional interface.

**Comment # 283**

**Cl 55 SC 55.1.2 P 138 L 27**

Reviriego, Pedro
Agere Systems

**Comment Type E**
**Comment Status D**

cleanup

Change 10GBaseT to 10Gb/s

**Suggested Remedy**

Include the above change.

**Proposed Response Response Status W**

PROPOSED REJECT.

The text refers to the Medium which should be 10GBase-T compliant.

**Comment # 284**

**Cl 55 SC 55.3.4.6 P 157 L 21**

Reviriego, Pedro
Agere Systems

**Comment Type E**
**Comment Status D**

Clarify point e)

**Suggested Remedy**

e) The block contains the payload of an invalid PHY frame.

**Proposed Response Response Status W**

PROPOSED ACCEPT IN PRINCIPLE.

Include the first 64/65B block of the next PHY frame to account for minor self-sync scrambler error propagation.

**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  U/unsatisfied  Z/withdrawn
**SORT ORDER:** comment ID

Page 50 of 141
IEEE P802.3an Comments

Comment #285

Cl 55 SC 55.3.16.2 P 166 L 21
Reviriego, Pedro
Agere Systems

Comment Type E  

When printed in paper 'IFn,' can be confused for 'Ifw'

Suggested Remedy

Put a space between 'IFn' and ',' to avoid confusion

Proposed Response  

PROPOSED ACCEPT.


Comment #286

Cl 55 SC 55.3.16.2 P 166 L 40
Reviriego, Pedro
Agere Systems

Comment Type E  

The text 'three settings of THP and Power Backoff and ...' is not very clear

Suggested Remedy

Change to:

'settings of THP and Power Backoff and ...'

The specific of those settings are then fully detailed in the corresponding section of the draft.

Proposed Response  

PROPOSED ACCEPT.


Comment #287

Cl 55 SC 55.3.17.2.2 P 167 L 55
Reviriego, Pedro
Agere Systems

Comment Type E  

The value TRUE is not aligned with the above text.

Suggested Remedy

Align the text

Proposed Response  

PROPOSED ACCEPT.


Comment #288

Cl 55 SC 55.5 P 175-194 L  
Reviriego, Pedro
Agere Systems

Comment Type E  

The header for this section is Draft 1.4

Suggested Remedy

change test to 'Draft 2.0'

Proposed Response  

PROPOSED ACCEPT IN PRINCIPLE.


Comment #289

Cl 55 SC 55.5.4.4 P 192 L 2737
Reviriego, Pedro
Agere Systems

Comment Type T  pmaelc - 1Galien

The alien crosstalk noise rejection does not cover the case of a 1G ANEXT noise source which will be the most common noise source for some time.

Suggested Remedy

Include a test that injects a 1G alien crosstalk source. The procedure may be similar to that used in 40.6.1.3.4 with the appropriate noise level.

Proposed Response  

PROPOSED ACCEPT IN PRINCIPLE.


Comment #290

Cl 55 SC 55.6 P 195-200 L  
Reviriego, Pedro
Agere Systems

Comment Type E  

The header is 'Draft 2.02.0'

Suggested Remedy

Change to 'Draft 2.0'

Proposed Response  

PROPOSED ACCEPT IN PRINCIPLE.

Will change to Draft 2.1 in next draft
<table>
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<th>Page</th>
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<th>Comment</th>
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</thead>
<tbody>
<tr>
<td>291</td>
<td>196</td>
<td>5060</td>
<td>E</td>
<td>D</td>
<td>not done</td>
<td>The Bits U23, U22 and U21 have not been updated to reflect the changes in section 55.4.3.1. SuggestedRemedy Remove those bits as they are no longer needed. Proposed Response PROPOSED ACCEPT IN PRINCIPLE.</td>
</tr>
<tr>
<td>292</td>
<td>214</td>
<td>9</td>
<td>E</td>
<td>D</td>
<td></td>
<td>The test 'A powered MDI will not disrupt 10GBaseT and vice versa' is not clear. SuggestedRemedy Include a reference to relevant PoE standards. Proposed Response PROPOSED ACCEPT IN PRINCIPLE. Related comments: 292, 534</td>
</tr>
<tr>
<td>294</td>
<td>225</td>
<td>19</td>
<td>E</td>
<td>D</td>
<td></td>
<td>The value comment seems to be void for AN1 SuggestedRemedy Fill it appropriately Proposed Response PROPOSED ACCEPT IN PRINCIPLE.</td>
</tr>
<tr>
<td>295</td>
<td>226</td>
<td>52</td>
<td>E</td>
<td>D</td>
<td></td>
<td>The test GMII seems to be incorrect SuggestedRemedy Change GMII to XGMII Proposed Response PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>296</td>
<td>230</td>
<td>28</td>
<td>E</td>
<td>D</td>
<td></td>
<td>The text 'the four noise source...' is incorrect. The value comment for PME 44 (and also PME 41) is in two font sizes, use one for all comment/values. This same problem occurs in 55.12.8 LKS18 and in 55.12.9 in MDI9. SuggestedRemedy Change it to the 'the four noise sources ...' Review the font size to ensure consistency in sections 55.12.7 through 55.12.9 Proposed Response PROPOSED ACCEPT IN PRINCIPLE.</td>
</tr>
</tbody>
</table>
IEEE P802.3an Comments

Cl 45 SC 45.2.7.10 P114 L514 Comment # 297
Reviriego, Pedro Agere Systems

Comment Type E Comment Status D

Bits 7.33.6 and 7.33.5:4 have not been updated to reflect the changes in section 55.4.3.1. The same applies to bits 7.34.5 and 7.34:4:3.

The text in sections 45.7.11.9 through 45.7.11.11 and 45.7.12.1 and 45.7.12.2 has not been updated to reflect the changes in section 55.4.3.1.

SuggestedRemedy
Remove those bits as they are no longer needed.

Remove the text in those sections.

Proposed Response Response Status O

Cl 55 SC 55.4.3.1 P178 L2060 Comment # 298
Reviriego, Pedro Agere Systems

Comment Type T Comment Status D thp programmable

The THP as currently specified will result in major interoperability problems that will jeopardize the success of 10GBaseT.

- First, two alternative precoders structures IIR or FIR are supported by the standard thus requiring for each PHY interoperability with a remote PHY that implements IIR or FIR.
- The proposed coefficients for IIR include a zero at Fs/2 to support TIS. But the FIR set does not include that zero. This will lead to interoperability issues for PHY's that implement TIS.
- It has been shown by a number of contributors that fixing the precoder response results in a significant performance loss for some channel configurations. It also benefits some specific receiver configurations, which is unfair.

SuggestedRemedy
Remove the IIR precoders from the standard.

Adopt programmable THP during startup using the Info Fields as per kota_1_0305.pdf

The coefficients for the FIR will be exchanged during startup using the Info Fields. The PHY Control state machine will also be changed so that independent settings for THP are allowed at both ends of the link.

Proposed Response Response Status WPROPOSED ACCEPT IN PRINCIPLE.

See comment #473

Cl 55 SC 55.4.3.1 P178 L58 Comment # 300
Puneet, Agarwal Broadcom

Comment Type T Comment Status D powerbackoff

It is not clear why you need the power backoff. What is the goal and the expected performance? What are we trying to prevent here: interference with other cables, power saving, something else??

SuggestedRemedy
Please state the problem being addressed, how this map into the need for power backoff and how well does the proposed method satisfies these requirements. Essentially specify the objective(s), the requirements derived from these objects and how the proposed backoff scheme satisfies these requirements

Proposed Response Response Status W PROPOSED REJECT.

Power backoff is a commonly used technique in communication systems. Editor understands commenter is requesting a tutorial on the subject of power backoff but there is no room for that in the draft.
<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>Comment #</th>
<th>Comment</th>
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<tr>
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<td></td>
<td></td>
<td></td>
<td>301</td>
<td>Glenn Parsons, Nortel</td>
</tr>
<tr>
<td>44</td>
<td>44.1.4.4</td>
<td>78</td>
<td>34</td>
<td>302</td>
<td>Dawe, Piers, Agilent</td>
</tr>
</tbody>
</table>

**Comment Type** E, **Comment Status** D

**Comment**

The headers are different throughout the draft:

- IEEE P802.3an DRAFT 2.0 LOCAL AND METROPOLITAN AREA NETWORKS
- IEEE P802.3an DRAFT 2.0 Revisions based on IEEE Draft P802.3REVam/D2.1
- IEEE P802.3an DRAFT 2.0 Revisions based on IEEE P802.3REVam/Draft 1.0/June 2004
- IEEE P802.3an DRAFT 2.0 Revisions based on P802.3REVam/Draft 1.1/October 2004

If this is correct, and the revisions are truly based on older versions of REVam, then there is a bigger problem.

If this is simply a typo, then it can simply be fixed.

**SuggestedRemedy**

Ensure that this draft is tracking 802.3REVam and that the revisions are against the latest draft D2.2.

Change all to:

- IEEE P802.3an DRAFT 2.0 Draft Amendment to IEEE STD 802.3-2005

**Proposed Response**

PROPOSED ACCEPT.

Change all headers to:

- IEEE P802.3an DRAFT 2.1 Draft Amendment to IEEE STD 802.3-2005

---

**Comment**

Clashing edits: P802.3am/D2.2 has 'Specifications of each physical layer device are contained in Clause 52 through Clause 54 inclusive.', P802.3aq/D2.0 has 'Specifications of these physical layer devices are contained in Clause 52 through Clause 54 and Clause 68.', here we have 'Specifications of each physical layer device are contained in Clause 52 through Clause 55 inclusive.' The 'each' is problematic - implies that specifications of each physical layer device is in some or all of the clauses, when actually the specifications for any one physical layer device are contained within just one clause. Also, 'through' is not a substitute for 'to' in English for international use, although that might be a common usage in some geographies. We want a form of words that will still work with 802.3aq, 802.3an and 802.3ap.

**SuggestedRemedy**

If the style rules and Frame let us, change to 'Specifications of these physical layer devices are contained in Clauses 52, 53, 54 and 55.' If not, change to 'Specifications of these physical layer devices are contained in Clause 52 to Clause 55.' or 'Specifications of these physical layer devices are contained in Clause 52, Clause 53, Clause 54 and Clause 55.' Coordinate with P802.3aq and P802.3ap.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Change to read:

Physical layer device specifications are contained in Clauses 52, 53, 54 and 55.
IEEE P802.3an Comments

**Comment #304**

_Dawe, Piers Agilent_

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

A code is not a block

**SuggestedRemedy**

Change to 'A block oriented encoding in which 64-bit blocks are scrambled and prepended with single bits to indicate whether a block contains ...'

**Proposed Response**

**Response Status** W  
PROPOSED ACCEPT IN PRINCIPLE.

Correct to 65-bit blocks are scrambled

---

**Comment #305**

_Dawe, Piers Agilent_

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

In 64B/65B, do you really scramble before prepending?

**SuggestedRemedy**

Swap around if necessary. Make 55.3.2 more explicit if necessary.

**Proposed Response**

**Response Status** W  
PROPOSED ACCEPT IN PRINCIPLE.

Page 3, line 50 is incorrect.

We scramble the full (64+1)bit block, including the data/ctrl header. This will be corrected in clause 1

---

**Comment #306**

_Dawe, Piers Agilent_

**Comment Type** E  **Comment Status** D

This is a pretty long document...

**SuggestedRemedy**

Please add a table of contents.

**Proposed Response**

**Response Status** W  
PROPOSED ACCEPT.

The bookmarks should suffice but we can add a table of contents.

---

**Comment #307**

_Dawe, Piers Agilent_

**Comment Type** E  **Comment Status** D

This title is getting unnecessarily long. 10 Mb/s, 100 Mb/s, 1000 Mb/s, and 10Gb/s is basically everything we care about.

**SuggestedRemedy**

Shorten title to 'Physical layer link signaling for auto-negotiation on twisted pair'. If necessary, add text within 28 to mention any twisted pair types that the clause doesn't apply to. Change title of 28.5 and 28.5.4, and text of 28.5.1 and 28.5.2.2, in step.

**Proposed Response**

**Response Status** W  
PROPOSED ACCEPT IN PRINCIPLE.

Task Force should discuss.

---

**Comment #308**

_Dawe, Piers Agilent_

**Comment Type** E  **Comment Status** D

Gratuitous Capital Syndrome. It seems 'Extended Next Page' is a term coined by P802.3an, so it doesn't inherit its capitals from somewhere else. Therefore, it doesn't need capitals.

**SuggestedRemedy**

Change to 'extended next pages'. Make similar editorial changes as appropriate in the document.

**Proposed Response**

**Response Status** W  
PROPOSED ACCEPT IN PRINCIPLE.

Next Page is consistently capitalized throughout the clause. Will make consistent within Clause 28.

---

**Comment #309**

_Dawe, Piers Agilent_

**Comment Type** E  **Comment Status** D

Unwanted new-page.

**SuggestedRemedy**

Remove, use 'keep paragraph together' as appropriate

**Proposed Response**

**Response Status** W  
PROPOSED ACCEPT.

The bookmarks should suffice but we can add a table of contents.
IEEE P802.3an Comments

Comment #310

Cl 28 SC 28.3.2 P 25 L 35
Dawe, Piers Agilent

**Comment Type:** E
**Comment Status:** D

Editorials: 'Mb/s. The' 'successful' '10,000 Mb/s'

**Suggested Remedy:**
Change to 'Mb/s. The' 'successful' '10 Gb/s.' (note the full stop). In table 28-9 and in 28.5.4.8, change '10,000 Mb/s' to '10 Gb/s'. Correct 'successful' in 28.5.4.8.

**Proposed Response**
PROPOSED ACCEPT.

Comment #311

Cl 28 SC 28.5.3 P 33 L 24
Dawe, Piers Agilent

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

ENP status 'O' contradicts 28D.6 which says 'Extended Next Page support is mandatory for 10GBASE-T.' OPT status 'O' contradicts 28.2.1.1.2 which says 'Devices supporting Extended Next Pages shall use optimized FLP Burst to FLP Burst timing.'

**Suggested Remedy:**
Reconcile (both issues).

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

Extended next page support is optional for a device that wishes to support auto-negotiation. For devices that support 10GBASE-T, extended next page support is mandatory. There is a mandatory PICS item in Clause 55 for support of extended next pages that a vendor will need to check. Then, the vendor can go into Clause 28 and check support of the optional Clause 28 feature.

For the comment about OPT, see response to comment 681.

Comment #312

Cl 28 SC 28.5.4.3 P 35 L 30
Dawe, Piers Agilent

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

Item 8 contradicts item 9.

**Suggested Remedy:**
Reconcile. Maybe status of 8 should be !OPT:M ?

**Proposed Response**
PROPOSED REJECT.

Item 8 says that the pulses must be separated by 8 - 24 ms, and that this is mandatory. Item 9 says that the pulses must be separated by 8 - 8.5 ms, and that this is optional. Support of the optional item 9 also means you support the mandatory item 8.

Comment #313

Cl 28 SC 28.5.4.8 P 44 L 22
Dawe, Piers Agilent

**Comment Type:** T
**Comment Status:** D not done

Item 11a contradicts item 11b.

**Suggested Remedy**
Reconcile. Is one predicated on 10GBASE-T? Are these two a set of options?

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

Item 11b is meant to be predicated on 10Gb/s and will be made so you can select one of the two options.

Comment #314

Cl 28D SC 28D.6 P 53 L 3
Dawe, Piers Agilent

**Comment Type:** E
**Comment Status:** D

Something missing in 'the signal source. Annex 28B'?

**Suggested Remedy**
Compare with 28D.5 bullets h, i.

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

Bullet I will be fixed.

Comment #315

Cl 28D SC 28D.6 P 55 L 3
Dawe, Piers Agilent

**Comment Type:** E
**Comment Status:** D

Wrong page headers

**Suggested Remedy**
Correct headers will be added to D2.1.
<table>
<thead>
<tr>
<th>Comment #</th>
<th>Page</th>
<th>Line</th>
<th>Comment Type</th>
<th>Comment Status</th>
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<th>Comment Description</th>
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<tbody>
<tr>
<td>316</td>
<td>57</td>
<td>42</td>
<td>E</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
<td>W</td>
<td>Document uses a mix of DSQ128 and 128DSQ. Acronyms that start with a numeral are inconvenient. Change '128DSQ' to 'DSQ128' throughout.</td>
</tr>
<tr>
<td>317</td>
<td>87</td>
<td>48</td>
<td>E</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
<td>W</td>
<td>Capitalization Change 'Test' to 'test'</td>
</tr>
<tr>
<td>318</td>
<td>89</td>
<td>15</td>
<td>E</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
<td>W</td>
<td>Problems with 'The THP setting register will reflect the THP setting selected during the startup process and will only be valid if bit 1.129.0 is set to one.' Why is it in the future tense? Move 'only' to be next to the thing it is meant to qualify (the 'if', not the 'be valid'). Change to 'The THP setting register reflects the THP setting selected during the startup process and will only be valid if bit 1.129.0 is set to one.' Similarly fix the tense in 45.2.1.61 and 45.2.1.63.</td>
</tr>
<tr>
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<td>58</td>
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<td>D</td>
<td>PROPOSED ACCEPT.</td>
<td>W</td>
<td>Please add THP to list of abbreviations. A search on the web seemed to indicate that the two names are usually joined by a hyphen. Please add THP to list of abbreviations.</td>
</tr>
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<td>321</td>
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<td>E</td>
<td>D</td>
<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
<td>W</td>
<td>Please add Tomlinson-Harashima precoder to list of definitions. Please add Tomlinson-Harashima precoder to list of definitions.</td>
</tr>
</tbody>
</table>

**SuggestedRemedy**
- Change to 'The THP setting register reflects the THP setting selected during the startup process and will only be valid if bit 1.129.0 is set to one.' Similarly fix the tense in 45.2.1.61 and 45.2.1.63.
- Change 'Test' to 'test'
- Change to 'The THP setting register reflects the THP setting selected during the startup process and will only be valid if bit 1.129.0 is set to one.' Similarly fix the tense in 45.2.1.61 and 45.2.1.63.
- Please add THP to list of abbreviations. A search on the web seemed to indicate that the two names are usually joined by a hyphen.
- Please add Tomlinson-Harashima precoder to list of definitions.
IEEE P802.3an Comments

Comment #322
Dawe, Piers Agilent

- **Comment Type**: TR
- **Comment Status**: D
- **pspma clarification**

The draft seems to say that a Tomlinson-Harashima precoder is used but I didn't find any information or specification for it in the draft.

- **Suggested Remedy**: Add the necessary information, specifications and/or references.

- **Proposed Response**: PROPOSED ACCEPT IN PRINCIPLE.

  The THP operation is described in 55.4.3.1, equation 55-3 and the text on lines 15-17. Additional information can be provided.

Comment #323
Dawe, Piers Agilent

- **Comment Type**: T
- **Comment Status**: D

The title is 'THP setting' yet 45.2.1.60.1-10 talk about 'will operate', 'will not operate', 'will not able to operate', 'will to operate', 'will not able to', 'will bypass', 'will not bypass' - sounds like an ability register, with some typos.

- **Suggested Remedy**: Tidy it up.

- **Proposed Response**: PROPOSED ACCEPT IN PRINCIPLE.

  See comment 564

Comment #324
Dawe, Piers Agilent

- **Comment Type**: E
- **Comment Status**: D

0.5 dB of accuracy sounds difficult. Even if it's used for power setting, is it necessary? I'm sorry I did not have time to research this comment.

- **Suggested Remedy**: Relax to 1 dB?

- **Proposed Response**: PROPOSED REJECT.

  Previously decided by vote.

Comment #325
Dawe, Piers Agilent

- **Comment Type**: ER
- **Comment Status**: D

Clause 45 doesn't use this nerdy and misleading '0x' notation (one would imagine that x means don't care). Please don't start now.

- **Suggested Remedy**: Delete '0x', use subscript 16 unless clause 45 has another established notation for denoting hex. Applies to several following subclauses.

- **Proposed Response**: PROPOSED REJECT.

  Section 1.2.5 of 802.3 specifically requires that hex numbers be denoted with "0x" preceding the hexadecimal value.
Comment #328

Cl 45 SC 45.5.10.9 P 135 L 1

Dawe, Piers

Agilent

Comment Type

E

Comment Status

D

Two blank pages

Suggested Remedy

Remove them

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Comment #329

Cl 55 SC 55.1 P 137 L 12

Dawe, Piers

Agilent

Comment Type

ER

Comment Status

D

cabling

Problem with referring to different versions of ISO/IEC 11801. We refer to them by date, while IEC may use edition numbers. ISO/IEC 11801 Edition 2 and ISO/IEC 11801 Edition 2.1 aren't in 1.4 references

Suggested Remedy

Sort out. Suggest include the edition numbers in 1.4 but use the dates in 55 if possible, as elsewhere in 802.3.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Will use publication dates when available. Till then we will use edition numbers.

Comment #330

Cl 55 SC 55.1.1 P 137 L 42

Dawe, Piers

Agilent

Comment Type

ER

Comment Status

D

Problem with referring to different versions of ISO/IEC 11801. We refer to them by date, while IEC may use edition numbers. ISO/IEC 11801 Edition 2 and ISO/IEC 11801 Edition 2.1 aren't in 1.4 references

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Comment #331

Cl 55 SC 55.1.1 P 137 L 42

Dawe, Piers

Agilent

Comment Type

T

Comment Status

D

Not a feasible objective!

Suggested Remedy

Change 'Bit Error Rate' to 'bit error ratio'. Add a full stop at the end of the line while we are here.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Will use publication dates when available. Till then we will use edition numbers.

Comment #332

Cl 55 SC 55.1.3 P 138 L 42

Dawe, Piers

Agilent

Comment Type

ER

Comment Status

D

No indication of what you mean by hybrid: dictionary definition 'a composite of mixed origin' isn't enough information to understand this use of the word.

Suggested Remedy

Explain, amplify, use another term, or add a definition to 1.4.

Proposed Response

PROPOSED REJECT.

The term "Hybrid" is used to refer to a two wire to four wire conversion device and has been used multiple time in IEEE Std 802.3-2002, Section Two - see page 417

Comment #333

Cl 55 SC 55.2.2 P 140 L 27

Dawe, Piers

Agilent

Comment Type

ER

Comment Status

D

problem with referring to different versions of ISO/IEC 11801. We refer to them by date, while IEC may use edition numbers. ISO/IEC 11801 Edition 2 and ISO/IEC 11801 Edition 2.1 aren't in 1.4 references

Suggested Remedy

Sort out. Suggest include the edition numbers in 1.4 but use the dates in 55 if possible, as elsewhere in 802.3.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Will use publication dates when available. Till then we will use edition numbers.

Comment Type

T

Comment Status

D

Gratuitous Capital Syndrome

Suggested Remedy

Change 'Bit Error Rate' to 'bit error ratio' - but see another comment.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Change to "BER"

Comment Type

T

Comment Status

D

Not a feasible objective!

Suggested Remedy

Change 'Bit Error Rate' to 'bit error ratio'. Add a full stop at the end of the line while we are here.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Will use publication dates when available. Till then we will use edition numbers.

Comment Type

T

Comment Status

D

Gratuitous Capital Syndrome

Suggested Remedy

Change 'Bit Error Rate' to 'bit error ratio' - but see another comment.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Change to "BER"

Comment Type

T

Comment Status

D

Not a feasible objective!

Suggested Remedy

Change 'Bit Error Rate' to 'bit error ratio'. Add a full stop at the end of the line while we are here.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Will use publication dates when available. Till then we will use edition numbers.

Comment Type

T

Comment Status

D

Gratuitous Capital Syndrome

Suggested Remedy

Change 'Bit Error Rate' to 'bit error ratio' - but see another comment.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Change to "BER"
If PMA_UNITDATA.indicate (rx_symb_vector) is the function PMA_UNITDATA.indicate of the variable rx_symb_vector, there wouldn't be a space before the '('.

**Suggested Remedy**

Either explain what parts of speech these things are, or remove this and similar spaces.

**Proposed Response**

**PROPOSED ACCEPT.**

---

Two blank pages

**Suggested Remedy**

Remove them

**Proposed Response**

**PROPOSED ACCEPT.**

This is an artifact of editing and will be cleaned up in the end.

---

**Comment Type** E  
**Comment Status** D

**Proposed Response**

**PROPOSED ACCEPT**

---

**Comment Type** E  
**Comment Status** D

**Proposed Response**

**PROPOSED ACCEPT IN PRINCIPLE.**

---

**Comment Type** E  
**Comment Status** D

**Proposed Response**

**PROPOSED ACCEPT IN PRINCIPLE.**

---

**Comment Type** E  
**Comment Status** D

**Proposed Response**

**PROPOSED ACCEPT**

---

**Comment Type** E  
**Comment Status** D

**Proposed Response**

**PROPOSED ACCEPT.**
Comment #340

Cl 55 SC 55.6.1.1 P195 L29 Comment #340
Dawe, Piers Agilent

Comment Type E Comment Status D CaPiTaLiZaTiOn

Gratuitous capitals

SuggestedRemedy
Change 'Registers' to 'registers', at foot of table change 'Read Only' to 'Read only' or 'read only', and so on.

Proposed Response PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 180.

Comment #341

Cl 55 SC 55.6.2 P199 L13 Comment #341
Dawe, Piers Agilent

Comment Type ER Comment Status D CaPiTaLiZaTiOn

This is the first mention of 'SEED value' (part in capitals). I found 'Seed Bits' in table 55-6, 'MASTER-SLAVE seed bits' in Table 45-124, and 'MASTER-SLAVE seed value bits' in 45.2.7.10.5. I don't believe that capitalisation should carry meaning (too subtle for us readers!), but this variety of phrases for the same thing makes it hard to discern what's going on.

SuggestedRemedy
Remove the gratuitous capitals, decide on a name for these things, and use it consistently throughout.

Proposed Response PROPOSED ACCEPT IN PRINCIPLE.
Will be more consistent throughout clause.

Comment #342

Cl 55 SC 55.6.3 P199 L26 Comment #342
Dawe, Piers Agilent

Comment Type E Comment Status D

This sentence 'The rationale for the hierarchy illustrated in Table 55–7 is straightforward.' is obviously copied from another clause where it made more sense. Here, some of the choices in the table are just arbitrary - not much 'rationale'. All the sentence does now is patronise the reader.

SuggestedRemedy
Remove this sentence.

Proposed Response PROPOSED ACCEPT IN PRINCIPLE.

Comment #343

Cl 55 SC 55.9.3 P215 L10 Comment #343
Dawe, Piers Agilent

Comment Type TR Comment Status D installation

Our normative references need to be specific, version-controlled, available, reasonable and relevant. The variety of codes and regulations that might apply to IT equipment and cable installation through the near 200 countries of the world is none of these. Such local codes may include restrictions on qualifications, years of apprenticeship, gender, religion, membership of political party, pricing, ... We cannot mandate these varied and possibly unsuitable requirements. Recent PMD clauses have omitted this subclause altogether or downgraded it to a recommendation. It remains so obvious that one has to obey the law that we don't need to say that.

SuggestedRemedy
For preference, remove the sentence 'It is a mandatory requirement that sound installation practice, as defined by applicable local codes and regulations, be followed in every instance in which such practice is applicable.', and the associated PICS. Or, if some guidance is necessary, write down specifically what to look out for, and remove the PICS. Or, less desirable, change to 'It is recommended that {proper|sound} installation practice(s), as defined by applicable local codes and regulation(s), be followed in every instance in which such practice(s) are applicable.', and remove the PICS. (Options in last sentence for info, representing the differences between .3an/D2.2 55.9.3 and 58.8.3.)

Proposed Response PROPOSED ACCEPT IN PRINCIPLE.

Change "It is a mandatory requirement" to "It is recommended"
IEEE P802.3an Comments

Cl 55 SC 55.11 P 216 L 1 Comment # 345
Dawe, Piers Agilent

Comment Type E Comment Status D
Usually the subclause on delay constraints comes immediately after the subclause about the service interface

SuggestedRemedy
Consider moving this subclause to a more familiar position

Proposed Response Response Status W
PROPOSED REJECT.

Not clear what position the commenter is recommending.

Cl 28C SC 28C P 51 L 17 Comment # 348
Dawe, Piers Agilent

Comment Type T Comment Status D not done
Is this accurate: 'Devices that have negotiated extended Next Page support will only transmit extended Next Pages.'? 'Only' excludes what? receiving extended Next Pages? transmitting data?

SuggestedRemedy
If the following is what's meant, change to 'Devices that have negotiated extended next page support will transmit extended next pages but not other next pages.'

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 55A SC 55A P 237 L 19 Comment # 346
Dawe, Piers Agilent

Comment Type E Comment Status D
Add the reference to the bibliography

SuggestedRemedy
per comment

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 28 SC 28.2.1.2.3 P 8 L 37 Comment # 347
Dawe, Piers Agilent

Comment Type E Comment Status D
orthogonal to? I think I understand the metaphor, but why not just say it rather than use a metaphor.

SuggestedRemedy
Change to 'not dependent on'

Proposed Response Response Status W
PROPOSED REJECT.

Similar text has previously been used to describe PAUSE.

Cl 45 SC 45.2.1.60 P 91 L 25 Comment # 349
Dawe, Piers Agilent

Comment Type E Comment Status D
Grammar: assignment is singular

SuggestedRemedy
Change 'are' to 'is'.

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 55 SC 55.3.4.2 P 153 L 39 Comment # 350
Dawe, Piers Agilent

Comment Type E Comment Status D
unc' not a word

SuggestedRemedy
Change to 'uncoded'

Proposed Response Response Status W
PROPOSED ACCEPT.
In the sentence 'Hexadecimal numbers are shown in normal hexadecimal.', 'normal' seems to be a matter of personal preference. As far as I know, this notation is C. It's not the notation I learnt as a schoolboy.

Suggested Remedy
Preferably, change to 'Hexadecimal numbers are shown with the least significant digit on the right'; remove the several '0x's from the draft, use a combination of subscript 16 and a footnote to table 55-9 to remove confusion with decimal numbers. Or if that's too much, change this sentence to 'Hexadecimal numbers are shown prepended with '0x', and with the least significant digit on the right (see 1.2.5).

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

Gratuitous color - would trigger unnecessary expense if printed copies were still made, orange and blue are not distinguishable on a black-and-white printer. Orange in diagram doesn't match orange square in key.

Suggested Remedy
Remove the cyan and grey shading. Can you use white, light grey, dark grey and black (with white lettering) for the other shadings?

Proposed Response
PROPOSED ACCEPT.

A single peak-to-peak voltage measurement of the common mode output may not be a sufficient predictor of EMI compliance. Additionally, data has not been presented to motivate the choice of 15mVpp.

Suggested Remedy
A common mode PSD mask (maximum common mode dBm/Hz vs frequency) should be specified along with experimental data validating that a compliant cabling system driven with such a signal can meet CISPR/FCC Class A EMI emissions limits.

Proposed Response
PROPOSED REJECT.

It is beyond the scope of the standard to define a system level EMI emissions test, this has been done in other standards bodies. Sub-clause 55.9.5 already requires a system integrating a 10GBASE-T phy to meet those requirements. See comment 279.

See presentation by tccbb on common-mode voltage.

Related comments: 279, 355, 423, 457, 501
It is unclear what the length objective for 10GBAS-T 55 m, 100 m, or take your pick 55-100 m

SuggestedRemedy
Ethernet in the premises wiring is the most entrenched standard. Reducing the length from 100 m to something like take a number will cause significant damage to the Ethernet as a standard. Ethernet in the premises wiring means 100m and 10GBASE-T group should not reduce the reach.

Proposed Response  
Working group to discuss

Comment Type  TR  Comment Status  D
Comment # 356
Ali, Ghiasi  Broadcom

Comment # 357
Cl 55 SC 55.4.3.1  P 179  L 1

Comment Type  TR  Comment Status  D
powerbackoff

Power backoff scheme is unclear. It appears that the power of the remote TX can vary depending on it's own received power which is the function of the local TX. However the power of the local TX can vary depending on it's own RX power which is a function of the remote TX

SuggestedRemedy
It is not clear how one uses the received power can used to deterministically set power backoff levels

Proposed Response  
PROPOSED ACCEPT IN PRINCIPLE.

Add text that states that the received signal power at MDI should be the estimate of received power from remote TX (after removing local TX power).

Comment # 358
Cl 28 SC 28.3.1  P 23  L 23

Comment Type  TR  Comment Status  D
autoneg

Please clarify "...after a successful master/slave resolution...". While you are at it, correct the spelling as well.

From the paragraph: "CHECK state for devices operating at 10/100/1,000 Mb/s. The Link_fail_inhibit_timer shall expire 2000–2250 ms after entering the FLP LINK GOOD CHECK state after a successful master/slave resolution for devices operating at 10,000 Mb/s"

SuggestedRemedy
Please refer to the state transition or timer event, instead of using the phase above.

Proposed Response  
PROPOSED ACCEPT IN PRINCIPLE.

Comment # 359
Cl 28 SC 28.3.1  P 23  L 23

Comment Type  TR  Comment Status  D

The specification makes little sense.. or I am missing something. If there is no interoperability issue, it ought to be lower bound of old and upper bound of new, i.e. 5 mS – 7.25 mS. If there is interoperability issue, then this seems unduly complex. Are you saying that if XNP is enabled, I need to go change my timer, and if XNP is disabled or enabled but not used, I need to change timer? Or is it if XNP capability is present (regardless of AN state), I need to use the new timer...

From the Draft: "Timer for the minimum time between two consecutive FLP Bursts. The nlp_test_min_timer shall expire 5–7 ms after being started or restarted. for devices that do no support extended Next Pages, and shall expire 6.75–7.25 ms after being started or restarted for devices that do support extended Next Pages."

SuggestedRemedy
Multiple issues on this comment:
1. Request for one range, not two, if no interoperability issue
2. Clarify the text (editorial), so XNP AN state refers to the correct timer, if more than one exists
3. If interoperability issue(s) effected this clause change, then let me know so that I could suggest a remedy, or you might find a better way without me :-).

Proposed Response  
PROPOSED ACCEPT IN PRINCIPLE.

A device that does not support extended next pages does not need to change any of its timer values. A device that does support extended next pages needs to use the new timer values.

Comment # 360
Cl 28 SC 28.3.1  P 23  L 23

Comment Type  TR  Comment Status  D

Is page_size a condition? Or is it more of a status?

From Draft: "page_size
Condition indicating the size of Next Page that the device is prepared to transmit and receive.

SuggestedRemedy
Select a better (and consistent datatype) and use it.

Proposed Response  
PROPOSED ACCEPT IN PRINCIPLE.

Text will be changed to reflect page_size as status.
Comment # 361
Kim, Yong
Broadcom

Comment Type TR
Comment Status D
Length

Objectives list (55.1.1) states "f) Define a single 10Gb/s PHY that would support links of at least 55 m to 100 m on four pair balanced copper cabling as specified in 55.7". This intro (55.1.3) states (or implies) 100 m. Well, which is it? Please make it consistent to the objectives.

From Draft: "The PMA couples messages from the PCS service interface onto the balanced cabling physical medium via the Medium Dependent Interface (MDI) and provides the link management and PHY Control functions. The PMA provides full duplex communications at 800 Msymbols/s over four pairs of balanced cabling up to 100 m in length."

SuggestedRemedy

Change length designation on line 52 page 141 to be consistent with objective f) on page 137. For example, replace "four pairs of balanced cabling up to 100m in length." with "four pairs of balanced cabling of at least 55m in length".

Proposed Response Working group to discuss

Comment # 362
Kim, Yong
Broadcom

Comment Type TR
Comment Status D
Length

May be a naive concern, but nevertheless a concern. The two paragraphs in 55.7.2 below indicates to me that we do not have realistic 10GBase-T segment model (or installed Class E and F cabling data) to evaluate the specification (or implementation). Also, the note says IF available, then WILL reference, and MAY replace the reference in the draft. How could we vote on this?

"The link segment transmission parameters of insertion loss and ELFEXT loss specified are ISO/IEC 11801 Class E specifications extended by extrapolating the formulas to a frequency up to 500 MHz with appropriate adjustments for length when applicable. The link segment transmission parameters of NEXT loss, MDNEXT loss and Return Loss specified are ISO/IEC 11801 Class E specifications extended beyond 250 MHz by utilizing the equations referenced in TIA/EIA TSB-155 D1.3. Editor's note: ISO/IEC TR-24750: Assessment of installed Class E and Class F cabling beyond their maximum specified frequencies, should be available before 802.3an is approved. In which case, 802.3an will reference both and may replace the above reference to TIA/EIA TSB-155."

SuggestedRemedy

Please provide reasonable evidence of agreement among the technical experts that the adopted extrapolation plus Table 55-8 provide a segment requirement that allows interoperable specification. Between the clause text and the note, I am not getting that impression.

Please re-draft the note, since the note is dictating future changes to the draft in auto-pilot (unless you meant it).

Proposed Response PROPOSED REJECT.

The 10GBASE-T task group has validated the implementation with "realistic" measurements and models for both Class E and Class F. In the formulation of other Ethernet standards we have referenced standards in development. This Comment does not include suggested remedy.
### IEEE P802.3an Comments

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<th>CI 55</th>
<th>SC 55.5.4.3</th>
<th>P 192</th>
<th>L 20</th>
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<tr>
<td>Walter Hurwitz</td>
<td>Broadcom</td>
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</tr>
</tbody>
</table>

**Comment Type**: TR  **Comment Status**: D  **pmaelec - cmnr**

The common mode noise rejection test is not clear

**Suggested Remedy**

Specify where the common mode voltage is to be measured. Is the noise signal a single tone swept frequency of wideband noise? Clearly specify if a 10GBASE-T PHY is required to pass the test referenced in 40.6.1.3.3 or note that it is only a recommendation. Alternatively, specify that the internationally recognized test procedures and levels for noise immunity shall be used by referencing EN61000-4-6 and EN61000-4-3 for the test method and CISPR 24 (or EN55024) for required legal levels.

**Proposed Response**  **Response Status**: W

PROPOSED ACCEPT IN PRINCIPLE.

**Relevant comments**: 274, 354, 363, 421, 500, 702

See response to comment 354

<table>
<thead>
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<th>P 216</th>
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<td>Barrass, Hugh</td>
<td>Cisco Systems</td>
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</table>

**Comment Type**: T  **Comment Status**: D  **delay**

Editor's note on line 26 records that the delay will vary depending on the relative arrival time of the SFD compared to the LDPC block position.

This must be remedied by making a definitive and observable requirement.

**Suggested Remedy**

Change table 55-10

Add a footnote attached to column heading "Max (bit times)"

"The delay between the measurement points shall not exceed the maximum for any frame transferred. In order to verify this a long sequence of random length frames may be used to ensure that SFD events occur in all positions relative to the PCS encoder and block boundaries."

**Proposed Response**  **Response Status**: W

PROPOSED ACCEPT IN PRINCIPLE.

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<th>SC 55.3.8</th>
<th>P 161</th>
<th>L 26</th>
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<td>Cisco Systems</td>
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</table>

**Comment Type**: E  **Comment Status**: D  **pmaelec - cmnr**

It is a bad idea to put the references for the matrix generator in this position and in Annex 55A

Following the example of other complex annexes (such as 61B), it is better to make a normative annex with all of the matrix generator information.

Note that this comment must be taken in conjunction with the following comment to insert the information in Annex 55A.

**Suggested Remedy**

Replace the following:

"The file http://www.ieee802.org/3/an/private/gen_802.3an.txt contains a representation of G. gen_802.3an.txt contains 1723 rows, one for each row of G. Each row has numbers ranging from 0 to 2047 separated by spaces. Each number represents the column index of the "1" entries in the specific row. All other entries of G are "0". G can also be constructed from P, which is available in PDF format online at https://www.ieee802.org/3/an/private/???.pdf. Annex 55A is an informative annex that describes how G was obtained from a sparse parity check matrix."

With:

"The definition and origin of G and P are described in Annex 55A."

Remove the editor's note on line 34

**Proposed Response**  **Response Status**: W

PROPOSED ACCEPT.
<table>
<thead>
<tr>
<th>Cl</th>
<th>55A</th>
<th>SC</th>
<th>P237</th>
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<td>Note that this comment must be taken in conjunction with the preceding comment to remove the information from Clause 55.3.</td>
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<td>Add the following text at the beginning of the paragraph:</td>
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<td>&quot;The file <a href="http://www.ieee802.org/3/an/private/gen_802.3an.txt">http://www.ieee802.org/3/an/private/gen_802.3an.txt</a> contains a representation of G. gen_802.3an.txt contains 1723 rows, one for each row of G. Each row has numbers ranging from 0 to 2047 separated by spaces. Each number represents the column index of the &quot;1&quot; entries in the specific row. All other entries of G are &quot;0&quot;. G can also be constructed from P, which is available in PDF format online at <a href="https://www.ieee802.org/3/an/private/??????.pdf">https://www.ieee802.org/3/an/private/??????.pdf</a>. Annex 55A is an informative annex that describes how G was obtained from a sparse parity check matrix.&quot;</td>
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<td>The reference should be in Annex A.</td>
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<td>&quot;A classic reference on LDPC codes is &quot;Low-Density Parity-Check codes,&quot; by Robert G. Gallager - The MIT Press (September 15, 1963).&quot;</td>
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<td>&quot;For further information on LDPC codes, see reference [Bnn].&quot;</td>
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<td>The latency allowed by this clause would make the performance of a 10GBASE-T link unacceptable. The parameter specified would allow the GMII-GMII latency to exceed 10μS.</td>
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<td>The time to transfer a 64byte frame using Gigabit Ethernet is only 512nS; a Gigabit link will achieve higher performance than a lightly loaded 10GBase-T link for all but the longest frames. It should be a goal of 10GBase-T to exceed the performance of 1000BASE-T in as many situations as possible.</td>
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<td>It is understood that the block size chosen for 10GBase-T puts a theoretical limit on latency ~400nS and that practical considerations will need multiple block times to achieve reasonable power and gate count tradeoffs. However, a very loose requirement for latency will create massive interoperability problems as performance will drop far below expectations for certain combinations of PHY implementation.</td>
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<td>It is proposed that 8 block times would be a reasonable limit for PHY latency. This is equivalent to the frame transmission time for a 320 byte frame at 1Gbps.</td>
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<td>Change &quot;100,352&quot; to &quot;25,600&quot;</td>
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<td>Delay related comments are numbered: 236, 242, 369</td>
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It is not sufficient to specify the latency from XGMII to XGMII. Clearly, any variation in latency for a transmitter will eat into the budget for the connected receiver. If a receiver is qualified using a low latency transmitter and transmitter is qualified using a low latency receiver then the resulting link may not meet the requirement.

Note that this comment assumes the acceptance of the comment requiring a shorter total latency. The latency figures in the remedy may be adjusted to match the currently agreed total latency.

Suggested Remedy

Add the word "(informative)" to the first column of the second row of Table 55-10.

Add a row to Table 55-10

XGMII ==> MDI ; SFD coming in on XGMII and exiting the MDI (as a start coded in a 64/65 codeblock) ; 3,100 ; SFD ; S code

Add a row to Table 55-10

MDI ==> XGMII ; Start coded 64/65 codeblock coming in on MDI and exiting the XGMII ; 22,400 ; S code ; SFD

Proposed Response

Working group to discuss
The section for PCS receive function is incomplete.

Suggested Remedy
Rewrite the main section of this subclause as follows:

The PCS Receive function shall conform to the PCS Receive state diagram in Figure 55-16 including compliance with the associated state variables as specified in 55.3.17.

The PCS Receive function accepts received code-groups provided by the PMA Receive function via the parameter rx_symb_vector. The PCS receiver uses knowledge of the encoding rules to correctly align the 65BLDPC frames. The received 65BLDPC frames are decoded with error correction; the CRC 8 and framing is checked; the 64B/65B ordered sets are converted to 64 bit data blocks to obtain the signals RXD<31:0> and RXC<3:0> for transmission to the XGMII. Two XGMII data transfers are decoded from each block. Where the XGMII and PMA sublayer data rates are not synchronized to a 25:64 ratio, the receive process will insert idles, delete idles, or delete sequence ordered sets to adapt between rates during training mode, PCS Receive checks the received framing and signals the reliable acquisition of the descrambler state by setting the parameter scr_status to OK.

Proposed Response 
PROPOSED ACCEPT IN PRINCIPLE.

The PCS receive specification lacks any definitive treatment of the CRC decode function.

Note also that the CRC8 function must be independent of the LDPC convergence for the MTTFPA analysis to be valid, therefore the use of the CRC8 parity bits for LDPC convergence must be prohibited.

Suggested Remedy
Add a subclause under PCS receive function. The new subclause should be between Frame and Block synchronization (was 55.3.13) and PCS Descrambler (was 55.3.14).

CRC8 receive function
The PCS receive function shall check the integrity of the CRC8 parity bits defined in 55.3.7. If the parity check fails, the receiver shall assert RX_ER during the transfer of all the codeblocks contained in the 65BLDPC frame across the XGMII. On receipt of a failed CRC8 parity check, the PCS receiver shall increment the counter if_fail_CRC8 (see 55.3.17.2.5).

The PCS receive function may decode and check the CRC8 parity bits simultaneously to resolving the LDPC error correction function. The PCS receiver shall not use the CRC8 parity check code to assist the LDPC convergence.

Also, add a corresponding counter in 55.3.17.2.5

If_fail_CRC8
Count of the number of LDPC frames failing CRC8 parity check within the current 64 LDPC frame window.

Proposed Response 
PROPOSED ACCEPT IN PRINCIPLE.
Additional test patterns are required:

It will be prohibitively difficult to test the quality of LDPC implementations in a receiver as it will be exceedingly difficult to ensure the test channel genuinely produces the worst signal degradation and noise ingress to fully exercise the error correction function in a deterministic manner. Therefore we should define an error inserting test pattern generator that can exercise the LDPC decode on a good quality and quiet link.

Also, we need a mechanism of forcing a parity error in the CRC8 so that the function can be tested in the receiver.

Suggested Remedy

At the end of clause 55.3.12, add:

The transmit function shall have the ability to inject pseudo random bit errors into the coded bits of a 65BLDPC frame. In order to test the receiver LDPC error correction function, a transmitter and receiver pair shall be connected by a short, high quality link. The SNR margin at the receiver shall be greater than 10dB. The transmitter injects a pseudo random error pattern into the coded bits of the egress 65BLDPC frames equivalent to a BER of 1/100. The receiver shall correct the errors to achieve a resultant BER less than 10^-12. (TBD: does the injected error pattern need to be distributed across the DSQ128 coding?)

The transmit function shall have the ability to inject random false parity codes in the CRC8 function. On a short, high quality link, with a receive SNR margin greater than 10dB, the receiver shall detect but not correct the injected CRC errors (invalidating the XGMII data as defined in 55.3.15).

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

A further improvement to test the LDPC would be to inject channel noise patterns on the DSQ
Comment Type: T  Comment Status: D  cabling
Link segment testing appears to be mandatory, according to the way this sentence is constructed. I don’t think that this is the intention however we did agree to recommend testing (George Eisler comment as I recall). Also, the impedance requires a tolerance.

SuggestedRemedy
Change the sentence to read “Link segment testing is recommended and shall be conducted using source and load impedances of 100 ohm + 1%.”

Proposed Response: PROPOSED ACCEPT IN PRINCIPLE.

Comment Type: E  Comment Status: D  cabling
Reference is made to “attenuation” rather than “insertion loss”.

SuggestedRemedy
Change “attenuation” to “insertion loss”.

Proposed Response: PROPOSED ACCEPT.

Comment Type: E  Comment Status: D
The link code word can be 16 or 48 bits in both the RX and TX paths based on the new XNP.

SuggestedRemedy
Expand the range to 48 bits or indicate the 2 options.

Proposed Response: PROPOSED ACCEPT IN PRINCIPLE.

A note will be added below the figure.
Comment Type | TR | Comment Status | D | linecode
---|---|---|---|---

It is not feasible to implement a robust receiver for 100m Cat-6E (Model 3) line length operation using the 128 Double Square line coding scheme documented in Draft 2.0, for two main reasons:

1. Even assuming all noise sources are perfectly Gaussian, the input-referred rms noise budget for the receiver is 650 microvolts, using an optimum MMSE implementation (ref. vareljian_1_1104.pdf). This is the noise budget that must be allocated to overcome
   a) residual Echo
   b) residual NEXT
   c) residual FEXT
   d) A/D quantization noise
   e) sampling jitter noise
   f) circuit thermal noise
   g) finite precision implementation noise, etc.

   This total noise budget is inadequate and it is, in fact, 7.0dB lower than just the thermal noise budget used in the 802.3ap task force models (altmann_01_1104.pdf, slide 5).

2. Three out of seven bits in the 128DSQ line code are not protected by the LDPC code. These unprotected bits are vulnerable to isolated noise events on the order of a few millivolts (ref. rao_1_1104.pdf, slide 23).

Suggested Remedy

At least two line code alternatives were presented in rao_2_1104.pdf to address the fundamental inadequacies of the 128-DSQ line code used in D2.0. Either PAM16-P or PAM8-P would be an usable choice for 10GBASE-T.

Proposed Response | Response Status | W
---|---|---

PROPOSED REJECT.

The task force has previously reviewed and rejected these proposals.

The input referred noise budget for these is not substantially higher and the Gaussian noise margin is lower.

Suggested Remedy

Delete the THP Bypass mode and free up the address space for useful purposes.

Proposed Response | Response Status | W
---|---|---

PROPOSED REJECT.

The task force has agreed that the bypass THP is desirable for very short channels.

This comment identical to one that was resubmitted from D1.4 by the editor (14004)

Comment Type | TR | Comment Status | D | linecode
---|---|---|---|---

The THP as currently specified will result in major interoperability problems that will jeopardize the success of 10GBaseT.

- First, two alternative precoders structures IIR or FIR are supported by the standard thus requiring for each PHY interoperability with a remote PHY that implements IIR or FIR.
- The proposed coefficients for IIR include a zero at Fs/2 to support TIS. But the FIR set does not include that zero. This will lead to interoperability issues for PHYs that implement TIS.
- It has been shown by a number of contributors that fixing the precoder response results in a significant performance loss for some channel configurations. It also benefits some specific receiver configurations, which is unfair.

Suggested Remedy

Remove the IIR precoders from the standard.

Adopt programmable THP during startup using the Info Fields as per kota_1_0305.pdf

The coefficients for the FIR will be exchanged during startup using the Info Fields. The PHY Control state machine will also be changed so that independent settings for THP are allowed at both ends of the link.

Proposed Response | Response Status | W
---|---|---

PROPOSED ACCEPT IN PRINCIPLE.

See comment #473
Robert Brink  
**Comment**

The Phy control in figure 55-18 assumes:

- Fix THP precoders
- Same THP settings for both the local and the remote PHY

Fixing the precoders has serious drawbacks as stated in a previous comment.

As the noise environment can be different at both ends of the link and so can be the PHYs and therefore the receivers using the same settings at both ends can result in significant performance loss.

**Suggested Remedy**

Adopt programmable THP as per kota_1_0035.pdf.

This includes a change in the PHY Control state machine so that independent settings for THP are allowed at both ends of the link.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Juan M. Jover  
**Comment**

I disagree with the appropriateness of the 128 DSQ line code for this problem.

Issues:

a) Total noise budget is too low.

b) Unprotected bits by the LDPC code present problems with noise events as described in Rao_1_1104.pdf, slide 23.

**Suggested Remedy**

Change line code.

**Proposed Response**

PROPOSED REJECT.

Beck, Michael  
**Comment**

10GBase-T should be written in all uppercase.

**Suggested Remedy**

"All 10GBASE-T PHY implementations..."
IEEE P802.3an Comments

Comment #391
Cl 55  SC 55.7.3.2.2  P209  L10
Beck, Michael  Alcatel Bell n.v.
Comment Type  ER  Comment Status  D
This line starts with a period.

SuggestedRemedy
Remove period.

Proposed Response  Response Status  W
PROPOSED ACCEPT.
Same as comment 201

Comment #392
Cl 55  SC 55.3.4.1  P152  L37
Beck, Michael  Alcatel Bell n.v.
Comment Type  ER  Comment Status  D
The Task Force seems to have chosen the name "64B/65B" for the encapsulation mode used by
the 10GBase-T PCS. This name could cause some confusion, because:
-the name "64B/65B" was used in early drafts of the 802.3ah "Ethernet in the First Mile"
standard to designate the PCS now known as "64/65-octet encapsulation";
-a different bitwise coding scheme called "64B/65B" is already defined as part of the GFP-T

SuggestedRemedy
Abandon the naming "64B/65B". As the name "64B/65B" is not used very often in the draft, it
may be possible to paraphrase the occurrences, thus avoiding the need for a new name.

Proposed Response  Response Status  W
PROPOSED ACCEPT IN PRINCIPLE.
Change to 64/65X encapsulation

Comment #393
Cl 55  SC 55.3.16  P164  L47
Christopher DiMinico  MC Communications
Comment Type  E  Comment Status  D
remove space "re initialize"

SuggestedRemedy

Proposed Response  Response Status  W
PROPOSED ACCEPT.

Comment #394
Cl 55  SC 55.5.4.3  P192  L21
Christopher DiMinico  MC Communications
Comment Type  E  Comment Status  D
pmaelec - check
Use symbols (e.g., &amp;#8804;).

SuggestedRemedy
Change: From: The transceiver shall maintain an LDPC frame error rate less than 3.2x10-9,
while being subject to a common mode voltage <= 2 V peak to peak for f ∈ [1, 80] MHz, and
<= 2*80/f V peak to peak for f ∈ (80,500] MHz.

To: The transceiver shall maintain an LDPC frame error rate less than 3.2x10-9, while being
subject to a common mode voltage ≤ 2 V peak to peak for f ∈ [1, 80] MHz, and ≤(2*80/f )
Vpp for (f ∈ (80 < f ≤ 500] MHz.

Proposed Response  Response Status  W
PROPOSED ACCEPT IN PRINCIPLE.
Change text to: The transceiver shall maintain an LDPC frame error rate less than 3.2x10-9, while being
subject to a common mode voltage ≤ 2 V peak to peak for 1 ≤ f ≤ 80 MHz, and ≤(2*80/f )
Vpp for 80 < f ≤ 500 MHz.

Comment #395
Cl 55  SC 55.1.5  P142  L56
Christopher DiMinico  MC Communications
Comment Type  E  Comment Status  D
Capitals for 10GBase-T

SuggestedRemedy
Change: From: 10GBase-T To: 10GBASE-T PHY

Proposed Response  Response Status  W
PROPOSED ACCEPT.
The note is not in context as it precedes the usage of Fs. Avoid introducing a subclause with a note.

Suggested Remedy
Delete Note: Fs equals 800 MHz ± 50ppm. Later in the text, when a specific tolerance on the symbol rate is not specified, it is assumed to be this.

Change: From: When test mode 4 is enabled, the PHY shall transmit, with the THP turned off, transmitted symbols, timed from an Fs clock in the MASTER timing mode, defined by the bits 7.9.12:10 and Table 55–4.

To: When test mode 4 is enabled, the PHY shall transmit, with the THP turned off, transmitted symbols, timed from a transmit clock (as specified in 55.5.3.5) in the MASTER timing mode, defined by the bits 7.9.12:10 and Table 55–4.

Proposed Response Response Status W
PROPOSED ACCEPT.

The symbol transmission rate on each pair of the master PHY shall be Fs which is 800MHz ± 50ppm.

Suggested Remedy
Change: From: The symbol transmission rate on each pair of the master PHY shall be Fs which is 800MHz ± 50ppm.

To: The symbol transmission rate on each pair of the master PHY shall be 800MHz ± 50ppm

Proposed Response Response Status W
PROPOSED ACCEPT.

It is not clear that the use of the extended burst must be limited to situations where extended next page ability has been established.

The use of an extended burst with an incapable link partner might cause unpleasant behavior...

Suggested Remedy
At the end of the current paragraph add the following sentence:
A transmitter shall not use extended FLP bursts until after extended next page ability for the AN LP has been established (see 28.2.1.2.3).

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Also see response to comment 598.
IEEE standards will not use "will". It must be expressed as a mandatory requirement "shall"; an option "may"; or a statement (not a requirement).

I interpret this as a mandatory requirement, but it might also be a statement.

**Suggested Remedy**

Change the sentence to:

"Devices that have negotiated extended Next Page support shall only transmit extended Next Pages."

Alternative resolution (for non normative text):

"Devices that have negotiated extended Next Page support only transmit extended Next Pages."

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

The non-normative text will be used. The other 171 instances of "will" will remain unchanged.

**Comment**

**Cl 28C SC 28C P 51 L 17 Comment # 401**

Barrass, Hugh Cisco Systems

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

IEEE P802.3an Comments

- **Comment**
  - **Cl 55 SC 55.4.2.3 P 176 L 9 Comment # 403**
  - Barrass, Hugh Cisco Systems
  - **Comment Type** T **Comment Status** D
  - **Proposed Response** PROPOSED ACCEPT IN PRINCIPLE.

- **Comment**
  - **Cl 55 SC 55.4.4 P 179 L 50 Comment # 404**
  - Barrass, Hugh Cisco Systems
  - **Comment Type** T **Comment Status** D
  - **Proposed Response** PROPOSED ACCEPT IN PRINCIPLE.

**Comment**

**Cl 28D SC 28D.6 P 54 L 45 Comment # 402**

Barrass, Hugh Cisco Systems

**Comment Type** E **Comment Status** D

IEEE P802.3an Comments

- **Comment**
  - **Cl 55 SC 55.4.4 P 179 L 50 Comment # 404**
  - Barrass, Hugh Cisco Systems
  - **Comment Type** T **Comment Status** D
  - **Proposed Response** PROPOSED ACCEPT IN PRINCIPLE.
IEEE P802.3an Comments

Cl 45   SC 45.2.7.6   P 109   L 7   Comment # 405
McConnell, Mike   KeyEye Communication

Comment Type   E   Comment Status   D
bit 7.16.14 mentioned in text is not included in table 45-120.

SuggestedRemedy
Correct table accordingly

Proposed Response   Response Status   W
PROPOSED ACCEPT.

Cl 45   SC 45.5.10.6   P 127   L 7   Comment # 408
McConnell, Mike   KeyEye Communication

Comment Type   E   Comment Status   D
All references to subclause 45.2.1.71

SuggestedRemedy
change 45.2.1.71 to 45.2.3

Proposed Response   Response Status   W
PROPOSED ACCEPT.

Cl 45   SC 45.5.9.3   P 119   L 8   Comment # 406
McConnell, Mike   KeyEye Communication

Comment Type   E   Comment Status   D
Last sentence read, "The Technology Ability Field (7.16.12:5) is set based on the values.

SuggestedRemedy
Remove "values" are replace with text description or reference to relevant subclause that defines the values.

Proposed Response   Response Status   W
PROPOSED ACCEPT IN PRINCIPLE.

Values referenced to Annex 28B.

Also, XNP bit will added as 7.19.12 and Technology ability field will be changed to 7.19.11:5
see 485

Cl 45   SC 45.2.7.8   P 110   L 30   Comment # 407
McConnell, Mike   KeyEye Communication

Comment Type   E   Comment Status   D
Sentence begins with "On power-up ...

SuggestedRemedy
Change to read, "On power-up or reset ...

Proposed Response   Response Status   W
PROPOSED ACCEPT IN PRINCIPLE.

"On power-up or AN reset ...

Cl 45   SC 45.5.9.3   P 119   L 28   Comment # 409
McConnell, Mike   KeyEye Communication

Comment Type   E   Comment Status   D
Auto Neg missing from table of capabilities

SuggestedRemedy
Add Auto Neg as Optional status with proper subclause

Proposed Response   Response Status   W
PROPOSED ACCEPT.

Cl 45   SC 45.5.10.3   P 123   L 40   Comment # 411
McConnell, Mike   KeyEye Communication

Comment Type   E   Comment Status   D
subclause references are wrong for MM47-MM50

SuggestedRemedy
change 45.2.1.11.1 to correct subclause

Proposed Response   Response Status   W
PROPOSED ACCEPT.
Table 45-125 description columns contain "shall"

SuggestedRemedy
- Remove "shall" from table and add to appropriate subclauses (45.2.7.11.10 & 45.2.7.11.11).
- Also add to PICS

Proposed Response Response Status W
PROPOSED ACCEPT.

The wrong register and register name is referenced (AN LD base page register (7.1))

SuggestedRemedy
- Change reference to 7.16 AN Advertisement Register.

Proposed Response Response Status W
PROPOSED REJECT.

Register 7.16 name AN LD Advertisement doesn't match 45.2.7.6 name

SuggestedRemedy
- Make name is register table 45-117 match register description (45.2.7.6) and subsequent table (45-120) match. Also fix the PICs (AM25)

Proposed Response Response Status W
PROPOSED ACCEPT.

AN Reset should reset this bit.

SuggestedRemedy
- Add text indicating that the bit 7.1.2 shall be cleared upon AN Reset. Add to PICS.

Proposed Response Response Status W
PROPOSED ACCEPT.

"segments are specified"

SuggestedRemedy
- "segments are specified"

Proposed Response Response Status W
PROPOSED ACCEPT.
Load impedances of 100 Ohm add "differential, or odd mode and 50 Ohm common, or even mode on all duplex channels of the link segment at the near end and far end."

This is to more accurately specify the terminations under test conditions.

**Suggested Remedy**

**Proposed Response**

"Comments #417,#504,#377: Two requests for change:1. add a tolerance to 100 Ω and characterize it as differential: The proposed tolerance(s): (+/- 1%) or (+/-10%) or (100 ohm with a tolerance of 20 dB)2. add common mode issue(s) for discussion: (1) Is the Link Segment test a field test or a laboratory test? If it's a field test; we need to be consistent with the source and load specifications of the field test standards. If it's a lab test; we need to be consistent with the source and load specifications of the cabling standards for each specified parameter. (2) Do we need to specify the source and load impedances here (line 35) if all of the specifications below this include a specification for the source and load impedances? (3) Other issues:?

Recommended remedy: delete Page 201 line 34 and 35. "Link segment testing shall be conducted using source and load impedances of 100 Ω."

This requirement is not sufficient to address link testing and given that link testing is addressed in both the cabling standards and the field test standards that we reference it is no necessary.

We already acknowledge that the nominal impedance is 100 Ω by reference to ISO/IEC 11801 Page 201, line 14 and 15.

"55.7.1 Cabling system characteristics
The cabling system used to support 10GBASE-T requires 4 pairs of ISO/IEC 11801 Class E or Class F balanced cabling with a nominal impedance of 100 Ω."

"55.7.2 specifies the cabling parameters for a viable 10GBASE-T link segment. 55.7.3 specified the coupling parameters covering coupling between link segments. 55.7.4 specifies the noise environment. I think the noise environment should come after 55.7.2 so that 55.7.2 and the new 55.7.3 will completely specify the operating channel for a PHY.

What is now 55.7.3 (Coupling parameters) will now become 55.7.4 and should provide detailed justification of the noise environment.

**Suggested Remedy**

Move 'Noise environment' from after 55.7.3 to before 55.7.3. Include in it the net effect of all the noise due the coupling between links.

**Proposed Response**

PROPOSED REJECT.

The 55.7.4 subclause characterizes the total noise environment including 55.7.3. It should follow 55.7.3 and provide total noise budget.
The text:
A 10GBASE-T link segment consisting of at least 55 to 100 meters of Class E or up to 100 meters of Class F which meets the transmission parameters of this subclause will provide a reliable medium.

is unclear to a number of readers. Clarify what medium the 55m refers to and what medium the 100m refers to.

**Suggested Remedy**
Change text to:
A 10GBASE-T link segment consisting of up to 100 meters of balanced 4-pair structured cabling which meet the transmission parameters of this subclause will provide a reliable medium.

Add an informative note saying:
100 meters of CAT 6A or CAT 7 is expected to meet the requirements of 55.7. 100 meters of other structured cabling may not meet the requirements and should be qualified by testing or analysis. Lengths shorter than 100 meters of other structured cabling may meet the requirements for 55.7.

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.
See comment resolution to #251

---

The correct operating voltage and frequency should be defined. Also, there is no international standard that requires this level of performance, and this does not have anything to do with interoperability.

**Suggested Remedy**
Change last paragraph to read:
The common-mode noise can be simulated using the cable clamp test defined in Sec 40.6.1.3.3. A 6 dBm sine wave signal from 80 MHz to 1000 MHz can be used to simulate an external electromagnetic field. Operation of the transceiver during the test is determined by the manufacture.

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

Relevant comments: 274, 354, 363, 421, 500, 702

See response to comment 354

---

The balance will not meet the latest magnetics measurements that are posted on our web.

**Suggested Remedy**
See contribution from tcobb

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

Change to a recommendation.

Change equation to:
\[ 50 \left(1 - 32 \times \frac{(f-100)}{1000}\right) \text{ for } 100 \text{ MHz} \leq f \leq 500 \text{ MHz}\]

This as per the equation on slide 10 of cobb_1_0505.pdf with upper freq reduced from 1000MHz to 500MHz.
<table>
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<td>Comment Type</td>
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<td>Comment Status</td>
<td>D</td>
<td>mdi - common mode output</td>
<td>The common-mode voltage needs only to be specified at frequencies greater than 30 MHz. Also change to dBm to be consistent with other specifications.</td>
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<tr>
<td>Suggested Remedy</td>
<td>Change text after less than to:</td>
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<td>-32.5 dBm for all frequencies greater than 30 MHz.</td>
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<tr>
<td>Comment Type</td>
<td>E</td>
<td>Comment Status</td>
<td>D</td>
<td>cleanup</td>
<td>The list of objectives has inconsistent punctuation (some have periods, other do not).</td>
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<tr>
<td>Suggested Remedy</td>
<td>Please make consistent. Suggest no periods.</td>
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<td>capitalization</td>
<td>Not trying to change objectives here, but &quot;MAC Client service Interface&quot; should be &quot;MAC client service interface&quot;</td>
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<td>clarification</td>
<td>I'd hate for the text &quot;connect one Clause 4 Media Access Control (MAC) layer to the medium&quot; to be construed as avoiding or precluding the 4A MAC. Other PHY clauses use different language. See 58.1.2 for an example.</td>
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<td>clarification</td>
<td>Given the current hypenation, the term &quot;MAS-TER-SLAVE&quot; is a little awkward.</td>
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<td>Change to &quot;MASTER-SLAVE&quot; if possible.</td>
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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  U/unsatisfied  Z/withdrawn  
**SORT ORDER:** comment ID  
**Page 81 of 141**  
**5/18/2005  9:44:46 AM**
IEEE P802.3an Comments

Cl 55  SC 55.1.3  P 138  L 60  Comment # 429
Daines, Kevin  World Wide Packets

Comment Type E  Comment Status D

"MASTER-SLAVE" in the first part of the paragraph suddenly changed to "MASTER/SLAVE".

Suggested Remedy

Change to "MASTER-SLAVE"

Proposed Response  Response Status W
PROPOSED ACCEPT.

Cl 55  SC 55.1.3.2  P 142  L 2  Comment # 430
Daines, Kevin  World Wide Packets

Comment Type ER  Comment Status D

"Each DAC outputs" should be "Each DAC output"

Suggested Remedy

As per comment

Proposed Response  Response Status W
PROPOSED ACCEPT.

Cl 55  SC 55.1.4  P 142  L 26  Comment # 431
Daines, Kevin  World Wide Packets

Comment Type E  Comment Status D

Change "including" to "including:"

Suggested Remedy

As per comment

Proposed Response  Response Status W
PROPOSED ACCEPT.

Cl 55  SC 55.1.5  P 142  L 56  Comment # 432
Daines, Kevin  World Wide Packets

Comment Type ER  Comment Status D

"10GBase-T" should be "10GBASE-T"

Suggested Remedy

As per comment

Proposed Response  Response Status W
PROPOSED ACCEPT.

Cl 55  SC 55.2.2  P 144  L 49  Comment # 433
Daines, Kevin  World Wide Packets

Comment Type ER  Comment Status X

Shouldn't "PMA_TXMODE.indicate(tx_mode)" be "PMA_TXMODE.indication(tx_mode)"

Suggested Remedy

As per comment.

Proposed Response  Response Status W

In addition, change each of the other ".indicate" service primitives to ".indication"

Proposed Response  Response Status W
See #333

Cl 55  SC 55.2.2 Figure 55-4  P 145  L 41  Comment # 434
Daines, Kevin  World Wide Packets

Comment Type ER  Comment Status D

Change figure by replacing ".indicate" with ".indication"

Suggested Remedy

As per comment

Proposed Response  Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

The following can be added:

Tomlinson-Harashima Precoding (THP), is a transmit feedback equalizer that takes the known transmit modulated symbols and equalizes them before transmission. To avoid power increase a modulo is performed within the feedback equalizer.

Cl 55  SC 55.2.6.1  P 147  L 44  Comment # 435
Daines, Kevin  World Wide Packets

Comment Type E  Comment Status D

Hanging indent needs to be fixed.

Suggested Remedy

As per comment

Proposed Response  Response Status W
PROPOSED ACCEPT.
IEEE P802.3an Comments

Comment Type  ER
Comment Status  cleanup

Suggested Remedy
Change figure by replacing "indicate" with "indication"

Proposed Response
As per comment.

Comment Status  X
Response Status  W

---

Section 55.3.16 and its subsections lack conciseness and rigor of specification. Specifically, the periodic initialization with seed values of the PN generator providing the main PN sequence \( \{ \text{Scr}[0] \} \) may be misinterpreted because in Figure 55.13 on page 159 the signals \( \text{Scr}[x] \), \( x=0,1,..32 \), are not clearly associated with signal lines, but are written above the delay elements with selectable inputs. Further, the role of the auxiliary generating (=generator) polynomial \( g(x) \) is not immediately clear. The statement "The associated delays are all large and different ..." is not entirely accurate. The four sequences \( \{ \text{Syn}[1] \} = \{ \text{Scr}[0] \}, \{ \text{Syn}[2] \}, \{ \text{Syn}[3] \} \) are pairwise (i.e., (0,1), (1,2), (2,3)) offset by the same unknown, presumably large delay.

Suggested Remedy
Follow description given in slide "Unambiguous generation of PMA training sequences" offered for presentation by the commenter.

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

---

Comment Type  T
Comment Status  D

Suggested Remedy
Follow description given in slide "Unambiguous generation of PMA training sequences" offered for presentation by the commenter.

Proposed Response
PROPOSED REJECT.

This is a duplicate of comment 439. See comment 439 for response.
### Comment 441
**Comment Type**: T  **Comment Status**: D  **scrambler**

Section 55.3.16 and its subsections lack conciseness and rigor of specification. Specifically, the periodic initialization with seed values of the PN generator providing the main PN sequence \( \{ \text{Scrn}[0] \} \) may be misinterpreted because in Figure 55-13 on page 159 the signals \( \text{Scrn}[x], x=0,1,..,32 \), are not clearly associated with signal lines, but are written above the delay elements with selectable inputs. Further, the role of the auxiliary generating (=generator) polynomial \( g(x) \) is not immediately clear. The statement "The associated delays are all large and different …" is not entirely accurate. The four sequences \( \{ \text{Syn}[1] \} = \{ \text{Scrn}[0] \}, \{ \text{Syn}[2] \} \), \( \{ \text{Syn}[3] \} \) are pairwise (i.e., \( (0,1), (1,2), (2,3) \)) offset by the same unknown, presumably large delay.

**Suggested Remedy**
Follow description given in slide "Unambiguous generation of PMA training sequences" offered for presentation by the commenter.

**Proposed Response**  **Response Status**: W  **PROPOSED REJECT.**

This is a duplicate of comment 439. See comment 439 for response.

---

### Comment 442
**Comment Type**: TR  **Comment Status**: D  **cabling**

Please add an Annex similar to that found in 1000BASE-T (Annex 40A), which addresses cabling design guidelines and Alien Crosstalk.

**Suggested Remedy**
Introduce an Annex such as 40A in 1000BASE-T, could be Annex 55B.

**Proposed Response**  **Response Status**: W  **PROPOSED ACCEPT IN PRINCIPLE.**

---

### Comment 443
**Comment Type**: ER  **Comment Status**: D  **cleanup**

Please remove any color from Figure 55-22.

**Suggested Remedy**
Ensure that the figure is drawn in Frame without color.

**Proposed Response**  **Response Status**: W  **PROPOSED ACCEPT.**

---

### Comment 444
**Comment Type**: E  **Comment Status**: D  **PROPOSED ACCEPT IN PRINCIPLE.**

Please ensure that the document is correctly formatted and that the template is properly applied. For instance, the line numbers are supposed to alternate sides between even and odd pages. It looks like this may be broken in some of the chapters like 55.

**Proposed Response**  **Response Status**: W  **PROPOSED ACCEPT.**

---

### Comment 445
**Comment Type**: E  **Comment Status**: D  **cleanup**

Please delete extra pages like 183 and 184.

**Proposed Response**  **Response Status**: W  **PROPOSED ACCEPT.**

---

### Comment 446
**Comment Type**: ER  **Comment Status**: D  **cleanup**

Please remove any color from Figure 55-23.

**Suggested Remedy**
Ensure that the figure is drawn in Frame without color.

**Proposed Response**  **Response Status**: W  **PROPOSED ACCEPT.**
IEEE P802.3an Comments

Comment #448

Wael William Diab
Cisco Systems

Comment Type: T
Comment Status: D

The Editor's note contains technical information that is relevant to the text. Either this is informative or normative but the way it is captured as an editor's note is confusing. Is the intent that this would be deleted at publication?

Suggested Remedy

If the intent of the alien noise sources model description is to be removed at publication please state that. Otherwise, please incorporate the comment into the text as normative or informative, whichever is appropriate.

Proposed Response
Response Status: W

PROPOSED ACCEPT IN PRINCIPLE.

Text of note will be incorporated into the text.

Comment #449

Wael William Diab
Cisco Systems

Comment Type: E
Comment Status: D

cleanup

Please delete extra pages like 194.

Suggested Remedy

delete extra pages like 194.

Proposed Response
Response Status: W

PROPOSED ACCEPT.

Comment #450

Healey, Adam
Agere Systems

Comment Type: TR
Comment Status: D

The THP as currently specified will result in major interoperability problems that will jeopardize the success of 10GBaseT.

- First, two alternative precoders structures IIR or FIR are supported by the standard thus requiring for each PHY interoperability with a remote PHY that implements IIR or FIR.

- The proposed coefficients for IIR include a zero at Fs/2 to support TIS. But the FIR set does not include that zero. This will lead to interoperability issues for PHYs that implement TIS.

- It has been shown by a number of contributors that fixing the precoder response results in a significant performance loss for some channel configurations. It also benefits some specific receiver configurations, which is unfair.

Suggested Remedy

Remove the IIR precoders from the standard.

Adopt programmable THP during startup using the Info Fields as per kota_1_0305.pdf

The coefficients for the FIR will be exchanged during startup using the Info Fields. The PHY Control state machine will also be changed so that independent settings for THP are allowed at both ends of the link.

Proposed Response
Response Status: W

PROPOSED ACCEPT IN PRINCIPLE.

See comment #473

Comment #451

Healey, Adam
Agere Systems

Comment Type: E
Comment Status: D

It looks like this would be deleted at publication. Also it would be more helpful to reference a presentation rather than a specific company name.

Suggested Remedy

Please state that the editor's note will be removed at publication. Please reference a presentation or information if this is to be carried forward in D2.1

Proposed Response
Response Status: W

PROPOSED ACCEPT IN PRINCIPLE.

Remove note

Comment #452

Healey, Adam
Agere Systems

Comment Type: TR
Comment Status: D

The THP as currently specified will result in major interoperability problems that will jeopardize the success of 10GBaseT.

- First, two alternative precoders structures IIR or FIR are supported by the standard thus requiring for each PHY interoperability with a remote PHY that implements IIR or FIR.

- The proposed coefficients for IIR include a zero at Fs/2 to support TIS. But the FIR set does not include that zero. This will lead to interoperability issues for PHYs that implement TIS.

- It has been shown by a number of contributors that fixing the precoder response results in a significant performance loss for some channel configurations. It also benefits some specific receiver configurations, which is unfair.

Suggested Remedy

Remove the IIR precoders from the standard.

Adopt programmable THP during startup using the Info Fields as per kota_1_0305.pdf

The coefficients for the FIR will be exchanged during startup using the Info Fields. The PHY Control state machine will also be changed so that independent settings for THP are allowed at both ends of the link.

Proposed Response
Response Status: W

PROPOSED ACCEPT IN PRINCIPLE.

See comment #473

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   U/unsatisfied  Z/withdrawn
SORT ORDER: comment ID

Page 85 of 141 5/18/2005 9:44:46 AM
Comment Type: TR

Comment Status: D

The Phy Control in figure 55-18 assumes:

- Fix THP precoders
- Same THP settings for both the local and the remote PHY

Fixing the precoders has serious drawback as stated in a separate comment.

As the noise environment can be different at both ends of the link and so can be the PHYs and therefore the receivers using the same settings at both ends can result in significant performance loss.

**Suggested Remedy**

Adopt programmable THP as per kota_1_0305.pdf

This includes a change in the PHY Control state machine so that independent settings for THP are allowed at both ends of the link.

**Proposed Response**

**Response Status:** W

PROPOSED ACCEPT IN PRINCIPLE.

See comment #473
IEEE P802.3an Comments

**Cl 55 SC 55.8.3.2 P 212 L 44**  
Comment # 456  
Cohen, Larry  
Independent  

**Comment Type T**  
**Comment Status D**  
**mdi - impedance balance**

The impedance balance test circuit shown in Figure 55-31 is not practical to the specified bandwidth of 500 MHz. Note the component impedance, which includes the fabrication parasitics as well as the nominal resistance, must be matched to the necessary tolerance. Also the given test circuit provides 96 Ohms instead of 100 Ohms differential termination.

**Suggested Remedy**

Use a balun based test circuit. Example off-the-shelf test balun BH Electronics 040-0092 provides a minimum of 50 dB balance to 650 MHz.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Neither resistors or baluns are sufficient to make accurate measurements to higher frequencies. Change measurement method to a more appropriate test method. Define a test using a four port Network Analyzer capable of measuring mixed mode S-parameters.

---

**Cl 55 SC 55.7 P 208 L 17**  
Comment # 458  
Mei, Richard  
SYSTIMAX Solutions  

**Comment Type T**  
**Comment Status X**  
cabling

PSAELFEXT is calculated based on IL and PSAFEXT. For a 100-meter channel, PSAFEXT value is close to the noise floor at high frequency. From the PHY point of view, it is negligible

**Suggested Remedy**

Please find the contribution rmei_0505.pdf

**Proposed Response**

Response Status W

For discussion by task force

---

**Cl 55 SC 55.8.3.3 P 213 L 27**  
Comment # 457  
Cohen, Larry  
Independent  

**Comment Type T**  
**Comment Status D**  
**mdi - common mode output**

The common-mode output signal measured on a single pair may have a partial return path through phantom circuit coupling and hence is not the true common-mode output applicable to potential radiated emission. Emission limits are frequency dependent so a single wideband peak-to-peak specification limit is not applicable to emissions compliance. Finally, the common-mode output voltage test circuit shown in Figure 55-32 is not practical to the specified bandwidth. Note the component impedance, which includes the fabrication parasitics as well as the nominal resistance value, must be matched to the necessary tolerance.

**Suggested Remedy**

An antenna current measurement performed with a clamp-on current probe over the entire cable (all four pairs at once) would provide the true common-mode output. Change the single pair common-mode voltage measurement to an antenna current (current probe) measurement. Change the peak-to-peak specification to a frequency dependent limit mask whereby the current is measured over a specific bandwidth (e.g. 100 kHz.).

However, if the task force chooses to remain with a single-pair common-mode voltage measurement, replace the test circuit in Figure 55-32 with a balun based test circuit. Example off-the-shelf test balun BH Electronics 040-0092 provides a minimum of 50 dB balance to 650 MHz.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 279

Related comments: 279, 355, 423, 457, 501

---

**Cl 28 SC 28.5.4.2 P 34 L 30**  
Comment # 459  
McClellan, Brett  
Solarflare  

**Comment Type T**  
**Comment Status D**  
**not done**

According to 28.5.4.6 items 20 and 21, Parallel Detection Faults are mandatory only for an MII interface. Furthermore, 10GBASE-T does not require (or even allow) the reporting of a parallel detection fault. See Clause 45.2 and Table 28-8 (both indicate no means of reporting parallel detection faults).

The only instance of link_status_[NLP] is in parallel detection part of the arbitration state diagram (LINK STATUS CHECK of Figure 28-17). Since parallel detection is only mandatory if an MII interface is present, then the NLP Receive Link Integrity Test should also be mandatory only when an MII interface is present. (Removing the parallel detection functionality from the arbitration state diagram removes all references to link_status_[NLP]).

**Suggested Remedy**

Modify 28.5.4.2 Item 4, NLP Receive Link Integrity Test, from a Status of M to a Status of MII:M.

**Proposed Response**

Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
IEEE P802.3an Comments

Cl 45 SC 45.2.7 P 113 L 45 Comment # 460
McClenan, Brett Solarflare

Comment Type E Comment Status D FD45
Reference to the Page received bit is incorrect. This refers to the Clause 22 bit instead of the Clause 45 bit.

Suggested Remedy
Change the Page received bit (6.1) to (7.1.6).

Proposed Response Response Status W
PROPOSED REJECT.

10GBASE-T only supports Full Duplex. Delete bit 7.32.12, 7.33.11 and subclauses 45.2.7.10. and 45.2.7.11.5.

see # 237

Cl 45 SC 45.2.7.10.4 P 113 L 3 Comment # 461
McClenan, Brett Solarflare

Comment Type E Comment Status D FD45
The wording in this paragraph is not worded to indicate that this is a control bit. The paragraph reads as if this is a status bit only.

Suggested Remedy
Re-word 45.2.7.10.4 to indicate that this bit controls whether or not the PHY advertises during auto-negotiation whether it is 10BASE-T full-duplex capable (and not simply reporting this ability to the host).
Suggested wording: “Bit 7.32.12 is to be used to select whether or not auto-negotiation will advertise the ability to operate as a 10GBASE-T full-duplex PHY…”

Proposed Response Response Status W
PROPOSED REJECT.

10GBASE-T only supports Full Duplex. Delete bit 7.32.12, 7.33.11 and subclauses 45.2.7.10. and 45.2.7.11.5.

see # 237

Cl 45 SC 45.2.7.10.10 P 112 L 29 Comment # 462
McClenan, Brett Solarflare

Comment Type T Comment Status D
The seed value in 1000BASE-T was not settable by the host, and there is no description or allowance for it to be settable by the host in 10GBASE-T. However, Table 45-124 has a R/W register for the seed value.

Suggested Remedy
Change the R/W status to RO for 7.32.10:0. Suggest moving these bits to a status register instead of in a control register. Clarify if this is the local device seed that was generated.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Do we need to report the seed value at all and if so it should be RO in register 7.34.15:6.

Cl 45 SC 45.2.1.62 P 96 L 33 Comment # 463
McClellan, Brett Solarflare

Comment Type E
Typo: 1.132.9.13 should be 1.132.13

Suggested Remedy
Change text to:
1.132.13

Proposed Response Response Status W
PROPOSED ACCEPT.

Coordinate with editor for 55.5.2

Cl 55 SC 55.5.2 P 186 L 6 Comment # 564
McClellan, Brett Solarflare

Comment Type E Comment Status D
Type: 1.132.9.13 should be 1.132.13

Suggested Remedy
Change text to:
1.132.13

Proposed Response Response Status W
PROPOSED ACCEPT.
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<tr>
<th>Comment #</th>
<th>Comment Type</th>
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<th>Suggested Remedy</th>
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<td>D</td>
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<tr>
<td>466</td>
<td>E</td>
<td>D</td>
<td>&quot;self-synchronizer state&quot; should be &quot;self-synchronizing descrambler state&quot;</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
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<tr>
<td>467</td>
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<td>D</td>
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<td>PROPOSED ACCEPT.</td>
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<td>469</td>
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<td>D</td>
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</tbody>
</table>
Cl 55 SC 55.4.6 P 181 L 1 Comment # 470

McClellan, Brett Solarflare

Comment Type T Comment Status D phy control

In the PMA Training Init M & S states, both the master and slave are waiting for a transition announcement from the other device before going to the PMA Training Update M & S states. Furthermore, "transition_count" has no defined min/max values. In the worst case, one device can announce a transition change with a counter value of 0.

I propose that the master initiates the transition count with "trans_to_Training_Update" flag and a minimum counter value of $2^9$ (10ms) and maximum of $2^{12} - 1$, and that the slave responds prior to the counter reaching $2^64$ (1ms) with the same flag and a count value matching the master. Then both PHY's will transition simultaneously to PMA Training Update.

Suggested Remedy

Add text to the "transition_count" definition on page 180.

"The master initiates the transition count with "trans_to_Training_Update" flag and a minimum counter value of $2^9$ (10ms) and maximum of $2^{12} - 1$. The slave responds prior to the counter reaching $2^64$ (1ms) with the same flag and a count value matching the master. Then both PHY's will transition simultaneously to PMA Training Update.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

With $2^64$ replaced with $2^6$

Cl 55 SC 55.4.6.1 P 181 L 25 Comment # 471

McClellan, Brett Solarflare

Comment Type T Comment Status D phy control

According to the current state machine in "PMA Training Init S", the master may end up transmitting with PBO = -6 for a long line, but the slave is allowed to respond with any PBO setting (including PBO=-14). This would require the master to train and reliably decode the Info Fields from the slave in the presence of an 8dB larger Echo and NEXT vs the far end signal. There needs to be a limitation on the PBO setting used by the slave at this point.

I propose that the slave respond with the exact same PBO used by the master (PBO_m).

The master and slave may both request an adjustment to the PBO settings in the transition to "PMA Training Update".

Additionally, at this same point the slave may choose to respond to PBO setting from the master that does not have sufficient margin for both the master and slave to reliably train and decode the Info Fields.

Suggested Remedy

Change text in "PMA Training Init S" to:

"PBO_s <= PBO_m"

Add an informative note that the slave should respond to a PBO setting from the master that provides sufficient margin for reliable decoding Info Field for both the master and slave.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Cl 55 SC 55.4.2.4 P 176 L 31 Comment # 472

McClellan, Brett Solarflare

Comment Type T Comment Status D info field

In the current Info Field definition there is no defined way to denote that the current values for "Next transmitter setting" and "Requested remote transmitter setting" are not yet valid.

Suggested Remedy

Change the unused bits (bit 7) in the those bytes to denote a "Valid" setting.

Proposed Response Response Status W

PROPOSED ACCEPT.

TYPE: TR/technical required  ER/editorial required  GR/general required  T/technical  E/editorial  G/general
COMMENT STATUS: D/dispatched  A/accepted  R/rejected  RESPONSE STATUS: O/open  W/written  C/closed  U/unsatisfied  Z/withdrawn
SORT ORDER: comment ID
Page 90 of 141  5/18/2005  9:44:46 AM
Previous contributions have shown that programmable THP coefficients provide SNR improvements over the fixed THP sets. We are proposing mandatory support for a programmable 16-tap THP. This will require an exchange of 16 coefficients per cable pair with up to 8-bits per coefficient. See presentation.

Suggested Remedy
Change text to reflect the programmable THP proposal.

Proposed Response
PROPOSED ACCEPT.
Task force to consider joint proposal mcclellan_1_0505.pdf and ungerboeck_1_0505.pdf for details.

An extended next page encoding for unformatted extended next page is needed, just as there are two encodings for 16-bit next pages. Some existing message codes require more than 32 bits of unformatted information so those will need to be followed by unformatted extended next pages.

Suggested Remedy
The MP bit determines which encoding is in use for the page. In the unformatted extended next page, bits D0 through D10 are part of the unformatted code field. The remainder of the encoding is the same as the message extended next page.

You can leverage from the .3ap draft or from the text of the unextended next pages for this.

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

All of the bits say "setting four" in the description for the 4 bits for link partner and the 4 bits for PMA.

Suggested Remedy
Shouldn't Link Partner THP 3 setting say "setting three" and so on for the other bits? Also 7 of the description lines omit "THP" while the others include it. Please insert it for clarity and consistency.

Proposed Response
PROPOSED REJECT.
See 478
Why does this line say "will not able to operate" rather than "will not operate"? That isn't grammatically correct and even if it was changed to "will not be able to operate" it doesn't seem accurate. Don't the bits reflect the chosen operating mode rather than the ability to operate in the mode?

**Suggested Remedy**
Change to "will not operate" as in 45.2.1.60.1. This comment needs to be applied to several of the subclauses of 45.2.1.60.

**Proposed Response**
PROPOSED REJECT.

THP settings will be changed to 3 bit field for both the local transmitter and the link partner with descriptions corrected to reflect the change.

---

Does this bit bypass the use of the other THP settings (bits 12 through 9)? That's what the text seems to say.

**Suggested Remedy**
If it acts as a bypass for the other bits, then state that more clearly. Perhaps each of the other bits should specify that they only operate as described when this bit is 0.

Or, if only one of the 5 settings can be selected at a time (all the bits but one must be zero) which seems to be what 45.2.1.60 says, then it would make more sense to construct this as a 3 bit field that showed the setting selected rather than 5 single bits.

The same comment applies to 45.2.1.60.10.

**Proposed Response**
PROPOSED REJECT.

See 478
This bit doesn't make sense and there are multiple problems with the note. The problems:
1) If support for the register requires extended next page ability, then why have a bit in the register to indicate extended next page ability?
2) Notes are non-binding. If one must support extended next page ability to have this MMD, that should be stated as part of 45.2.7 rather than in a note.
3) "use of" extended next page can't be the gating factor in having the registers since that use depends on the result of the negotiation and the AN MMD shouldn't disappear when the link partner doesn't negotiates non-extended next pages.

Suggested Remedy
Move the content of the note to 45.2.7 as part of the clause, not a note and replace "use of" with "support for"
Delete Bit 45.2.7.2.1 or if there is some reason to retain it. Add that 1 is the only legal value.

Proposed Response Response Status W
PROPOSED ACCEPT.

This doesn't make sense.
7.16 contains the advertised values so its validity shouldn't depend on the completion of auto-negotiation.
The description of when auto-negotiation is complete is vague and these registers seem unusable if it means what it says. Auto-negotiation has many page exchanges. The Base page registers must be valid when the base page exchange is complete because one will want to read their contents before deciding on the next page exchange.

Suggested Remedy
There should be a bit for base page exchange complete and another bit for next page exchange complete. For the next page exchange complete bit, one will have to provide a mechanism for clearing it to enable use for a further page exchange. Perhaps it should be cleared when the next page registers have been read.

I know you leveraged this bit, but I went back and looked at 22 and it didn't clarify the operation. 22 may have a maintenance issue too.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
Change second sentence to read, "When read as a logic zero, bit 7.1.5 indicates that the auto-negotiation process has not been completed, and that the contents of 7.16, 7.19 and 7.22 through 7.27 are as defined by the current state of the Auto-Negotiation protocol, or as written for manual configuration."

In clause 28, the extended next page ability bit (7.19.12 here) was moved out of the technology ability field, so you will have to match that here.

Suggested Remedy
put a separate entry in the table for extended next page ability to match it to Clause 28.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
XNP bit will 7.19.12 and Technology ability field will be changed to 7.19.11:5
<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>Comment #</th>
<th>Comment</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Proposed Response</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Proposed Response</th>
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<tr>
<td>45</td>
<td>45.2.7.9</td>
<td>111</td>
<td>1</td>
<td>486</td>
<td>Thaler, Pat</td>
<td>Agilent Technologies</td>
<td>TR</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
<td>TR</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
<td></td>
</tr>
<tr>
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<td>112</td>
<td>3</td>
<td>487</td>
<td>Thaler, Pat</td>
<td>Agilent Technologies</td>
<td>TR</td>
<td>X</td>
<td>PROPOSED ACCEPT.</td>
<td>TR</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
<td></td>
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<td>55</td>
<td>55.5.2</td>
<td>186</td>
<td>23</td>
<td>489</td>
<td>Chris, Pagnanelli</td>
<td>Solarflare Communications</td>
<td>E</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
<td>E</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
<td></td>
</tr>
</tbody>
</table>

Since this is a multiple register set, there needs to be a way to ensure that it is frozen so that the three reads are returning a consistent set - the values from a single next page exchange.

**Suggested Remedy**
- Specify that reading one of the registers, e.g. 27 causes the other two values to be latched for reading. See the multi-register counters for an example of the text.

**Proposed Response**
- PROPOSED ACCEPT.

The contents of this register seems to duplicate some but not all of the values that are in the 10GBASE-T and 1000BASE-T technology message. It isn't clear how this is to be used. What happens if there is a discrepancy between this register and the registers loaded for the extended next page exchange of the technology message? Since this register contains only some of the information how can it allow a power up or reset to a normal operational state without management intervention?

**Suggested Remedy**
- Remove this register or clarify its use.

**Proposed Response**
- PROPOSED ACCEPT.

In Table 55-3, use of the word "mandatory" in the description of test mode 7 may be misinterpreted as meaning only test mode 7 is mandatory.

**Suggested Remedy**
- Delete the word "mandatory" from the text describing test mode 7 in Table 55-3 (table row 9, table column 4).

**Proposed Response**
- PROPOSED ACCEPT.
<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Suggested Remedy</th>
<th>Proposed Response</th>
<th>Comment Status</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>D</td>
<td>The description of test mode 1 incorrectly states that the PHY shall transmit the PMA training pattern from all four transmitters. The SLAVE jitter test requires that, in test mode 1, the PHY transmit the PMA training pattern on transmitters A, B, and C, and transmit silence on pair D (see subclause 55.5.3.3). Also, in the description of test mode 1, identifying the PMA training pattern as &quot;PRBS 33&quot; may be misinterpreted as meaning a training pattern different from the training pattern defined in subclause 55.3.16.2 with respect to the Sync Bit being on or off.</td>
<td>Change the description of test mode 1 to read: &quot;When test mode 1 is enabled, the PHY shall transmit the PMA training pattern, as defined in clause 55.3.16.2, continually on pairs A, B, and C. The PHY shall transmit silence on pair D.&quot;</td>
<td>PROPOSED ACCEPT.</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>D</td>
<td>The description of the peak to peak levels does not specify the relative amplitudes of the two sine waves generated for the dual tone transmitter linearity test.</td>
<td>Change the text to read: &quot;The peak to peak levels used in this test, for both single and dual frequency tones, shall correspond to the +/- 16 symbol levels. For dual frequency tones, the relative amplitudes of each tone shall be equal.&quot;</td>
<td>PROPOSED ACCEPT.</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>D</td>
<td>The description of the droop test is worded in a way that makes the location of the initial and final measurement points confusing.</td>
<td>Change the text to read: &quot;With the transmitter in test mode 6 and using the transmitter test fixture 1, the magnitude of both the positive and negative droop shall be less than 10%, measured with respect to an initial value at 0.01 usec after the zero crossing and a final value at 0.09 usec after the zero crossing.&quot;</td>
<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
</tbody>
</table>

Relevant comments: 269, 494
Comment #495

Cl 55 SC 55.5.3.2 P 190 L 8

Comment Type: T, Comment Status: X

Two-tone SFDR is not precisely defined.

Suggested Remedy

Change text starting on line 8 of page 190 to read: "where f is in MHz (maximum frequency of the two tones) and SFDR is the ratio in dB of the minimum RMS value of either input tone to the RMS value of the worst intermodulation product in the frequency range of 1 to 400 MHz."

Proposed Response: Response Status W

Relevant comments: 495, 579

Comment #496

Cl 55 SC 55.5.3.3 P 190 L 30

Comment Type: T, Comment Status: D

Absolute RMS jitter is not precisely defined.

Suggested Remedy

Add the following text at the end of subclause 55.5.3.3: "Absolute RMS jitter over an integration time interval of 1 msec +/- 10%, shall be defined as the root mean square period difference from the average period (T-Tavg), accumulated over a sample size of 200,000 +/- 20,000:

\[ j = \sqrt{\frac{\sum (T-Tavg)^2}{\text{SampleSize}}} \]

Proposed Response: Response Status W

PROPOSED ACCEPT.

Comment #497

Cl 55 SC 55.5.3.4 P 190 L 32

Comment Type: T, Comment Status: D

The 5 MHz lower frequency of the lower PSD mask is not consistent with the intent of the transmitter droop requirement of subclause 55.5.3.1. The 5 MHz lower frequency allows use of a digital high pass filter during normal operation that causes excessive transmitter droop. This filter can be bypassed during droop testing.

Suggested Remedy

Change the lower frequency of the lower PSD mask from 5 MHz to 1 MHz.

Proposed Response: Response Status W

PROPOSED ACCEPT.
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<tr>
<th>Cl</th>
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<th>P</th>
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<td>14</td>
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<td>55.5.5.4.3</td>
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<td>55.8.3.3</td>
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<td>503</td>
<td>55.1.1</td>
<td>137</td>
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</tr>
</tbody>
</table>

**Comment Type:** T

**Comment Status:** D

**Comment:**

The common-mode voltage rejection requirement does not accurately reflect the superior conducted EMI immunity of Class E, Class F, and Augmented Category 6 cabling compared to Category 5e cabling. Also, the common-mode voltage is incorrectly specified as <= 2 V peak to peak instead of >= 2 V peak to peak in two places.

**Suggested Remedy:**

Change the common-mode voltage requirement to reflect actual cable susceptibility performance as determined by measurement.

**Proposed Response**

PROPOSED REJECT.

The signs are correct.

**Related comments:** 274, 354, 363, 421, 500, 702

See response to comment 354

---

**Comment Type:** T

**Comment Status:** D

**Comment:**

The common-mode output voltage requirement was changed from 50 mV peak-to-peak to 15 mV peak-to-peak without final feedback from the task force.

**Suggested Remedy:**

Change the common-mode output voltage requirement to 50 mV peak-to-peak, pending final feedback from the task force.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

A) typos have to be fixed
B) Is there a cleaner solution (e.g. model the load to reflect channels in use today)?
C) is it better to make the change in Clause 14

**Related comments:** 279, 355, 423, 457, 501

See response to comment 279

---

**Comment Type:** TR

**Comment Status:** X

**Comment:**

What does "at least 55-100m" mean? Is the min distance objective 55 or 100 or something in between? Or isn't this the same as "at least 55m" since if someone can build a 100m cable that meets the specs then they have met "at least 55m" requirement.

**Suggested Remedy:**

change "at least 55-100m" to "55m"

**Proposed Response**

Working group to discuss

---

**Comment Type:** T

**Comment Status:** D

**Comment:** The link pulse template defined in clause 14 requires conformance to the template both with and without the category 3 cable model (Fig. 14-7.) Auto-negotiation to 10GBaseT requires link pulses to conform to this template. 10GBaseT transmitters are required to have high linearity, but the transmit output level is only 2.5Vp-p differential. This is only about half the amplitude that would be required to meet the link pulse template with the cat-3 cable model (transmit output needs to be about 2.5V zero-peak or 5.0V p-p.) If the 10GBaseT transmitters are burdened with the requirement to drive this larger amplitude, the linearity performance will be compromised. A POTENTIAL SOLUTION All of the cables specified in 10GBaseT (55.7) have dramatically less attenuation than the old category 3 cable. In fact the normal transmit amplitude for 10GBaseT (1.25V zero to peak) is sufficient to meet the link pulse template when passed through any of the cables specified in 55.7.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

A) typos have to be fixed
B) is there a cleaner solution (e.g. model the load to reflect channels in use today)?
C) is it better to make the change in Clause 14

---

**Comment Type:** TR

**Comment Status:** X

**Comment:**

This is not clear. The question is: What is the minimum distance that must be achieved for a link to be considered "at least 55-100m"? Is it 55m or 100m, or something in between? Or is it the same as "at least 55m"? If someone can build a 100m cable that meets the specs, then they have met "at least 55m" requirement.

**Suggested Remedy:**

change "at least 55-100m" to "55m"

**Proposed Response**

Working group to discuss
IEEE P802.3an Comments

Cl 55 SC 55.7.2 P201 L 35 Comment # 504
Baumer, Howard Broadcom

Comment Type TR Comment Status D cabling
There is no tolerance specified with the load impedance.

Suggested Remedy
Change: ".. of 100 ohm" to ".. of 100 ohm +/- 10%" or ".. of 100 ohm with a tolerance of 20dB"

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

See response to 417

Cl 55 SC 55.7.2.1 P201 L 60 Comment # 505
Baumer, Howard Broadcom

Comment Type TR Comment Status D cabling
Frequency domain specifications are defined with respect to a reference impedance.

Suggested Remedy
Replace "terminated in" with "referenced to".

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

See response to 417

Cl 55 SC 55.7.2.2 P202 L 7 Comment # 506
Baumer, Howard Broadcom

Comment Type T Comment Status D cabling
The characteristic impedance of the cabling should be a requirement. The statement ".. is 100 ohm .." makes this informative.

Suggested Remedy
Change ".. is 100 ohm .." to ".. shall be 100 ohms .."

Proposed Response Response Status W
PROPOSED REJECT.

The characteristic impedance of the cabling is not a requirement (link segment return loss is specified)

Cl 55 SC 55.7.2.2.1 P202 L 60 Comment # 507
Baumer, Howard Broadcom

Comment Type E Comment Status X cabling
The equation reference could be confusing as no specifically referenced equation number is used

Suggested Remedy
replace ".. the following equation" with ".. equation 55.11" with the appropriate link to equation 55.11

Proposed Response Response Status O

See response to 417

Cl 55 SC 55.7.2.2.2 P202 L 7 Comment # 508
Baumer, Howard Broadcom

Comment Type ER Comment Status D cabling
The wording from lines 47-56 doesn't seem to explicitly tie the frequency ranges to the specification. The "where"s should be replaced with "for"s and the two equations tied together with an "and".

Suggested Remedy
replace "where f is the frequency" with "for" on line 47
replace the sentence on line 49 with "and"
and on line 56 replace "where f is the frequency" with "for".

Proposed Response Response Status W
PROPOSED REJECT.
Consistent with 1000BASE-T equation format

Cl 55 SC 55.7.2.2.3 P202 L 12 Comment # 509
Baumer, Howard Broadcom

Comment Type ER Comment Status D cabling
The wording from lines 16-22 doesn't seem to explicitly tie the frequency ranges to the specification. The "where"s should be replaced with "for"s and the two equations tied together with an "and".

Suggested Remedy
replace "where f is the frequency" with "for" on line 16
add "and" between line 16 and eq. 55-15
and on line 22 replace "where f is the frequency" with "for".

Proposed Response Response Status W
PROPOSED REJECT.
1000BASE-T equation format
<table>
<thead>
<tr>
<th>Comment #</th>
<th>Comment Text</th>
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<tbody>
<tr>
<td>510</td>
<td>Is this means for calculating PSNEXT loss a recommendation or a requirement? If it is a requirement then &quot;shall&quot; needs to be used instead of &quot;is&quot;.</td>
</tr>
<tr>
<td>511</td>
<td>&quot;n&quot; is not specified and is therefore open ended, specify what &quot;n&quot; should be.</td>
</tr>
<tr>
<td>512</td>
<td>Incisnistant use of frequency range for multiple specifications. Cable specs use a frequency range from 1Mhz - 500MHz, whereas the delay specs use 2MHz - 500Hz</td>
</tr>
<tr>
<td>513</td>
<td>Incisnistant use of frequency range for multiple specifications. Cable specs use a frequency range from 1Mhz - 500MHz, whereas the delay specs use 2MHz - 500Hz</td>
</tr>
<tr>
<td>514</td>
<td>Not necessary to specify delay to 1 MHz --- 2 MHz minimum consistent with 1000BASE-T</td>
</tr>
<tr>
<td>515</td>
<td>&quot;MDANEXT&quot; is separated across lines</td>
</tr>
<tr>
<td>516</td>
<td>MDANEXT specification is structured differently than MDNEXT and MDELFEXT. For consistency sake structure this section the same as the MDNEXT and MDELFEXT sections</td>
</tr>
</tbody>
</table>

Proposed Response: PROPOSED ACCEPT IN PRINCIPLE.

Proposed Response: PROPOSED REJECT.

Proposed Response: PROPOSED ACCEPT IN PRINCIPLE.

Proposed Response: PROPOSED REJECT.

Proposed Response: PROPOSED ACCEPT IN PRINCIPLE.
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<th>Line</th>
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<th>Response Status</th>
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<td>517</td>
<td>TR</td>
<td>55.7.3.1.1</td>
<td>P206</td>
<td>L8</td>
<td>Comment # 517</td>
<td>Baumer, Howard</td>
<td>cabling</td>
<td>Specify &quot;n&quot;</td>
<td>&quot;n&quot; is not specified and is therefore open ended, specify what &quot;n&quot; should be.</td>
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<tr>
<td>518</td>
<td>E</td>
<td>55.7.3.1.1</td>
<td>P206</td>
<td>L19</td>
<td>Comment # 518</td>
<td>Baumer, Howard</td>
<td>cabling</td>
<td>Replace &quot;intercept&quot; with &quot;value&quot;</td>
<td>&quot;intercept&quot; is the value at 0 not at f=100MHz</td>
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<tr>
<td>519</td>
<td>E</td>
<td>55.7.3.1.1</td>
<td>P206</td>
<td>L32</td>
<td>Comment # 519</td>
<td>Baumer, Howard</td>
<td>cabling</td>
<td>Replace &quot;intercept&quot; with &quot;value&quot;</td>
<td>&quot;intercept&quot; is the value at 0 not at f=100MHz</td>
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**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
- U: unsatisfied
- Z: withdrawn

**Note**
- "n" is the number of pair-to-pair combinations between adjacent link segments (see ANNEX 55X)
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<th>Commenter</th>
<th>Company</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
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<td>Baumer, Howard</td>
<td>Broadcom</td>
<td>TR</td>
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</table>

There appears to be a desire for a length dependent or a variable set of link segment characteristics. This dependency is very confusing and unclear as to its intent and specification. Several possible intents for the link segment specifications could be:

1) one set of link segment specifications that any and all compliant link segments must meet?
2) Two sets of link segment specifications that a link segment gets to choose from to meet, one equivalent to 55m length and the other to 100m
3) an infinite set of link segment specifications that a link segment can choose from to meet where one end is equivalent to 55m and the other to 100m and anything in between.
4) one set of link segment specifications that any and all compliant link segments must meet where the NEXT, ELFEXT, ANEXT, AELFEXT specifications are dependent upon the measured insertion loss of the link segment.

It is also unclear as to whether the link segment specifications are tied to a measured length or not. If they are tied to a measured length how is that length measured?

Suggested Remedy
Clearly state what the intent of the link segment specification is. One possible clarification of intent is:

Any compliant link segment shall meet the specified insertion loss of Eq 55-10.
A given link segment's NEXT, ELFEXT, ANEXT, AELFEXT limits are set by its measured insertion loss. Put in a sub-clause that describes how that insertion loss is to be measured and how each dependent specification is calculated from that measured insertion loss.

This is a huge rewrite of 54.7 and as such the whole sub-clause should then be left open for comments on the next recirculation ballot.

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

Agree in principle that the subclause 55.7.3 "Coupling parameters between link segments" alien crosstalk specifications (PSAELFEXT and PSANEXT) need to be clearer in regard to the 10GBASE-T cabling types and distances and the usage of insertion loss scaling.
Recommended remedy:(1). In 55.7.3 (or where appropriate), provide a table of supported cabling types and distances with references to applicable cabling standards. This table will not include the calculated 10GBASE-T PSAELFEXT or PSANEXT which has resulted in much of the confusion between the minimum requirements for 10GBASE-T operation over the referenced cabling type and distance and the performance limits of the cabling.

Suggested Remedy
Delete or clarify

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

There is no transmit disable function control for 10GBASE-T. Such control may be required externally for test purposes and internally to prevent spurious signal emission during power up or release from power-down in accordance with 55.8.3

Suggested Remedy
Use bits 1.9.4:1 for disabling transmitter on channels 3:0 respectively. Use bit 1.9.0 for global (all channels) transmit disable. Add reference to the appropriate section of Clause 55 in the register 1.9 description. This control should be defined in addition to defining the "Transmit Diable" functionality in Clause 55.

Proposed Response
PROPOSED ACCEPT.

Bits are already defined as stated. Editors comments to be removed and change made as suggested.

Suggested Remedy
Remove recommendation to implement crossover in the PHY local to the multiport device is not compatible with mandatory MDI crossover, considering the crossover is determined before the autonegotiation process.

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

Remove note

Suggested Remedy
Delete or clarify

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

The editors note appears to be a fragment out of place. It is not clear what is the application of the frequency range of interest and what the equations are.

Suggested Remedy
Delete or clarify

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

Delete
<table>
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<tr>
<th>Comment ID</th>
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<th>Comment Status</th>
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</thead>
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<tr>
<td>#525</td>
<td>E</td>
<td>D</td>
<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
<td>Wording &quot;A 10GBASE-T link segment consisting of at least 55 to 100 meters ...&quot; implies the minimum distance is 55m. SuggestedRemedy Change wording to &quot;A 10GBASE-T link segment consisting of UP TO at least 55 to 100m...&quot; (change shown in CAPS).</td>
</tr>
<tr>
<td>#526</td>
<td>E</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
<td>Typo: the register referenced is 7.9 whereas it should be 1.132 SuggestedRemedy Change reference from register 7.9 to 1.132</td>
</tr>
<tr>
<td>#527</td>
<td>E</td>
<td>D</td>
<td>PROPOSED REJECT.</td>
<td>In the description of the bit 7.32.12: &quot;When read as a logic zero, bit 7.32.12 indicates that the PHY lacks the ability to support full duplex operation&quot;. The implication is that it can still support 10GBASE-T (which is defined in full duplex only). the bit description in the table is more accurate. SuggestedRemedy Change the above statement to: &quot;When read as a logic zero, bit 7.32.12 indicates that the PHY lacks the ability to support 10GBASE-T full duplex operation.&quot;</td>
</tr>
<tr>
<td>#528</td>
<td>E</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
<td>Typo: AELFEXT_constants SuggestedRemedy change to AELFEXT_constants</td>
</tr>
<tr>
<td>#529</td>
<td>E</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
<td>The document refers to all processing occurring in pairs A, B, C, and D. However, the names of the registers 1.133 through 1.144 refer to channels 0 through 3. SuggestedRemedy Change references in register names from channel 0 through 3 to pair A through D, respectively. This change affects: lines 50 through 59 on page 87, lines 5 through 11 on page 88, subclauses 45.2.1.163 through 45.2.1.174</td>
</tr>
<tr>
<td>#530</td>
<td>T</td>
<td>D</td>
<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
<td>No register indicating the status of pair swap and status of polarity reversal. SuggestedRemedy Add a register indicating status of pair swap and status of polarity reversal as described in the attached document.</td>
</tr>
</tbody>
</table>

TYPE: TR/technical required ER/editorial required G/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: comment ID
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<th>Comment</th>
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<th>Proposed Response</th>
<th>Response Status</th>
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<tr>
<td>531</td>
<td>T</td>
<td>D</td>
<td>No register indicating skew delay between pairs</td>
<td>Add a register indicating skew delay as described in the attached document.</td>
<td>PROPOSED REJECT.</td>
<td>W</td>
</tr>
<tr>
<td>533</td>
<td>E</td>
<td>D</td>
<td>Reference to ANSI/TIA/EIA-568-B:2:2002 should be reference to ...B2-1:2002</td>
<td>Correct reference as above.</td>
<td>PROPOSED ACCEPT.</td>
<td>W</td>
</tr>
<tr>
<td>534</td>
<td>T</td>
<td>D</td>
<td>The requirement &quot;A powered MDI will not disrupt 10GBASE-T and vice versa.&quot; is not applicable because there is no 10GBASE-T link to which one can apply power. It seems that the intent was to assure that when a 10GBASE-T PHY is connected to a powered MDI as a link partner, no damage is caused to either the 10GBASE-T PHY or the powered MDI.</td>
<td>Reword to &quot;A 10GBASE-T PHY shall be able to sustain, without damage, connection to a powered MDI, and shall not cause damage to the powered MDI&quot;.</td>
<td>PROPOSED ACCEPT.</td>
<td>W</td>
</tr>
<tr>
<td>535</td>
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<td>D</td>
<td>Typo in title - &quot;If..&quot; precedes &quot;THP 4 setting&quot;</td>
<td>Delete &quot;If&quot;</td>
<td>PROPOSED REJECT.</td>
<td>W</td>
</tr>
<tr>
<td>536</td>
<td>E</td>
<td>D</td>
<td>Typo in title - &quot;If..&quot; precedes &quot;THP 4 setting&quot;</td>
<td>Delete &quot;If&quot;</td>
<td>PROPOSED ACCEPT.</td>
<td>W</td>
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</tbody>
</table>
IEEE P802.3an Comments

Cl  45  SC 2.1.61  P93  L29  Comment # 537
Zimmerman, George  Solarflare Communicati
Comment Type  E  Comment Status  D
Text says precoder setting, should be power level setting
SuggestedRemedy
change to power level setting
Proposed Response  Response Status  W
PROPOSED ACCEPT.

Cl  45  SC 2.1.61  P93  L42  Comment # 538
Zimmerman, George  Solarflare Communicati
Comment Type  E  Comment Status  D  THP45
Subclause 45.2.1.61 CORRECTLY defines that the selected power level setting is described by register 1.131. The following sub-subclauses 45.2.1.61.1 through 45.2.1.61.16 incorrectly state that the bits represent whether the PHY has "the ability to operate" at a certain power level
SuggestedRemedy
Change text in 45.2.1.61.1 through .16 from "has the ability to operate with" or "has the ability to support" to "has selected" the power level, or, preferable, delete the one-bit-per-level encoding and replace with a 3 bit binary number, encoding the power level selected (0 through 7).
Proposed Response  Response Status  W
PROPOSED ACCEPT IN PRINCIPLE.

See 478

Cl  45  SC 45.2.1.60  P91  L20  Comment # 539
Zimmerman, George  Solarflare Communicati
Comment Type  E  Comment Status  D  THP45
Encoding for THP level selected is overly complicated. One of 5 levels is selected, encode simply as a 3 bit number.
SuggestedRemedy
Change register bit definitions in Table 45-50 to encode both the Link partner and PMA THP settings as a 3 bit unsigned number.
Delete sections 45.2.1.60.1 through 45.2.1.60.10 and replace with description that the index number of the PMA THP setting selected (and link partner settings) are encoded as 3 bit unsigned numbers. Delete "onlhy one THP setting may be selected at any time" on line 24, page 91. Reserve remaining bits, or combine with the power backoff register.
Proposed Response  Response Status  W
PROPOSED ACCEPT IN PRINCIPLE.

See 478

Cl  55  SC 55.5.2  P186  L27  Comment # 540
Zimmerman, George  Solarflare Communicati
Comment Type  T  Comment Status  D
It is unclear what signal a SLAVE PHY in test mode 3 is loop timing from, and, the text states that test mode 1 puts signal on all 4 pairs, in conflict with figure 55-22.
SuggestedRemedy
Clariy figure 55-22 to include deletion of signal on pair D, (preferred) or redefine test mode 1 on line 28 to indicate that a PMA shall transmit only on pairs A, B, and C.
Specifically call out that a SLAVE PHY in test mode 3 is used with a MASTER in test mode 1. Reference figure 55-22 here.
Proposed Response  Response Status  W
PROPOSED ACCEPT IN PRINCIPLE.
Follow suggestion marked (preferred) in suggested remedy.
IEEE P802.3an Comments

Comment #541
Cl 55 SC 55.4.3.1 P179 L13 Comment Status D
Zimmerman, George Solarflare Communications

Comment Type TR
Powerbackoff
Two editorial/transcription errors in power backoff table: line length (m) (reference) column was not updated per the agreement at the last meeting - see zimmerman_2_0305.pdf. received MDI power numbers are unchanged.

Also, power backoff column should be positive values, not negative

Suggested Remedy
"Length (m) (Reference)" Column should read as in zimmerman_2_0305.pdf, slide 8, as agreed:
0-25
25-35
45-55
55-65
65-75
75-85
>85

"Minimum Power Backoff (dB)" Column should read:
10
10
8
6
4
2
0
0

Proposed Response PROPOSED ACCEPT.
Response Status W

Comment #542
Cl 28 SC 28.2.1.1.1 P6 L10 Comment Status D
Zimmerman, George Solarflare Communications

Comment Type TR
Link pulse
THE PROBLEM (referring to the last paragraph of 14.3.1.2.1) The link pulse template defined in clause 14 requires conformance to the template both with and without the category 3 cable model (Fig. 14-7.) Auto-negotiation to 10GBaseT requires link pulses to conform to this template. 10GBaseT transmitters are required to have high linearity, but the transmit output level is only 2.5Vp-p differential. This is only about half the amplitude that would be required to meet the link pulse template with the cat-3 cable model (transmit output needs to be about 2.5V zero-peak or 5.0V p-p.) If the 10GBaseT transmitters are burdened with the requirement to drive this larger amplitude, the linearity performance will be compromised. A POTENTIAL SOLUTION All of the cables specified in 10GBaseT (55.7) have dramatically less attenuation than the old category 3 cable. In fact the normal transmit amplitude for 10GBaseT (1.25V zero to peak) is sufficient to meet the link pulse template when passed through any of the cables specified in 55.7

Suggested Remedy
PROPOSED MODIFICATION: Replace 28.2.1.1.1 "FLP bursts shall be composed of link pulses meeting the requirements of Fig. 14-12." with "For devices auto-negotiating to 10/100/1,000 Mb/s, all link test pulses in the FLP Burst Sequence shall meet the template requirements of Figure 14-12 when measured across each of the test loads defined in Figure 14-11; both with the load connected directly to the TD circuit and with the the load connected through the twisted pair model as defined in Figures 14-7 and 14-8. For devices auto-negotiating to 10,000 Mb/s, all link test pulses in the FLP Burst sequence shall meet the template requirements of Figure 14-12 when measured across each of the test loads defined in Figure 14-11; both with the load connected directly to the TD circuit and with the load connected through each of the cable types and distances defined in 55.7.

Proposed Response PROPOSED ACCEPT IN PRINCIPLE.
Response Status W

Task Force should discuss.

Comment #543
Cl 28 SC 28.2.1.1.1 P6 L16 Comment Status D
Matt Squire Hatteras Networks

Comment Type E
Comment Status D

When introducing the 49/48 coding, should indicate that odds are still clock symbols and evens data.

Suggested Remedy
Change last sentence to say "49 (odd numbered) clock pulses and 48 (even numbered) data pulses.

Proposed Response PROPOSED ACCEPT.
Response Status W

Proposed Response PROPOSED ACCEPT.
IEEE P802.3an Comments

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<td>Include a forward reference to where XNP is explained in more detail.</td>
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<td>D</td>
<td>SuggestedRemedy</td>
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<td>See sentence at the end of remote fault section as an example.</td>
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<td>Hatteras Networks</td>
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<td></td>
<td>It might be beneficial to add a note or other indication that this is the first auto-negotiated BASE-T phy that is full-duplex only, so anyone wondering about duplex negotiations is o-o-luck.</td>
<td></td>
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<td>T</td>
<td>SuggestedRemedy</td>
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<tr>
<td></td>
<td>Maybe something as simple as: &quot;Note: 10GBASE-T does not support half-duplex capabilities.</td>
<td></td>
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<td>Proposed Response</td>
<td></td>
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<tr>
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<td>PROPOSED REJECT.</td>
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<td>The first objective listed for 10GBASE-T in subclause 55.1.1 states that it supports full duplex operation only. In addition, item h in this list states that full duplex is added to the priority resolution list in 28B.3.</td>
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<td>Matt Squire</td>
<td>Hatteras Networks</td>
<td></td>
<td></td>
<td>Comment Type</td>
<td>T</td>
</tr>
<tr>
<td></td>
<td>I'll admit I haven't spent enough time parsing the state diagrams again, but in the first few minutes of reading it seems we've adjusted the rx_bit_cnt and tx_bit_cnt from 16 to 48 in some cases via page_size. However, these variables are used as indices into rx_link_code_word and tx_link_code_word, which are still fixed at 16-bits. Should the code_word variables be page_size, or am I just worrying that the indices have values that are out-of-range for the defined arrays?</td>
<td></td>
<td></td>
<td>T</td>
<td>SuggestedRemedy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjust the size of rx_link_code_word and tx_link_code_word to page_size.</td>
<td></td>
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<td>Proposed Response</td>
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<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
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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  U/unsatisfied  Z/withdrawn
SORT ORDER: comment ID
### Comment #551

**Comment**

Table 28-1, the 'Min' value for T4 is missing a space

**Suggested Remedy**

Replace addition "for 16-bit" with " for 16-bit"

**Proposed Response**

PROPOSED ACCEPT.

---

### Comment #552

**Comment**

Title of this subclause does not mention 'Extended FLP Bursts', but the proposed addition relates to this type of burst.

**Suggested Remedy**

Change "28.2.1.1.1 FLP burst encoding" to "28.2.1.1.1 FLP and Extended FLP burst encoding"

**Proposed Response**

PROPOSED REJECT.

The title of the subclause accurately reflects the contents within the subclause.

---

### Comment #553

**Comment**

RevAM subclause 28.2.4.1.1 covers extensively the use of MII registers in Clause 22, specifically in subclause 22.2.4.1, and especially related to Auto-negotiation. Yet Clause 55 contains no mention of this subclause, except for one reference to a power-down situation, and a PICS reference, but there are no edits to 22.2.4.1, or to Table 22-11, which does not include 10GBASE-T among it's possibilities. How will a 1000BASE-T PMA/PMD recognize a 10GBASE-T device? In particular, some of the slower PHYs are allowed to default to a half-duplex mode in the "parallel detect" mode. However, 10GBASE-T does not seem to allow a half-duplex mode.

**Suggested Remedy**

I am not sure there is a problem, but I would like to be sure it has been considered!

**Proposed Response**

PROPOSED REJECT.

All management for 10GBASE-T is contained within Clause 45. Parallel detection, which may be used for 10/100 devices, allows devices which do auto-negotiate to link with devices that do not. Since auto-negotiation is required for both 1000BASE-T and 10GBASE-T, parallel detection is not necessary.

---

### Comment #554

**Comment**

In Table 45-8; although my attempts to "rationalize" the assignments in this table during the CX4 task force were resoundingly rejected, it would still seem more rational to use '1000' for 10GBASE-T (closer to '0000' for the other electrical cable standard, CX4) and '1001' for 10GBASE-LRM (here listed as "reserved"), since they are both under initial review currently.

**Suggested Remedy**

Swap the two lines for 10GBASE-T and the 'reserved' left for 10GBASE-LRM, so that 10GBASE-T is 1000.

Obviously, this would need to be co-ordinated with the 10GBASE-LRM task force.

**Proposed Response**

PROPOSED REJECT.

Choice of bits previously agreed upon with other groups.

---

### Comment #555

**Comment**

The subclause heading references bits 2:0, whereas the corresponding table utilizes bits 3:0

**Suggested Remedy**

Replace "2:0" by "3:0"

**Proposed Response**

PROPOSED ACCEPT.

---

### Comment #556

**Comment**

"after a successful master/slave" misspelt

**Suggested Remedy**

Replace "after a successful master/slave" by "after a successful master/slave"

**Proposed Response**

PROPOSED ACCEPT.
<table>
<thead>
<tr>
<th>Cl</th>
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<th>P</th>
<th>L</th>
<th>Comment #</th>
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<th>Intersil</th>
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<td>87</td>
<td>42</td>
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</table>

**Comment Type:** ER  **Comment Status:** D

- **My understanding of the PICS requirements are that the items may NOT be renumbered (hence MM43a and MM43b in 45.5.5.3).**

**Suggested Remedy:**
- Either we get together and overcome this rule, or we should follow it. Actually, I personally prefer the former, since I think it makes more sense; the concept of the PICS (as expressed in the footnotes to all their initial headings) is that the user will copy the table(s) into their statement, and add the conformance items, so a renumber merely reflects the original source level.

**Proposed Response:** PROPOSED ACCEPT IN PRINCIPLE.

The Task Force should discuss whether or not renumbering the PICS items is appropriate and necessary.

<table>
<thead>
<tr>
<th>Cl</th>
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</table>

**Comment Type:** E  **Comment Status:** D

- "#CrossRef#" appears here, and also at line 53, and pages 96, line 58, & 175, line 49, p 176 line 12, and several more.

**Suggested Remedy:**
- Fix crossreferences

**Proposed Response:** PROPOSED ACCEPT.

<table>
<thead>
<tr>
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</table>

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

- In Figure 44-1, all the PCS "boxes" except that for 10GBASE-T have their coding ratios shown (64B/66B, 8B/10B).

**Suggested Remedy:**
- Change the PCS box label to "64B/65B PCS".

**Proposed Response:** PROPOSED ACCEPT IN PRINCIPLE.

- Change to read: LDPC PCS

---

*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  U/unsatisfied  Z/withdrawn  
SORT ORDER: comment ID*
Cl 45 SC 45.2.1.10 P 90 L 16 Comment # 563
Bradshaw, Peter Intersil

Comment Type T Comment Status D
Table 45-12: I would prefer to see 10GBASE-T as bit 1.11.1, to conform to the likely order of the PMA types elsewhere in the various tables, etc.

SuggestedRemedy
swap 1.11.1 & 1.11.2

Proposed Response Response Status W
PROPOSED REJECT.
Choice of bits previously agreed upon with other groups.

Cl 45 SC 45.2.1.60 P 91 L 32 Comment # 564
Bradshaw, Peter Intersil

Comment Type E Comment Status D
THP45
In Table 45-50, the descriptions for the THP settings seem to disagree with the descriptions in the following subclauses (45.2.1.60.1 through 10); it is suspicious that they are all identical.

SuggestedRemedy
Check, and fix if needed

Proposed Response Response Status W
PROPOSED REJECT.
See 478

Cl 99 SC P 1 L 24 Comment # 565
Booth, Brad Intel

Comment Type E Comment Status D
This isn't a Task Force ballot.

SuggestedRemedy
Change to be Working Group ballot.

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 28 SC 28.2.1.2 P 8 L 3 Comment # 566
Booth, Brad Intel

Comment Type E Comment Status D
Figure 28-7 should have a change bar as it is not the same as in 802.3REVam.

SuggestedRemedy
Add a change bar to the figure.

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 28 SC 28.2.3.4.2 P 14 L 17 Comment # 567
Booth, Brad Intel

Comment Type E Comment Status D
Figure 28-13 is new to Clause 28.

SuggestedRemedy
Insert change bar for the figure.

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 28 SC 28.3.2 P 25 L 54 Comment # 568
Booth, Brad Intel

Comment Type E Comment Status D
The variable name is separated from the value.

SuggestedRemedy
Keep variable name with the value.

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 28 SC 28.5 P 31 L 42 Comment # 569
Booth, Brad Intel

Comment Type E Comment Status D
PICS section should start at top of page.

SuggestedRemedy
Start PICS at top of the page.

Proposed Response Response Status W
PROPOSED ACCEPT.
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Comment #582

Cl 45 SC 45.2.7.2.3

Ilango Ganga Intel

Comment Type: E

Comment Status: D

"The Page Received bit shall be reset to logic Zero on a read of the LD base page register (Register 7.1)." Register 7.1 is actually AN status register and not LD base page register. Also since this bit is also a copy of expansion register 6.1, hence reading register 6 will have the same effect as reading (AN stats Register 7.1)

SuggestedRemedy

Fix the appropriate line to read as "AN Status register (Register 7.1)" Also add a note to specify Reading expansion register 6 will also clear the bit.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Change text to read, "The Page Received bit shall be reset to zero on a read of the AN status register (Register 7.1) or if present the Auto-Negotiation expansion register 6 as defined in 28.2.1.4.5.

See comment 413

Comment #583

Cl 55 SC 55.7.1

Thompson, Geoff Nortel

Comment Type: TR

Comment Status: D

cabling

The statement: "10GBASE-T uses a star topology with Class E or Class F balanced cabling used to connect PHY entities." is technically incorrect. 10GBASE-T like all higher speed Ethernet media (except PON) uses a point-to-point topology. The elements (e.g. MACs and a switch) that bind it into a star have nothing to do with 10GBASE-T.

SuggestedRemedy

Change text to read: "10GBASE-T uses a point-to-point topology with Class E or Class F balanced cabling used to connect PHY entities."

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Change text to: The link segment transmission parameters of insertion loss and ELFEXT loss specified are ISO/IEC 11801 Class E specifications extended by extrapolating the formulas to a frequency up to 500 MHz with appropriate adjustments for length when applicable."

...is not acceptable. We are not a cabling standards group and not an appropriate forum for whether such extrapolations are appropriate or justified.

SuggestedRemedy

Change text to stay within the boundaries of performance laid out by established standards appropriate for reference by an international standard. Delay approval until such approved reference is available.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Change text to: The link segment transmission parameters of insertion loss and ELFEXT loss specified are ISO/IEC 11801 Class E specifications extended by extrapolating the formulas to a frequency up to 500 MHz with appropriate adjustments for length when applicable as specified in ISO/IEC TR-24750 and TIA/EIA TSB-155.

Comment #584

Cl 55 SC 55.7.2

Thompson, Geoff Nortel

Comment Type: TR

Comment Status: D

cabling

The text:

"The link segment transmission parameters of insertion loss and ELFEXT loss specified are ISO/IEC 11801 Class E specifications extended by extrapolating the formulas to a frequency up to 500 MHz with appropriate adjustments for length when applicable."

...is not acceptable. We are not a cabling standards group and not an appropriate forum for whether such extrapolations are appropriate or justified.

SuggestedRemedy

Change text to stay within the boundaries of performance laid out by established standards appropriate for reference by an international standard. Delay approval until such approved reference is available.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Change text to: The link segment transmission parameters of insertion loss and ELFEXT loss specified are ISO/IEC 11801 Class E specifications extended by extrapolating the formulas to a frequency up to 500 MHz with appropriate adjustments for length when applicable as specified in ISO/IEC TR-24750 and TIA/EIA TSB-155.

Comment #585

Cl 55 SC 55.7.2.1

Thompson, Geoff Nortel

Comment Type: E

Comment Status: X

cabling

Comma needed at the end of line 1

SuggestedRemedy

Insert comma (or reverse the clauses).

Proposed Response

PROPOSED ACCEPT.

The language is consistent with 1000BASE-T. "1000BASE-T uses a star topology with Category 5 balanced cabling used to connect PHY entities."

Commission: Change text to read: "1000BASE-T uses a Class E or Class F balanced cabling star topology to connect point-to-point PHY entities."

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

The language is consistent with 1000BASE-T. "1000BASE-T uses a star topology with Category 5 balanced cabling used to connect PHY entities."

Commission: Change text to: "...crosstalk noise. To ensure...

is missing a space.

SuggestedRemedy

Insert comma (or reverse the clauses).

Proposed Response

PROPOSED ACCEPT.
IEEE P802.3an Comments

Comment #587

Thompson, Geoff

Invalid references
same basic comment as my #2

Suggested Remedy
See my #2

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.
Will use applicable cabling standards references

Comment #588

Thompson, Geoff

The text has an extra leading period.

Suggested Remedy
Change: "Table 55–8 lists the calculated..." To: "Table 55–8 lists the calculated..."

Proposed Response
PROPOSED ACCEPT.

Comment #589

Thompson, Geoff

The text has an extra leading period.

Suggested Remedy
Change: "Table 55–9 lists the calculated..." To: "Table 55–9 lists the calculated..."

Proposed Response
PROPOSED ACCEPT.

Comment #590

Thompson, Geoff

I don't understand this clause and especially the note. Is the intent to require automatic implementation of the cross-over function without regard to whether or a straight or cross-over cable is used? If so, then I don't understand the intent.
The absolute requirement (for that is how it is stated) for the jack to be marked with an "X" means that the same jack can not be used in multiple speed implementations.

Suggested Remedy
I'm not sure. Once I know the intent perhaps I can help work out the wording.

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.
Remove clause. The clause does not add additional requirements to the 10GBASE-T PHY other than marking of an X for having the automatic crossover, which will be mandatory on all 10GBASE-T PHY's, so this will not be needed. For multiple speed implementations the requirements for those PHY's will be followed.

Comment #591

Thompson, Geoff

The guidance to label the: "Data rate capability in Gb/s" without any indication that units are also required can lead to confusion as the speed label could be the same as that produced by the requirement in 10.8a.

Suggested Remedy
Change to: "Data rate capability and units thereof."

Proposed Response
PROPOSED ACCEPT.

Comment #592

Tellado, Jose

Upper PSD mask is too high (integrates to almost 8dBm of tx power)

Suggested Remedy
Reduce upper PSD limit but at least 1dB at low frequencies and more between 200-600MHz to reduce the amount of worst case ANEXT

Proposed Response
Task force to discuss and decide

Relevant comments: 272, 592, 672, 692, 696
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  U/unsatisfied  Z/withdrawn
SORT ORDER: comment ID

Comment #593
Cl 55  SC 55.3.4.2  P 153  L 42
Tellado, Jose  Teranetics
Comment Type: T  Comment Status: D  pcsnpma cleanup
The indeces for the 512 DSQ128 should span 0 to 511
SuggestedRemedy
Change the indeces 252, 253, 254 and 255 to 508, 509, 510, 511
Proposed Response  Response Status: W  PROPOSED ACCEPT.

Comment #594
Cl 55  SC 55.3.16  P 165  L 9
Tellado, Jose  Teranetics
Comment Type: TR  Comment Status: D  scrambler
The (re)initialization of the PMA scrambler is not clear. If the seed[32:0] is inserted at time n=0, it will appear at Scr_n[0] at n=1, since there is a delay of T
SuggestedRemedy
Make it clear that the seed value is reset at time n=0 at the output Scr_n[0] for n=0.
Proposed Response  Response Status: W  PROPOSED ACCEPT IN PRINCIPLE.

Comment #595
Cl 55  SC 55.4.2.4  P 181  L 30
Tellado, Jose  Teranetics
Comment Type: TR  Comment Status: D  phy control
The PHY control state diagram, Figure 55-18 does not allow the Master to select the THP_s setting that is best for the Master rx design and noise/xtalk. Moreover during 'PMA training Init S' the Master rx does not know what THPinitS the Slave has selected.
SuggestedRemedy
Allow the Master to select the THP_s with IF_M (i.e. THP_s <= THP IF_M )
Since the Master will pick the desired THP_s, during PMA Training Init S the Slave should use the same THP_incr the Master is using to simplify the Master rx Training Init training.
Proposed Response  Response Status: W  PROPOSED ACCEPT.
It isn't clear that the text in this subclause applies to Extended Next Page but it must as this is where there Ack, Ack2 and NP functionality is defined. Based on this the following changes are suggested to this subclause.

Note 1. - The term "Extended Next Page" is unclear. Is this a function, ability (Page 8, line 38) or a encoding (Figure 28-13).

Note 2. - These changes are based on the assumption that XNP is only supported by devices with a selector field of IEEE 802.3 (01Hex). If the addition of XNP is to be global, that is A7 changed to XNP and the ability file reduced to 7 bits, then the text in the third paragraph of this subclause will need refined in relation to what message pages are exchanged when the selector fields do not match (See Page 13, line 16).

**Suggested Remedy**

Page 12, Line 50:
Change the text 'Two types of Next Page encoding are defined: Message Pages and Unformatted Pages.' to read 'Three types of Next Page encoding are defined: Message Pages, Unformatted Pages, and Extended Next Page.'

Page 13, Line 5:
Change the text 'Next Page operation is controlled by the same two mandatory control bits, Next Page and Acknowledge, used in the Base Link Code Word.' to read 'Next Page operation is controlled by the same two mandatory control bits, Next Page and Acknowledge, used in the Base Link Code Word.'

Page 13, line 13:
Change the text to read:
Next Page exchange occurs after the base Link Code Words have been exchanged. Next Page exchange consists of using the normal Auto-Negotiation arbitration process to send Next Page messages. Three message encoding are defined: Message Pages, Unformatted Pages and Extended Next Pages. Unformatted Pages can be combined to send extended messages. If the Selector Field values do not match, then each series of Unformatted Pages shall be preceded by a Message Page containing a message code that defines how the following Unformatted Pages will be interpreted. If the Selector Field values match, then the convention governing the use of Message Pages shall be as defined by the Selector Field value definition. Any number of Next Pages may be sent in any order; however, it is recommended that the total number of Next Pages sent be kept small to minimize the link start-up time.

**Proposed Response**

Response Status O
The mapping here seems to be unclear. The statement that additional unformatted pages would be mapped to bits M0:10, U0:10 and U16:26 seems to imply that the message code associated with these unformatted pages, already sent in bits M0:10 of the first Extended Next Page should be repeated in bits M0:10 of the second Extended Next page. I believe that this is correct but should be made clearer.

Other issues are:
- The term '16-bit Next page' is used but not defined.
- It should be specified that multiple Next Pages associated with a single Message Code need to be transmitted in order as there is no way to reorder on reception if they are not.
- Suggest that multiple Next Pages associated with a single message code be transmitted in a burst and not interspersed by other Message Codes. While this is not a protocol requirement, all Extended Next Pages contain a Message Code so can be identified, it will prevent the need to reassemble more than one message at a time at the receiver and also the need for specification of how many messages can be active at one time.

in the following manner. The 11-bit Message Code Field is mapped to bits M0:10 of the extended next page, and the first two unformatted pages associated with the Message Code Field are mapped to bits U0:U10 and U16:U26, respectively of the extended next page. Additional unformatted pages would be mapped to bits M0:10, U0:10, and U16:26

or with other message interspersed.

Suggested Remedy

Suggest this paragraph be replaced with the following, also should consider moving this text to the body of Clause 28, possibly 28.2.3.4.

An Extended Next Page may be used to transmit a Message Code field and up to two associated Unformatted Code fields. The 11-bit Message Code field is mapped to bits M0:10 of the Extended Next Page. The first 11-bit Unformatted Code field, if required by the message code, is mapped to bits U0:U10 of the Extended Next Page. The second 11-bit Unformatted Code field, if required by the message code, is mapped to bits U16:U26 of the Extended Next Page. All unused bits of the Extended Unformatted Code field of the Extended Next Page shall be set to zero.

If more that two Unformatted Code fields are required by a Message Code, then additional Unformatted Code fields shall be transmitted in subsequent extended next pages. The 11-bit Message Code field is repeated in bits M0:10 of the subsequent Extended Next Page. The next 11-bit Unformatted Code field is mapped to bits U0:U10 of the Extended Next Page. The following 11-bit Unformatted Code field, if required by the message code, is mapped to bits U16:U26 of the Extended Next Page. All unused bits of the Extended Unformatted Code field of the Extended Next Page shall be set to zero.

If a Message Code requires the transmission of multiple Extended Next Pages, due to the number of Unformatted Code fields it defines, these Extended Next Pages shall be transmitted so that the Unformatted Code fields are in the order specified by the Message code.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

---

The Extended Next Page encoding includes a MP bit (D13) which is then defined in subclause 28.2.3.4.5 to differentiate between a Message Page and an Unformatted page of which this is neither since it is a Extended Next Page.

Suggested Remedy

Remove the MP bit from the Extended Next Page encoding.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

---

The Extended Next Page encoding includes bits D16 to D47 which are described as 'Unformatted code field' however subclause 28.2.3.4.11 describes this as an eleven bit wide field.

Suggested Remedy

Define bits D16 to D47 as the 'Extended unformatted code field', or something similar, and add a definition for this as a new subclause 28.2.3.4.13.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
**IEEE P802.3an Comments**

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From Annex 28C (page 51, line 17) it appears that devices that negotiate Extended Next Page Support only transmit Extended Next Pages hence will not transmit Message or Unformatted pages. Based on this the statement that 'Once a device has completed transmission of its Next Page information, it shall transmit Message Pages with Null message codes and the NP bit set to logic zero while its Link Partner continues to transmit valid Next Pages.' seems to be in conflict with this.

**Suggested Remedy**

Suggest the paragraph 5 of subclause 28.2.3.4 be changed to read:

Next Page transmission ends when both ends of a link segment set their Next Page bits to logic zero, indicating that neither has anything additional to transmit. It is possible for one device to have more pages to transmit than the other device. Once a device has completed transmission of its Next Page information, it shall transmit Message Pages, or Extended Next Pages, with Null message codes and the NP bit set to logic zero while its Link Partner continues to transmit valid Next Pages. An Auto-Negotiation able device shall recognize reception of Message Pages, or Extended Next Pages, with Null message codes as the end of its Link Partner’s Next Page information.

**Proposed Response**

**Law, David 3Com**

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The 'Use of Next Pages' text needs updated to include Extended Next Pages. This includes when to send then, the fact they can carry the Null message and also that a Message code can be now carried in either a Message Page or an Extended Message Page.

**Suggested Remedy**

Suggest the text be changed to read:

a) Both devices must indicate Next Page ability for either to commence exchange of Next Pages.

b) Both devices must indicate Extended Next Page ability for either to commence exchange of Extended Next Pages.

c) If both devices are Next Page able, then both devices shall send at least one Next Page.

d) If both devices are Extended Next Page able, then both devices shall only transmit Extended Next Pages.

e) Next Page exchange shall continue until neither device on a link has more pages to transmit as indicated by the NP bit. A Message Page, or Extended Next Page, with a Null Message Code Field value shall be sent if the device has no other information to transmit.

f) A Message Page provides a Message Code that can carry either a specific message or information that defines how following Unformatted Page(s) should be interpreted.

g) If a Message Code in a Message Page references Unformatted Pages, the Unformatted Pages shall immediately follow the referencing Message Code in the order specified by the Message Code.

h) Unformatted Page users are responsible for controlling the format and sequencing for their Unformatted Pages.

i) A Extended Next Page provides a Message Code and a Unformatted Code. The Message Code can carry either a specific message or information that defines how following Unformatted code should be interpreted.

**Proposed Response**

**PROPOSED ACCEPT.**
While the base pages encoding is owned by IEEE 802.3 and specified in IEEE std 802.3 it is used by three other Working Groups which have allocated selector field values. These Working Groups are IEEE 802.5, IEEE 802.9, which are probably just of academic interest at this point, but more importantly, and the most recent allocation which is being implemented as part of IEEE P802.3REVam, IEEE 1394.

While I think it is very unlikely that these other Working Groups have defined so many abilities that A7 is in use, by changing the global definition of the base page encoding for all Selector field values, as is being done here we are effectively changing these other Standards if they cross reference this figure, or placing us in conflict with them if they simply reproduce the figure.

Suggested Remedy
I see two choices here:

[Option 1] On the assumption that IEEE 802.5, 802.9 and 1394 haven't used A7, which I think is likely, we do redefine A7 to be XNP globally and update Figure 28-7 as shown. This would give the advantage that the XNP function would actually become available to IEEE 1394 and any other Working groups that are allocated a Selector field.

The disadvantage to this approach however is that we may break the text that exists in some of these standards - at a minimum we would need to liaise with 1394 on this approach.

Note to support this the text of subclause 28.2.1.2.3 will need to be changed to read "Extended Next Page (XNP) is encoded in bit D12 of the base Link Code word regardless of the value of the Selector Field.".

[Option 2] On the assumption that we do not want to do anything that would have any impact on IEEE 802.5, 802.9, or 1394, leave the definition of the Base Page encoding as is. Extend Next page would then simply then become another IEEE 802.3 Selector value related Technology ability bit defined in Annex 28B.2. The text from 28.2.1.2.3 would then be moved to Annex 28B.2.

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.
Task force to discuss.

I hope the fonts are a font substitution thing (because the editor doesn't have all the right fonts) and not a change to the styles. The fonts in the document are mostly all wrong.

Suggested Remedy
Perhaps the editor could load appropriate fonts.

Proposed Response
PROPOSED ACCEPT.

Appropriate fonts have been loaded and this problem should disappear from subsequent drafts.
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**Comment Status:** D/dispatched A/accepted R/rejected
**Response Status:** O/open W/written C/closed U/unsatisfied Z/withdrawn
**Sort Order:** comment ID

5/18/2005 9:44:47 AM
**Comment #614**

**Cl 30B SC 30B.2**
**P73 L18**

Grow, Robert Intel

**Comment Type:** ER  **Comment Status:** D editing

In reducing the amount of repeated text, this change will need its own change instruction.

**Suggested Remedy**

Insert into the TypeValue enumeration after 10GBASE-SW.

**Proposed Response**

PROPOSED ACCEPT.

---

**Comment #615**

**Cl 44 SC 44.1**
**P75 L35**

Grow, Robert Intel

**Comment Type:** ER  **Comment Status:** D editing

Too much of the base standard is repeated.

**Suggested Remedy**

Delete all subclauses, figures, tables and paragraphs that are not changed, and insert appropriate change instructions when necessary.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Some information is provided to ensure a level of context. Where not required, the information will be removed.

---

**Comment #616**

**Cl 44 SC 44.1.4.4**
**P77 L31**

Grow, Robert Intel

**Comment Type:** E  **Comment Status:** D editing

The change instruction could be clearer.

**Suggested Remedy**

Insert new row and column into Table 44-1 to add 10GBASE-T

**Proposed Response**

PROPOSED REJECT.

Picture is worth a thousand words. Table is shown to reduce confusion for the IEEE editor.

---

**Comment #617**

**Cl 44 SC 44.3**
**P79 L3**

Grow, Robert Intel

**Comment Type:** E  **Comment Status:** D editing

Editor instruction could be clearer.

**Suggested Remedy**

A row is inserted.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Change editing instruction to read: Insert row into Table 44-2...

---

**Comment #618**

**Cl 00 SC**
**P3 L15**

Grow, Robert Intel

**Comment Type:** E  **Comment Status:** D editing

To aid the publication editor and reduce the problems of parallel projects modifying the same portions of the standard add an Editor's Note.

**Suggested Remedy**

Insert an "Editor's Note (to be removed prior to final publication). The publication editor might want to change some of the editing instructions for this clause to be "Change" instructions rather than "Insert". Reviewers and the publication editor should note that editing instructions have been written to minimize the probability of changes being lost at publication. Other active amendment projects (e.g., P802.3aq and P802.3ap) are likely to modify the same text, and the order of approval for the active amendments is uncertain.

**Proposed Response**

PROPOSED ACCEPT.

---

**Comment #619**

**Cl 44 SC Table 44-2**
**P79 L28**

Grow, Robert Intel

**Comment Type:** E  **Comment Status:** D

**Proposed Response**

PROPOSED ACCEPT.

This should simply be 10GBASE-T as it is a complete PHY (PCS, PMA and PMD).

**Suggested Remedy**

Change per comment. I would also move to the bottom of the table.

**Proposed Response**

PROPOSED ACCEPT.
IEEE P802.3an Comments

Cl 45 SC Table 45-1 P 84 L 8 Comment # 620
Grow, Robert Intel

Comment Type ER Comment Status D

Item like this table need a clearer explanation for the publication editor to avoid deletion of changes from other amendments.

Suggested Remedy
Editor's Note (to be removed prior to publication): Table 45-1 is also being modified by P802.3ap. If P802.3an is not published prior to or simultaneous with P802.3ap, the Reserved Device Addresses shown here that are defined by P802.3ap should be preserved in this table.

Insert similar targeted notes also in for Table 45-2, 45-3, etc.

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 45 SC Table 45-3 P 87 L 44 Comment # 621
Grow, Robert Intel

Comment Type TR Comment Status D

Why the skip to register number 129? The registers start with 0. Why is 802.3ap starting at a decimal register number (150). Let's get some consistency.

Suggested Remedy
If a binary number is desired, then 128 is the place to start.

Proposed Response Response Status W
PROPOSED REJECT.

Register 128 was listed as reserved to maintain consistancy with previous register schemes. The first register in a set has consistently been a control register with the next register being a status. Thus register 128 was reserved should a control register be necessary.

Also comment #561

Cl 45 SC Table 45-8 P 88 L 20 Comment # 622
Grow, Robert Intel

Comment Type ER Comment Status D

Needs a change instruction and an editors note.

Suggested Remedy

45.2.1.6 10G PMA/PMD control 2 register (Register 1.7)
Change the Table 45-7 as follows:

Editor's Note (to be removed prior to publication): Table 45-7 is also being modified by P802.3an and P802.3ap. If P802.3an is not published prior to or simultaneous with P802.3ap the line for bits 1.7.3:0 value 1001 should be "Reserved". If P802.3ap is not published prior to or simultaneous with P802.3ap bits 1.7.3:0 values 1011 and 1010 should be "Reserved".

Other change markings are against P802.3REVam, and may need to be modified based on publication order of current amendment projects, with edit reference changed to latest amendment.

Define bits 1.7.3:0 values for 802.3aq (with underline)
1 0 00 = 10GBASE-KR PMA/PMD type

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 45 SC Table 45-8 P 88 L 22 Comment # 623
Grow, Robert Intel

Comment Type ER Comment Status D

This is table 45-7 in REVam and I don't think has changed.

Suggested Remedy
Correct table number.

Proposed Response Response Status W
PROPOSED ACCEPT.
Comment Type: ER  Comment Status: D

Suggested Remedy:
Insert row into Table 45-11 to define reserved bit 1.11.2 for 10GBASE-T, as follows:
Editor's Note (to be removed prior to publication): Other projects are defining bits in this register (e.g., P802.3ap and P802.3aq). Depending on order of publication, the number of rows in the table may need to be adjusted at time of publication. Bit 1.11.1 is proposed for use by 10GBASE-LRM, bits 1.11.3, and bits 1.11.4 are proposed for use by 10GBASE-KR4 and 10GBASE-KR respectively. Reserved bits will also need to be adjusted based on order of publication. Reserved bits will also need to be adjusted based on order of publication.

Proposed Response: PROPOSED ACCEPT.
IEEE P802.3an Comments

Cl 45 SC 45.2.1.60 P91 L45 Comment # 630
Lynskey, Eric UNH-IOL

Comment Type E Comment Status D

In table 45-50, description should be for setting 0.

SuggestedRemedy
Change to Link Partner THP setting zero is selected and Link Partner THP setting zero is not selected.

Proposed Response PROPOSED REJECT.

Also 478

Cl 45 SC 45.2.1.62.1 P96 L58 Comment # 631
Lynskey, Eric UNH-IOL

Comment Type E Comment Status D

Wrong bit reference.

SuggestedRemedy
Change 7.9.15:13 to 1.132.15:13 on both lines 58 and 59.

Proposed Response PROPOSED ACCEPT.

Cl 45 SC 45.2.1.60 P91 L6 Comment # 632
Lynskey, Eric UNH-IOL

Comment Type E Comment Status D

In table 45-50, bit 1.130.3, description should be for setting 3.

SuggestedRemedy
Change to THP setting three is selected and THP setting three is not selected.

Proposed Response PROPOSED REJECT.

Also 478

Cl 45 SC 45.2.1.60 P91 L8 Comment # 633
Lynskey, Eric UNH-IOL

Comment Type E Comment Status D

In table 45-50, bit 1.130.2, description should be for setting 2.

SuggestedRemedy
Change to THP setting two is selected and THP setting two is not selected.

Proposed Response PROPOSED REJECT.

Also 478

Cl 45 SC 45.2.1.60 P91 L11 Comment # 634
Lynskey, Eric UNH-IOL

Comment Type E Comment Status D

In table 45-50, bit 1.130.1, description should be for setting 1.

SuggestedRemedy
Change to THP setting one is selected and THP setting one is not selected.

Proposed Response PROPOSED REJECT.

See comment 478

Cl 45 SC 45.2.1.60 P91 L14 Comment # 635
Lynskey, Eric UNH-IOL

Comment Type E Comment Status D

In table 45-50, bit 1.130.0, description should be for setting 0.

SuggestedRemedy
Change to THP setting zero is selected and THP setting zero is not selected.

Proposed Response PROPOSED REJECT.

See 478

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 U/unsatisfied Z/withdrawn
SORT ORDER: comment ID
IEEE P802.3an Comments

**Cl 45 SC 45.2.1.71 P98 L12 Comment # 636**
Lynskey, Eric UNH-IOL

**Comment Type** E **Comment Status** D

- Need better cross reference. Also applies to lines 20, 27, and 35 on the same page.
- SuggestedRemedy
  - Replace "section 55" with appropriate reference.

**Proposed Response** Response Status W
- PROPOSED ACCEPT.

---

**Cl 55 SC 55.1.3 P139 L3 Comment # 637**
Yagil, Ariel Texas Instruments

**Comment Type** E **Comment Status** D

- The sentence: "If loop timing is not implemented, the SLAVE PHY clocking is identical to the MASTER PHY clocking" is not clear
- SuggestedRemedy
  - Replace the sentence with: "If loop timing is not implemented, the SLAVE PHY transmit clocking is identical to the MASTER PHY transmit clocking"

**Proposed Response** Response Status W
- PROPOSED ACCEPT IN PRINCIPLE.

---

**Cl 55 SC 55.1.3 P140 L Comment # 638**
Yagil, Ariel Texas Instruments

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

- The variable pcs_status is communicated between the PCS and the PMA (see Figures 55-18 and 55-19), but is missing from the "PMA service interface". It is not clear if scr_status and pcs_status are identical.
- SuggestedRemedy
  - Either add pcs_status line from "PCS receive" to "PHY control" and "Link status" in Figures 55-3, 55-4, 55-5 and 55-17, or merge the variables pcs_status and scr_status

**Proposed Response** Response Status W
- PROPOSED ACCEPT IN PRINCIPLE.

---

**Cl 55 SC 55.1.3.1 P141 L13 Comment # 639**
Yagil, Ariel Texas Instruments

**Comment Type** E **Comment Status** D

- The sentence: "1723 bits are encoded using a systematic LDPC(1723,2048) encoder, which adds 325 LDPC check bits" is repeated two lines below
- SuggestedRemedy
  - Delete the sentence

**Proposed Response** Response Status W
- PROPOSED ACCEPT.

---

**Cl 55 SC 55.1.3.1 P141 L44 Comment # 640**
Yagil, Ariel Texas Instruments

**Comment Type** E **Comment Status** D

- Paragraph 55.2 describes the PCS service interfaces to the management function and PMA, not XGMII
- SuggestedRemedy
  - Change the sentence: "The PCS Service Interfaces to the XGMII and the PMA are abstract message-passing interfaces specified in 55.2." to "The PCS Service Interfaces to the management function and the PMA are abstract message-passing interfaces specified in 55.2."

**Proposed Response** Response Status W
- PROPOSED ACCEPT.

---

**Cl 55 SC 55.2.2 P145 L37 Comment # 641**
Yagil, Ariel Texas Instruments

**Comment Type** E **Comment Status** D

- Figure 55-4: according to 55.2, the management function interface is specified in clause 45, not 28
- SuggestedRemedy
  - Change "(Clause 28)" to "(Clause 45)"

**Proposed Response** Response Status W
- PROPOSED ACCEPT.
IEEE P802.3an Comments

Comment #642

Cl 55  SC 55.2  P145  L45  Comment # 642
Yagil, Ariel  Texas Instruments

Comment Type: E  Comment Status: D
This is a sub-paragraph of 55.2.2, therefore the numbering should be 55.2.2.1, not 55.2.3. This applies to all sub-paragraphs related to PMA service interface.

SuggestedRemedy:
Change numbering of all sub paragraphs between 55.2.3 to 55.2.10.2 (to 55.2.2.1 to 55.2.2.8.2, respectively).

Proposed Response: Response Status W
PROPOSED ACCEPT.

Comment #643

Cl 55  SC 55.2.6.1  P147  L42  Comment # 643
Yagil, Ariel  Texas Instruments

Comment Type: T  Comment Status: D  pcospmclarification
In order to achieve the required BER, rx_symb_vector should include not only the receiver’s best estimate of the symbols that were sent by the remote transmitter, but also a reliability measure for each symbol.

SuggestedRemedy:
Change: “A vector of the four 1-D symbols that is the receiver’s best estimate of the symbols that were sent by the remote transmitter across the four pairs” to “A vector of the four 1-D symbols that is the receiver’s best estimate of the symbols that were sent by the remote transmitter across the four pairs with reliability measures for each symbol.”

Proposed Response: Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Comment #644

Cl 55  SC 55.3.2.2  P151  L19  Comment # 644
Yagil, Ariel  Texas Instruments

Comment Type: E  Comment Status: D
The sentence: “When the PCS Synchronization process is synchronized to the PMA Training 1 bit pattern on pair A every 256 PAM2 symbols which is aligned with the PCS PHY frame boundary, block_lock is asserted” is not clear.

SuggestedRemedy:
Replace with the following sentence: “PMA Training sequence includes 1 bit pattern on pair A every 256 PAM2 symbols, which is aligned with the PCS PHY frame boundary. When the PCS Synchronization process is synchronized to this pattern, block_lock is asserted.”

Proposed Response: Response Status W
PROPOSED ACCEPT.

Comment #645

Cl 55  SC 55.3.2.2  P151  L24  Comment # 645
Yagil, Ariel  Texas Instruments

Comment Type: E  Comment Status: D
The two paragraphs starting at line 24 describe the PCS receive function. Therefore, they belong to 55.3.15.

SuggestedRemedy:
Move the paragraphs to 55.3.15.

Proposed Response: Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Comment #646

Cl 55  SC 55.3.2.2  P151  L29  Comment # 646
Yagil, Ariel  Texas Instruments

Comment Type: E  Comment Status: D
The sentence: “InfoField is not only used for indicating the receiver status to the link partner, but also to make requests for remote transmitter settings.” is not clear.

SuggestedRemedy:
Add at the end of the paragraph “...and makes requests for remote transmitter settings. See 55.4.2.4.”

Proposed Response: Response Status W
PROPOSED ACCEPT.
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<td><strong>Comment</strong>&lt;br&gt;Yagil, Ariel Texas Instruments&lt;br&gt;&lt;br&gt;<strong>Comment Type</strong>: T <strong>Comment Status</strong>: D <strong>pcspma cleanup</strong>&lt;br&gt;In Figure 55-9 the term &quot;Data/Ctrl header&quot; should be used instead of &quot;Data/Ctrl bit&quot; for consistency with the text (e.g. the first sentence of 55.3.4.3)&lt;br&gt;&lt;br&gt;<strong>Suggested Remedy</strong>: Change &quot;bit&quot; to &quot;header&quot;&lt;br&gt;&lt;br&gt;<strong>Proposed Response</strong>: PROPOSED ACCEPT.</td>
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</tbody>
</table>
| 55 | 55.3.11 | 162 | 651 | **Comment**<br>Yagil, Ariel Texas Instruments<br><br>**Comment Type**: E **Comment Status**: D<br>Change "The 65B-LDPC adapts..." to "The 65B-LDPC framer adapts..."

**Suggested Remedy**: Change as suggested

**Proposed Response**: PROPOSED ACCEPT. |
| 55 | 55.3.12 | 163 | 652 | **Comment**<br>Yagil, Ariel Texas Instruments<br><br>**Comment Type**: E **Comment Status**: D<br>Clarify that the test pattern is used in test mode 7

**Suggested Remedy**: Add the following sentence at the end of the paragraph: "This test pattern is used in test mode 7 (see Table 55-7)"

**Proposed Response**: PROPOSED ACCEPT. |
| 55 | 55.3.17.2.4 | 168 | 653 | **Comment**<br>Yagil, Ariel Texas Instruments<br><br>**Comment Type**: E **Comment Status**: D<br>The DECODE function specified in this text is not consistent with the DECODE function used in Figure 55-16. In the text, the argument of this function is a vector of 256 (soft) values of rx_symb_vector. The function returns 50 72-bit rx_raw vector. In the Figure, the function's argument is 65-bit rx_coded vector and the function returns a single 72-bit rx_raw vector

**Suggested Remedy**: Change the text according to the Figure: "DECODE(rx_coded<64:0>)<br>In the PCS Receive process, this function takes as its argument 65-bit rx_coded<64:0> from the LDPC decoder and decodes the 65B-LDPC bit vector returning a vector rx_raw<71:0> which is sent to the XGMII. The DECODE function shall decode the block based on code specified in 55.3.4"

**Proposed Response**: PROPOSED ACCEPT. |
Comment #654
Cl 55 SC 55.3.17.2.4 P 168 L 44
Yagil, Ariel Texas Instruments

Comment Type T Comment Status D encode

The ENCODE function specified in this text is not consistent with the ENCODE function used in Figure 55-15. In the text, the function returns 256 values of tx_symb_vector. In the Figure, the function returns a 65-bit rx_coded vector.

Suggested Remedy
Change the text according to the Figure:
"ENCODE(tx_raw<71:0>) Encodes the 72-bit vector received from the XGMII, returning 65-bit vector tx_coded. The ENCODE function shall encode the block as specified in 55.3.4."

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Comment #655
Cl 55 SC 55.3.17.2.2 P 168 L 10
Yagil, Ariel Texas Instruments

Comment Type T Comment Status D crc8

Specification of valid LDPC frame is not clear (it is mentioned in the PCS introduction in 55.3.2.2)

Suggested Remedy
Add the following sentence to the definition of lf_valid:
"LDPC frame if valid if:
a. All parity check of coded bits are satisfied. 
b. CRC8 field is valid"

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Comment #656
Cl 55 SC 55.3.7 P 160 L 44
Yagil, Ariel Texas Instruments

Comment Type T Comment Status D aux bit

It is not completely clear if the Aux bit participates in CRC8. The text implies that it is not. However, since since Aux bit is an uncoded bit, I believe it should participate (although the aux bit has currently no use and is a-priori known, this may change in future drafts)

Suggested Remedy
Change the first sentence to: "The aggregated 50 65B blocks and the Aux bit shall be used to calculate..."

Proposed Response Response Status W
PROPOSED REJECT.

Comment #657
Cl 55 SC 55.3.17.2.4 P 168 L 52
Yagil, Ariel Texas Instruments

Comment Type E Comment Status D encode

The term "sync header" is used instead of "data/ctrl header" in teh definitions of C,S,T & D.

Suggested Remedy
Change the four occurrences of "sync header" to "data/ctrl header"

Proposed Response Response Status W
PROPOSED ACCEPT.

Comment #658
Cl 55 SC 55.3.17.2.4 P 169 L 7
Yagil, Ariel Texas Instruments

Comment Type T Comment Status D pscpma control

There are no 10GBASE-R control codes specified in Table 55-1

Suggested Remedy
Change "10GBASE-R" to "10GBASE-T"

Proposed Response Response Status W
PROPOSED ACCEPT.

Comment #659
Cl 55 SC 55.3.17.2.5 P 169 L 7
Yagil, Ariel Texas Instruments

Comment Type T Comment Status D pscpma control

It is not clear if the reserved 10GBASE-T control codes in Table 55-1 should be considered as valid or non valid

Suggested Remedy
Add the following sentence: "The reserved 10GBASE-T control codes in Table 55-1 shall be considered as valid"

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Comment #660
Cl 55 SC 55.3.17.2.5 P 169 L 53
Yagil, Ariel Texas Instruments

Comment Type T Comment Status D counters

The counters lf_cnt and lf_invalid_cnt are never used in the state machines (or elsewhere)

Suggested Remedy
Eliminate these counters

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
IEEE P802.3an Comments

**Comment #661**

**Cl 55 SC 55.3.17.2.5 P 170 L 12**

Yagil, Ariel  
Texas Instruments

**Comment Type E**  
**Comment Status D**

The aliases PUDI and PUDR are never used

**SuggestedRemedy**

Eliminate these aliases

**Proposed Response**  
**Response Status W**  
PROPOSED ACCEPT.

---

**Comment #662**

**Cl 55 SC 55.3.18.1 P 170 L 44**

Yagil, Ariel  
Texas Instruments

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

PCS_status is used only for PCS management but also as a message to the PMA (see Figures 55-18 and 55-19)

**SuggestedRemedy**

Add PCS_status also to the list of messages in 55.3.17.3.

**Proposed Response**  
**Response Status W**  
PROPOSED ACCEPT IN PRINCIPLE.

---

**Comment #663**

**Cl 55 SC 55.3.18.2 P 171 L 6**

Yagil, Ariel  
Texas Instruments

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

It seems that the value of lfer_count is always identical to lfer_cnt

**SuggestedRemedy**

Clarify that lfer_count and lfer_cnt are identical (or clarify the difference). Consider renaming lfer_count to lfer_cnt.

**Proposed Response**  
**Response Status W**  
PROPOSED ACCEPT IN PRINCIPLE.

---

**Comment #664**

**Cl 55 SC 55.3.18.2 P 171 L 30**

Yagil, Ariel  
Texas Instruments

**Comment Type E**  
**Comment Status D**

In Figure 55-14, the label near the transition between state START_TIMER and LFER_TEST_LF ("lfer_test_lf") is not a condition and does not add any information

**SuggestedRemedy**

change the label from "lfer_test_lf" to "UCT"

**Proposed Response**  
**Response Status W**  
PROPOSED REJECT.

The condition is lfer_test_if==TRUE, i.e. a new LDPC frame is available for testing

---

**Comment #665**

**Cl 55 SC 55.3.18.2 P 173 L**

Yagil, Ariel  
Texas Instruments

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

Figure 55-15 describe only a portion of the PHY transmit state machine: the 64B/65B encoder (ENCODE function). It does not include functions such as the aggregation of 50 65B blocks, LDPC encode, effect of tx_mode signal etc. Note the the figure is based on 10GBASE-R spec in which (unlike 10GBASE-T) the ENCODE function is most of the functionality of the PCS transmit process

**SuggestedRemedy**

Either extend the state machine to cover more PCS functionality, or clarify that the the figure cover only the 64B/65B encoding

**Proposed Response**  
**Response Status W**  
PROPOSED ACCEPT IN PRINCIPLE.

---

**Comment #666**

**Cl 55 SC 55.3.18.2 P 172 L**

Yagil, Ariel  
Texas Instruments

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

Figure 55-16 describe only a portion of the PHY receive state machine: the 64B/65B decoder (DECODE function). It does not include functions such as the aggregation of 50 65B blocks, LDPC decode, CRC8 check etc. Note the the figure is based on 10GBASE-R spec in which (unlike 10GBASE-T) the DECODE function is most of the functionality of the PCS receive process

**SuggestedRemedy**

Either extend the state machine to cover more PCS functionality, or clarify that the the figure cover only the 64B/65B decoding

**Proposed Response**  
**Response Status W**  
PROPOSED ACCEPT IN PRINCIPLE.
<table>
<thead>
<tr>
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<th>SC</th>
<th>P</th>
<th>L</th>
<th>Comment #</th>
<th>Commenter</th>
<th>Company</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
<th>Proposed Response</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>55.4.2.2</td>
<td>175</td>
<td>42</td>
<td>667</td>
<td>Yagil, Ariel</td>
<td>Texas Instruments</td>
<td>E</td>
<td>Comment Status</td>
<td>The sentence: &quot;If loop timing is not implemented, the SLAVE PHY clocking is identical to the MASTER PHY clocking.&quot; is not clear.</td>
<td>SuggestedRemedy</td>
<td>Replace sentence with: If loop timing is not implemented, the SLAVE PHY transmit clocking is identical to the MASTER PHY transmit clocking.</td>
</tr>
<tr>
<td>55</td>
<td>55.4.2.3</td>
<td>175</td>
<td>57</td>
<td>668</td>
<td>Yagil, Ariel</td>
<td>Texas Instruments</td>
<td>T</td>
<td>pcspmclarification</td>
<td>The meaning of &quot;equivalent LFER&quot; in the sentence &quot;The PMA shall translate the signals received on pairs BI_DA, BI_DB, BI_DC, and BI_DB into the PMA_UNITDATA.indicate parameter rx_symb_vector with equivalent LFER of less than 3.2*10-9 over a channel meeting the requirements of 55.7.&quot; is not clear. Note that the above LFER is achieved after LDPC decoding, which is done in the PCS.</td>
<td>SuggestedRemedy</td>
<td>Change the sentence to: &quot;The PMA shall translate the signals received on pairs BI_DA, BI_DB, BI_DC, and BI_DB into the PMA_UNITDATA.indicate parameter rx_symb_vector. The quality of these symbols shall allow LFER of less than 3.2*10-9 after LDPC decoding, over a channel meeting the requirements of 55.7.&quot;</td>
</tr>
<tr>
<td>55</td>
<td>55.4.2.4</td>
<td>176</td>
<td>L</td>
<td>669</td>
<td>Yagil, Ariel</td>
<td>Texas Instruments</td>
<td>T</td>
<td>info field</td>
<td>Specification of the usage and fields of the InfoField is not clear. For example, it is not clear if in the Message Field more than 1 bit is allowed to be 1. Relations with Figure 55-18 are not. For example, are PBOintM/S and THPinitS/M equal to the requested PBO and THP by the remote device?</td>
<td>SuggestedRemedy</td>
<td>Clarify the specification of the fields of InfoField and their relation to Figure 55-18.</td>
</tr>
</tbody>
</table>

**SuggestedRemedy**

- Replace sentence with: If loop timing is not implemented, the SLAVE PHY transmit clocking is identical to the MASTER PHY transmit clocking.
- Change the sentence to: "The PMA shall translate the signals received on pairs BI_DA, BI_DB, BI_DC, and BI_DB into the PMA_UNITDATA.indicate parameter rx_symb_vector. The quality of these symbols shall allow LFER of less than 3.2*10-9 after LDPC decoding, over a channel meeting the requirements of 55.7."
- Clarify the specification of the fields of InfoField and their relation to Figure 55-18.

**Proposed Response**

- PROPOSED ACCEPT IN PRINCIPLE.
IEEE P802.3an Comments

Cl 55 SC 55.5.3.4 P 191 L Comment # 672
Yagil, Ariel Texas Instruments

Comment Type T  Comment Status X  psd
Tx PSD tolerance (>6dB) is too high and may create interoperability issues. It is desired that it would be possible to implement the transmitter such that the peak to peak voltage at the DAC will not be greater than 2V (the required ptp voltage of 100BASE-T and 1GBASE-T). Therefore, I believe that the Tx PSD tolerance should be reduced to its lower range.

Suggested Remedy
Change Tx PSD limits to the lower 2-3dB of the current limits

Proposed Response  Response Status W

Relevant comments: 272, 592, 672, 692, 696

Cl 55 SC 55.5.2 P 187 L 9 Comment # 673
Sandeep, Gupta Teranetics

Comment Type T  Comment Status X  pmaelec twotone
Table 55-4: Two tone testing better than single tone testing for several reasons, so modify the table for just two-tone testing down to low frequencies

Suggested Remedy
Change the table 55-4 with the single tone entries deleted and the two tone frequencies to be the following 6 pairs for the 6 digital words as given in the table

800e6/1024 * [(13, 17), (47, 53), (101, 103), (179, 181), (277, 281), (397, 401)]

Proposed Response  Response Status W
Task force to discuss and decide

Cl 55 SC 55.4.3.1 P 179 L 1 Comment # 674
Telang, Vivek Broadcom Corp.

Comment Type TR  Comment Status D  powerbackoff
Much of the received signal power will be comprised of return loss from the local transmitter. Does the "received signal power" of table 55-2 assume the echo, NEXT, and FEXT have been subtracted prior to measuring the level? If so, does this imply some sort of blind algorithm is necessary to perform the cancellation since power backoff is set prior to receiving valid data?

Suggested Remedy
Replace "received power" with a more appropriate metric for power backoff, such as decision point SNR, or simply leave it as a function of estimated cable length.

Proposed Response  Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

See response to comment #357
<table>
<thead>
<tr>
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<th>SC</th>
<th>P</th>
<th>L</th>
<th>Comment #</th>
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</tr>
</thead>
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<tr>
<td>45</td>
<td>45.2.7.6</td>
<td>109</td>
<td>1</td>
<td>677</td>
<td>Law, David 3Com</td>
</tr>
<tr>
<td>Comment Type</td>
<td>T</td>
<td>Comment Status</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| If the Auto-Negotiation advertisement register (Register 4) is present, (see 28.2.4.1.3), reads to the AN advertisement register (7.16) will report the value of the Auto-Negotiation advertisement register (Register 4). Any write to the AN advertisement register (7.16) will also cause a write to also occur to the Auto-Negotiation advertisement register (Register 4).

There is no text here, or in subclause 28.3, to describe what happens if an implementation chooses to implement both the Clause 22 register set (Note 1) and the Clause 45 register set and therefore has both register bits 4.15:0 and 7.16.15:0 present. What happens when these registers have different values, what is the Figure 28-15 to 28-18 state machine variable mr_adv_ability[16:1] to be set to, the Clause 22 value or the Clause 45 value.

There would seem to be various options here but I would assume that what is intended is that a write to either of these register will be reflected in the other - the text 'This register is a copy of the Advertisement register 4 described in section 28.2.4.1.3 (See Table 45-120)' seems to imply this however the text doesn't seem to make it clear what to do when the Clause 22 interface is not present.

Note 1 - A Clause 22 register set in the same device as a Clause 45 register set can be accessed though the Clause 45 electrical interface by using the Clause 22 ST encoding of 01 instead of the Clause 45 ST encoding 00.

SuggestedRemedy
Suggest one possibility would be that the text 'This register is a copy of the Advertisement register 4 described in section 28.2.4.1.3' be deleted at the following paragraph be added to the end of subclause 45.2.7.6:

If the Auto-Negotiation advertisement register (Register 4) is present, (see 28.2.4.1.3), then this register is a copy of the Auto-Negotiation advertisement register (Register 4). In this case reads to the AN advertisement register (7.16) will report the value of the Auto-Negotiation advertisement register (Register 4), writes to the AN advertisement register (7.16) will cause a write to occur to the Auto-Negotiation advertisement register (Register 4).

Proposed Response | Response Status | O |

---

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>Comment #</th>
<th></th>
</tr>
</thead>
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<td>45</td>
<td>45.2.7.7</td>
<td>110</td>
<td>18</td>
<td>678</td>
<td>Law, David 3Com</td>
</tr>
<tr>
<td>Comment Type</td>
<td>T</td>
<td>Comment Status</td>
<td>D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| The Technology ability field is now only 7 bits with an additional XNP bit. Assuming we are taking the approach of replacing ability bit A7 rather than considering XNP as just another ability.

SuggestedRemedy
Based on bit A7 being replaced by XNP 'Technology ability field' needs to be reduced to 7 bits, a new XNP bit added.

Proposed Response | Response Status | W |
| PROPOSED ACCEPT IN PRINCIPLE. |
| XNP bit will 7.19.12 and Technology ability field will be changed to 7.19.11:5 |
| Does Annex 28B will need to be updated to reflect the usage of bit 7 for XNP? |

---

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>Comment #</th>
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<td>1</td>
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<td>679</td>
<td>Law, David 3Com</td>
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<td>Comment Type</td>
<td>T</td>
<td>Comment Status</td>
<td>D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| The Technology ability field is now only 7 bits with an additional XNP bit. Assuming we are taking the approach of replacing ability bit A7 rather than considering XNP as just another ability.

SuggestedRemedy
Based on bit A7 being replaced by XNP 'Technology ability field' needs to be reduced to 7 bits, and a new XNP bit added. Note that this is backwardly compatibly with all existing conformant implementations as bit A7 has always been defined as zero in the past hence legacy devices will always correctly report as being not Extended Next Page able.

Proposed Response | Response Status | W |
| PROPOSED ACCEPT IN PRINCIPLE. |
| In Table 28-3, change the Technology Ability Field to 5.11:5, and add a row for the XNP bit 5.12. |
IEEE P802.3an Comments

Comment # 680
Law, David 3Com

Comment Type T, Comment Status D

As discussed in my comment against Figure 28-13, the inclusion of the Message Page bit, with a reference to 28.2.3.4 where 0 = Unformatted Page and 1 = Message Page seems odd in the Extended Next Page definition since by definition it is not a Unformatted or Message Page and is capable of carrying both a Message Code and up to two Unformatted Codes.

The same comment applies to Table 45-123.

SuggestedRemedy
Remove the Message Page bit and merge 7.22.13 with 7.22.14 so that both are reserved bits

Proposed ResponseResponse Status W
PROPOSED ACCEPT IN PRINCIPLE.

Pending resolution of comment XXX on clause 28.

Comment # 681
Law, David 3Com

Comment Type T, Comment Status D

This PICS item states that optimize FLP to FLP burst timing is optional however subclause 28.2.1.1.2 states that it is mandatory in devices that support extended Next Page.

SuggestedRemedy
Change the Status field to read:
ENP:M
!ENP:0

Proposed ResponseResponse Status W
PROPOSED ACCEPT.

Comment # 682
Law, David 3Com

Comment Type E, Comment Status D

The titled for the changed Clauses is incorrect, Revision is a keyword in IEEE-SA speak and is being used incorrectly here.

SuggestedRemedy
Change the title of the changed Clauses from 'Revisions to IEEE P802.3REVam ...' to read 'Changes to IEEE P802.3REVam ...'.

Proposed ResponseResponse Status W
PROPOSED ACCEPT.
IEEE P802.3an Comments

Comment #684
Cl 00 SC P L  Comment Status D
Law, David 3Com

Comment Type E  Comment Status D  editing

Generally too much of the existing text is included where changes are shown, and example of this is where the entire Annex 30B is reproduced to show just one aditional line.

Suggested Remedy
Suggest some of the existing text that is provided for the changed Clauses is beyond that required to provide context to the proposed change and should not be included in future drafts.

Proposed Response  Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Comment #685
Cl 55 SC 55.3.18.3 P 174 L 5  Comment Status D
Law, David 3Com

Comment Type T  Comment Status D  pcspsma testing

The text states that 'the PCS shall transmit a continuous stream of 65B-LDPC encoded 1DSQ128 symbols to the PMA sublayer,' therefore it seems any stream of 65B-LDPC encoded 1DSQ128 symbols is acceptable and it doesn't have to bear any relation to that data being presented on the transmit path of the XGMII.

Suggested Remedy
If this is correct then no change is required, but if not change to specify what is required to be transmitted.

Proposed Response  Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Proposed response:
The rx data presented from the PMA to the PCS will be ignored, so the tx data presented from the PCS to the PMA does not need to be related to the XGMII data.

Comment #686
Cl 55 SC 55.7 Eqn: 55-29 P 208 L 17  Comment Status D
Paul Kish Belden CDT

Comment Type T  Comment Status D  cabling

The PS AELFEXT requirement at low frequencies (less than 8 MHz) and at high frequencies (greater than 300 MHz) is very sensitive to the noise floor of the test setup for pair-to-pair alien crosstalk measurements. In practice 90 dB is a reasonable value for the noise floor of individual pair-to-pair AFEXT measurements. For a worst case scenario with 24 disturbers (bundled configuration with six cables around a victim cable, the combined noise from all disturbers is 76.2 dB. At high frequencies, this gives a significant error (see table below) because the requirement is very close to the noise floor.

<table>
<thead>
<tr>
<th>Noise</th>
<th>PS AFEXT IL PS AFEXT</th>
<th>PS AELFEXT</th>
<th>PS Noise</th>
<th>+ PS Noise</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>77.00 2.19 79.19 76.20 74.43 4.76 70.98 2.96 73.93 76.20 71.91 2.02 64.96 4.09 69.05 76.20 68.28 0.77</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>8</td>
<td>58.94 5.73 64.67 76.20 64.37 0.30</td>
<td></td>
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</tr>
<tr>
<td>10</td>
<td>57.00 6.40 63.40 76.20 63.18 0.22</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>100</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>30.98 29.97 60.95 76.20 60.83 0.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>27.46 37.28 64.74 76.20 64.44 0.30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>24.96 43.61 68.57 76.20 67.88 0.69</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>500</td>
<td>23.02 49.31 72.33 76.20 70.84 1.49</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Suggested Remedy
1) Add a measurement precaution that the noise floor needs to be (10 + 10log(n))better than the specified PS AFEXT requirement.
2) If this isn't practical, provide a formula for correcting the alien PS AFEXT measurements.

Proposed Response  Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Proposed response:
Specify PS AELFEXT below 10 MHz consistent with measurement floor accuracies.
The PS AELFEXT_avg requirement at low frequencies (less than 8 MHz) and at high frequencies (greater than 300 MHz) is very sensitive to the noise floor of the test setup for pair-to-pair alien crosstalk measurements. In practice 90 dB is a reasonable value for the noise floor of individual pair-to-pair AFEXT measurements. For a worst case scenario with 24 disturbers (bundled configuration with six cables around a victim cable, the combined noise from all disturbers is 76.2 dB. At high frequencies, this gives a significant error (see table below) because the requirement is very close to the noise floor.

<table>
<thead>
<tr>
<th>Noise (pr-pr)</th>
<th>90</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS AFEXT</td>
<td></td>
</tr>
<tr>
<td>PS AELFEXT_avg IL</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>8</td>
</tr>
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<td></td>
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<td></td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>500</td>
</tr>
</tbody>
</table>

Suggested Remedy
1) Add a measurement precaution that the noise floor needs to be (10 + 10log(n))better than the specified PS AFEXT requirement.
2) If this isn't practical, provide a formula for correcting the alien PS AFEXT measurements.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Specify PS AELFEXT below 10 MHz consistent with measurement floor accuracies.

There are 8 PBO levels (0, -2, ..., -14). The 'minimum' PBO settings for data mode are (0, -2, ..., -10). Settings -12 and -14 can also be used. In addition start-up (PHY control) uses the PBO level -14.

Suggested Remedy
Either change text to match table or just reference table 55 2 for levels.

Proposed Response Response Status W
PROPOSED REJECT.
Nominal power should be defined clearly. Nominal power refers to power without any PBO and is specified in C55.5.3.4 ("with no PBO, the tx power shall be in the range 3.2dBm and 5.2dBm")
Transmitter PSD mask does not indicate known zero at DC and permits arbitrary energy
between DC and 1MHz.

**SuggestedRemedy**
Specify lower PSD mask for frequencies less than 5MHz. Suggestion: Upper PSD(0) <-
116dBm, Upper PSD(dc<f<5MHz) <-78dBm

**Proposed Response**

**Response Status** W

PROPOSED ACCEPT IN PRINCIPLE.

Modify the frequency range on line 41, page 190 from:

\[ 1 \leq f \leq 150 \]

To:

\[ 0 < f \leq 150 \]

The presence of a transformer will ensure the requested PSD(0) requirement and does not
need to be called out explicitly.

---

Transmitter PSD mask permits a 6dB ripple up to 50MHz an ~8dB ripple up to 200MHz, and
> 8dB ripple from 200 to 400MHz. Equalization and precoding requirements differ for a
smooth spectrum vs a spectrum with ripples.

**SuggestedRemedy**
Add a TBD ripple specification to the PSD mask.

**Proposed Response**

**Response Status** W

PROPOSED ACCEPT IN PRINCIPLE.

Measured PSD shall not deviate from a 3th order polynomial fit by more than +/-1dB

---

Analysis has not been presented to indicate a fixed set of TH precoders can properly equalize
a channel with the large variation of transmit filtering permitted by the spectral mask of figure
55 23.

**SuggestedRemedy**
Show analysis to validate fixed precoders can be used in an environment with such a loosely
defined transmit PSD -or- tighten PSD mask -or- abandon fixed precoders in favor of a
programmable precoder (see ungerboeck_1_0505.pdf).

**Proposed Response**

**Response Status** W

PROPOSED ACCEPT IN PRINCIPLE.

Adopt programmable precoder.

Relevant comments: 272, 592, 672, 692, 696
IEEE P802.3an Comments

Cl 55 SC 55.4.3.1 P 179 L 8 Comment # 694
Powell, Scott Broadcom

Comment Type TR  Comment Status D  powerbackoff EMI
(Resubmission of comment 23 from last meeting deferred by task force.) Power backoff schedule designed without consideration of susceptibility to external interference. Accepted resolution to comment 23 last meeting: "The power backoff levels chosen are subject to further study for EMI susceptibility."

SuggestedRemedy
Sufficient analysis/data should be presented to the task force to permit the addition of the following statement in the standard "back off levels are chosen to allow sufficient margin to comply with common local and national codes for EMI susceptibility."

Proposed Response  Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

EMI data and analysis is welcome. Editor has already included editor's note.

Cl 55 SC 55.8.3.1 P 212 L 38 Comment # 695
Powell, Scott Broadcom

Comment Type TR  Comment Status D  mdi - rl
(Resubmission of comment 34 from last meeting deferred by task force.) Not necessary to specify RL to 500MHz with a 400MHz signal. Accepted resolution to comment 34 last meeting: "Editor will resubmit to working group ballot"

SuggestedRemedy
Change upper limit from 500MHz to 400MHz.

Proposed Response  Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Related comments : 695, 14005
See response to comment 14005

Cl 55 SC 55.5.3.4 P 190 L 46 Comment # 696
Powell, Scott Broadcom

Comment Type TR  Comment Status X  psd
(Resubmission of comment 37 from last meeting deferred by task force.) The transmit PSD mask is defined too loosely. Accepted resolution: "The zero excess bandwidth concept should be discussed by the task force."

SuggestedRemedy
Transmit PSD mask should specify a zero at 400MHz. See presentation ungerboeck_1_0505.pdf to lead discussion.

Proposed Response  Response Status W
Task force to discuss and decide

Relevant comments: 272, 592, 672, 692, 696

Cl 55 SC 55.7.3.1 P 206 L 15 Comment # 697
Powell, Scott Broadcom

Comment Type TR  Comment Status D  cabling
Equation (55 24) does not specify length dependence of ANEXT.

SuggestedRemedy
Include well-known equation for length dependence of ANEXT (see ungerboeck_1_0305.pdf) or add sentence indicating that the given equation applies to all cable lengths.

Proposed Response  Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Will use the equation from ISO/IEC 11801-(IEC 61156-1)

Cl 55 SC 55.4.5.1 P 180 L 8 Comment # 698
Powell, Scott Broadcom

Comment Type T  Comment Status D  powerbackoff
Values for power backoff are not consistent with table 55.2.

SuggestedRemedy
Reference table 55.2 rather than list values.

Proposed Response  Response Status W
PROPOSED REJECT.

See response to comment #688

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  U/unsatisfied  Z/withdrawn
SORT ORDER: comment ID
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IEEE P802.3an Comments

Comment # 699
Cl 55 SC 55.4.5.2
Powell, Scott Broadcom

Comment Type T
Comment Status D

PBO values in text on line 45 and in figure 55 18 do not coincide with table 55 2.

Suggested Remedy
Reference PBO variable value (ie: 1 to 8) rather than actual dB backoff level.

Proposed Response
PROPOSED REJECT.

See comment #688

Comment # 700
Cl 55 SC 55.4.6.1
Powell, Scott Broadcom

Comment Type TR
Comment Status D

Further definition required for an interoperable start-up procedure.

Suggested Remedy
Further definition has been submitted in a supporting presentation (powell_1_0505.pdf).

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 354

Comment # 701
Cl 55 SC 55.4.3.1
Powell, Scott Broadcom

Comment Type TR
Comment Status D

Loosely constrained transmit PSD mask makes predetermined fixed set of precoding functions impractical.

Suggested Remedy
Add requirement for transmitters to support programmable precoder with FIR precoding polynomial. See ungerboeck_1_0505.pdf for details.

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

See comment #473

Comment # 702
Cl 55 SC 55.7.4.3
Powell, Scott Broadcom

Comment Type TR
Comment Status D

Common-mode test methodology, setup, and equipment needs further definition. Referenced cable clamp only valid up to 250MHz. Goals for this test are not clear.

Suggested Remedy
Clearly indicate how noise is to be added and measured. Is the cable clamp required? If so, how is compliance validated beyond 250MHz? Specify which noise immunity standards a PHY which passes this test is expected to satisfy.

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

Relevant comments: 274, 354, 363, 421, 500, 702

See response to comment 354

Comment # 703
Cl 55 SC 55.7
Dieter Schicketanz Independent cabling co

Comment Type T
Comment Status X
cabling

It is mentioned that the clause 55.7 does not specify cabling but the link requirements for 10GBASE-T operation (See note under Table 55.8). Cabling may be specified better. In some cases the requirement are more stringent than in ISO/IEC 11801 and may not be specified as in clause 55.7. They all refer to the low frequency range around 1-4 MHz. This frequency range is not so relevant to the system and it is proposed to correct this. There are two possibilities:

1- Add at the beginning of Clause 55.7 that all low frequency exemptions, plateaus etc. of ISO/IEC 11801 apply. E.G. add in 55.7.1 after b) All low frequency rules of 11801 apply

c) All low frequency rules of 11801 apply

2- Add all this foot notes in the relevant clauses( I hope I got all of them):

3- 55.7.2.1 Insertion loss: values less than 4 dB are for information only

4- 55.7.2.2 Return loss: values less than 3 dB are for information only

5- 55.7.2.4.1 NEXT values for information if channel values are less than 4 dB

6- 55.7.2.4.2 PSNEXT identical

7- 55.7.2 ELFEXT and PSELFEXT larger than 70 dB for information only.

8- 55.7.2.3 PS ANEXT and PSAELFEXT are not specified at the moment in ISO/IEC, but a plateau is being discussed and was already shown in a presentation two meetings ago (Zimmerman et AL). A starting value could be 65 dB.

Suggested Remedy

Proposed Response
Response Status O
**IEEE P802.3an Comments**

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**Comment Type:** T

**Comment Status:** X

For cabling under higher noise environment there are misleading issues. In 55.7.3.1.2 PSANEXT loss to insertion loss ratio it is explained how to perform a calculation. It is not said clearly that all related channels should then be shorter than the one used for calculation. The same happens to 55.7.3.2.2 PSAELFEXT.

**Suggested Remedy**

**Proposed Response**

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**Comment Type:** E

**Comment Status:** X

Under Table 55-8 in 55.7.3.1.2 there is a note saying that Note: For simulating PHY performance to estimate system margin, the PSANEXT constant average (average of the four pairs) is increased by 2.5 dB to account for an averaging of the PSANEXT over frequency. This note is not under Table 55-9. Why is there a difference? Either this note results in a limit or it is an editorial note for system performance, and does not belong to the section 55.7

**Suggested Remedy**

**Proposed Response**

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**Comment Type:** TR

**Comment Status:** D

There also should be an Extended Unformatted Next page encoding for extended next pages with no message code field. The text for how messages for 16 bit message code field values are transmitted when extended next pages are active requires this format for messages that would be followed by more than two unformatted 16-bit pages.

**Suggested Remedy**

Add extended unformatted next page format (all bits other than the flag bits form an unformatted field).

**Proposed Response**

Has been resubmitted from D.14 by Editor
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  U/unsatisfied  Z/withdrawn
SORT ORDER: comment ID

IEEE P802.3an Comments

**Comment** #14001

**Comment Type:** T  **Comment Status:** D1.4 cabling

Clause 55 includes alien crosstalk and extended frequency performance for the 10GBASE-T link segment. As with 1000BASE-T, the link segment specification of 55.7 must be supplemented with an Annex addressing the additional cabling considerations for 10GBASE-T to facilitate the end-user deployment.

**Suggested Remedy**

Include in 802.3 an Annex to Clause 55 addressing additional cabling design guidelines for 10GBASE-T, "Annex 55B - Additional cabling design guidelines for 10GBASE-T".

Boilerplate Proposal:

Annex 55B: Additional cabling design guidelines:

This annex provides additional cabling guidelines for 10GBASE-T deployment on balanced copper cabling systems as specified in 55.7. These guidelines are intended to supplement those in Clause 55.

The 10GBASE-T PHY is designed to operate four pairs of balanced cabling, as specified in ISO/IEC 11801 Edition 2 with appropriate augmentation as specified in 55.7. It is recommended that the guidelines (proposed) in ANSI/TIA TSB 155 and ANSI/TIA 568-B.2-10 and ISO/IEC 11801 Edition 2.1 be considered before the installation of 10GBASE-T equipment for any cabling system.

55B.1 Alien crosstalk - coupling between link segments
55B.1.1 Cabling Topologies
+++point-to-point
+++asymmetrical
+++connector co-location
55B.1.2 Bundled or hybrid cables
55B.1.3 Field Testing
55B.1.4 Mitigation
+++patch cord
+++cabling unbundling
+++connector adjacency
55B.2 Link segment - extrapolated frequency performance
55B.2.1 Mitigation
+++cross-connect versus interconnect
55B.2.1 Field testing

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE. Resubmitted from D1.4 by Editor.

This will be an informative annex and can be added during working group ballot.

**Comment** #14002

**Comment Type:** TR/technical required  **Comment Status:** D  **Suggested Remedy**

The draft specifies a fixed set of both IIR and FIR THP responses. It has been shown by a number of contributors that fixing the precoder response results in a significant performance loss for some channel configurations.

It also benefits some specific receiver configurations, which is unfair.

We propose to maintain the present fixed coefficients scheme and, in addition, to include the option to program the precoder from the receiver.

The receiver could use alternative pre-calculated coefficients or it could dynamically calculate the coefficients.

**Suggested Remedy**

Adopt a programmable solution as per presentation Kota_1_0305.pdf

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE. Resubmitted from D1.4 by Editor.

See comment #473

**Comment** #14003

**Comment Type:** T  **Comment Status:** D  **Suggested Remedy**

Coefficient entries in the THP sets A(1), A(2) and A(3) represent 7-bit values, whereas the 802.3an TF adopted requirement is 8-bit.

**Suggested Remedy**

Replace coefficient entries in the THP sets A(1), A(2) and A(3) with 8-bit representation as follows:

A(1) = [1.78125   1.390625  0.515625 -0.203125 -0.65625 -0.875 -0.90625 -0.796875 0.609375 -0.359375 -0.140625 0 0 0 0]
A(2) = [1.265625 0.375 -0.4375 -0.78125 -0.765625 -0.5 -0.140625 0 0 0 0 0 0 0 0]
A(3) = [0.59375 -0.375 -0.625 -0.515625 -0.25 0.09375 0.078125 0.078125 0 0 0 0 0 0 0 0]

**Proposed Response**

PROPOSED ACCEPT.

Resubmitted by editor from previous meeting.
Comment Type  TR  Comment Status  D  thp bypass D1.4

There is no need for a THP Bypass mode during normal operation in the standard.
1. The THP Bypass mode is not needed for noise margin purposes for 0m operation.
2. If a THP Bypass mode is made available during normal operation, then implementers who are building PHYs based on just the THP Bypass mode will gain a competitive advantage if the specified THP coefficients are all unusable. At present, in Draft D1.3, the THP filters specified are all unusable if 1000BASE-T Alien FEXT/NEXT are the dominant noise sources in the cable plant.

Suggested Remedy
Delete the THP Bypass mode and free up the address space for useful purposes.

Proposed Response  Response Status  W
PROPOSED REJECT.
The task force has agreed that the bypass THP is desirable for very short channels.

This comment was resubmitted from D1.4 by the editor.

An identical comment has been resubmitted by the commenter. See response to comment 384

Comment Type  T  Comment Status  D  mdi - rl

Not necessary to specify RL to 500MHz with a 400MHz signal.

Suggested Remedy
Change upper limit from 500MHz to 400MHz to ease transformer/connector implementation.

Proposed Response  Response Status  W
PROPOSED ACCEPT IN PRINCIPLE.
Related comments : 695, 14005

Currently the draft specifies parameters to 500MHz - see editor's note on page 215

Relax the return loss specification above 400MHz; make no substantive change to the requirements below 400MHz as below:

\[ \text{loss} = 6 - 30\log(f/400) \text{ dB for } 400<f<500 \]

This comment was on D1.4 and was resubmitted by the editor.
The use of one-hot encoding for the register bits appears to be a remnant from an ability register rather than a status register.

Suggested Remedy

Change register bit definitions of 1.131:15:0 to:
1.130:11 Reserved Value always 0, writes ignored
1.130:10:8 Link partner TX power level
Link partner is operating with TX power level setting = -2dB * 1.130:10:8

1.130:7:3 Reserved Value always 0, writes ignored
1.130:2:0 TX power level
PMA is operating with TX power level setting = -2dB * 1.130:2:0

Proposed Response

REJECT.

Nothing wrong with current implementation. The suggested remedy appears to be an improvement but it should be submitted during working group ballot.

Editor will resubmit to working group ballot.