Cl **96** *SC* **96.3.2.2.2** *P* **41** *L* **18** # 4

Ran, Adee Intel

Comment Type **ER** *Comment Status* **A**

"could" should be "may" here.

SuggestedRemedy

replace.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment 3.

Cl **45** *SC* **45.2.1.2001** *P* **26** *L* **34** # 26

Ran, Adee Intel

Comment Type **TR** *Comment Status* **A** *Table 45-2001*

"0 0 1 x" and "0 0 0 1" are not defined.

SuggestedRemedy

Add them as "reserved".

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Use commentors suggested remedy. Additionally, remove "000x = reserved for future use".

Cl **96** *SC* **96.3.3.1.1** *P* **52** *L* **45** # 31

Ran, Adee Intel

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

INVALID is assigned into rx_data[2:0] in Figure 96-9. How can "any random three-bit output" be identified as invalid? there should either be an unique identifiable code, or a separate variable should flag invalid data.

SuggestedRemedy

A variable to flag the indalid data is suggested.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Change
"Any random three-bit outputs are invalid and disregarded"

to

"Three-bit outputs are invalid and disregarded"

Cl **96** *SC* **96.1.2.3** *P* **30** *L* **23** # 68

Ran, Adee Intel

Comment Type **ER** *Comment Status* **A**

"delimiters" out of place, underline instead of dash

SuggestedRemedy

change

"Robust delimeters for Start-of_stream delimiter (SSD), End-of-Stream (ESD), and other control signals"

to

"Robust encoding for Start-of-Stream delimiter (SSD), End-of-Stream delimiter (ESD), and other control signals"

Response *Response Status* **W**

ACCEPT.

Use commentors suggested remedy.

Cl **01** *SC* **1.4** *P* **4** *L* **20** # 119

Grow, Robert RMG Consulting

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

PDF page 18 - You are perpetuating a violation of IEEE style, a capital B indicates byte, and lower case b indicates bit. This was violated for 8B/10B (should have been 8b/10b) with justification that the inventors used a capital B to describe their encoding. This continues to be a problem and shows up with B being ambiguous (64B/65B).

SuggestedRemedy

Follow the style manual, the abbreviation for bit is lower case b.

Response *Response Status* **U**

REJECT.

A lower case b is mathematically correct, however using a Capital B is consistant with other 802.3 Clauses.

Cl **30** *SC* **30.3.2.1.2** *P* **8** *L* **11** # 120

Grow, Robert RMG Consulting

Comment Type **ER** *Comment Status* **A**

PDF page 22 - This is not a change, it is an insert.

SuggestedRemedy

Editing instruction should be an insert with the insert point of the new line identified (e.g., Insert the following after xxxx). Check other approved amendments for lines they might have added to avoid ambiguity of insert point.
Similar correction on line 19, 30.3.2.1.3, and line 34, 30.5.1.1.2.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Similar comment in 63, additionally scrub the remainder of the draft for erroneous editing instructions.

Cl **30** *SC* **30.5.1.1.11** *P* **8** *L* **41** # 121

Grow, Robert RMG Consulting

Comment Type **ER** *Comment Status* **A**

PDF page 22 - This is not shown as a change, it is more like an insert.

SuggestedRemedy

Either include the rest of the current text for BEHAVIOUR and leave as a change or write as an insert and clearly indicate the insert point. The former is preferred as it is not too long. In either case, check approved amendments to look for any text they might have added.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Similar comment in 305, see the proposed change for this text there.

Cl **96** *SC* *P* *L* # 123

Grow, Robert RMG Consulting

Comment Type **ER** *Comment Status* **A**

I tried to indicate figures with specific problem in this clause.

It isn't clear what function color plays in clause 96 figures, especially for red and black text on transition lines of some of the figures. The style manual requires that color not be required to interpret figures.

Additionally font size in many of the figures appears to be much smaller than 12 point, has the figure been shrunk to fit thus decreasing displayed font size? This also happens with imported figures. Some (e.g., 96-17) appear to have been copied from some other drawing program or as bit maps. This is a maintenance headache. It is much better for all figures to be drawn in FrameMaker. Import also is a problem for import of bad style conventions (Figure 96-23 labels a resistor 500O, has a footnote that does not follow IEEE style).

There is no need to include product names (Figures 96-15, 96-23). BroadR-Reach is a

SuggestedRemedy

Replace all (or almost all) imported figures with drawings made in FrameMaker. In redrawing correct the problems noted in comment.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #553.

Cl **99** *SC* *P* **1** *L* **1** # 128

Grow, Robert RMG Consulting

Comment Type **ER** *Comment Status* **A**

PDF page 11 - For some reason, page numbering restarts here rather than continuous numbering of front matter.

SuggestedRemedy

Use continuous page numbering for front matter.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #198.

Cl **99** *SC* *P* **4** *L* **3** # 129

Grow, Robert — RMG Consulting

Comment Type **ER** *Comment Status* **A**

page iv - The note unfortunately is not correct. The D1.2 draft uses publication page numbering, not our consistent Arabic page numbers for balloting.

SuggestedRemedy

Please follow 802.3 balloting convention for numbering with future drafts.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #198.

Cl **00** *SC* **0** *P* **10** *L* **1** # 130

Grow, Robert — RMG Consulting

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

PDF page 24 - This draft includes management in clause 45 registers. This is the only PHY at speeds of 100 Mb/s or 1000 Mb/s to do so. All previous PHYs use clause 22 registers. Mixing management between the two different register spaces is a bad idea. It also specifies use of the MII as specified in Clause 22. The MII includes the management interface (22.1.1,c), a requirement to report rate of operation via that management interface (22.1.3), a requirement to implement the basic register set (22.2.4, para. 3), etc.

The Clause 22 MII specifications also include text (often requirements) that need to be reviewed as part of this project (as well as for 1000BASE-T1 and GEPOF) needs to review Clause 22 for any text that would contradict the specifications of P802.3bw. To move management to Clause 45 for this PHY would require opening Clause 22 and making significant edits. (1000BASE-T1 and GEPOF will have to do the same for both Clause 22 and Clause 35.)

It is important that all three projects review the tradeoffs for management and be consistent in editing legacy clauses. There is a strong case for all three projects taking a similar technical approach to use of these legacy interfaces not carefully examined probably since 1000BASE-T.

SuggestedRemedy

All register definitions need to be written for Clause 22. Text still needs to be examined since it is likely the extended register set will need to be used, and current text assumes only gigabit PHYs will use the extended register set.

Response *Response Status* **U**

REJECT.

The Clause 22 MDIO interface has limited extensibility since all the registers have been allocated. Also, the Clause 45 electrical interface is more compatible with current (and expected future technologies). That is why Clause 45 was created and new technologies should continue to use Clause 45 rather than Clause 22.

Cl **99** *SC* *P* **5** *L* **27** # 131

Grow, Robert RMG Consulting

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

page v - Front matter should reflect the plan for the amendment. It is not correct for either amending 802.3-2012, or 802.3-20xx

SuggestedRemedy

In either case, it is customary to add a description of the amendment (i.e., description of IEEE Std 802.3bw) so that balloters agree on the text to appear in front matter of subsequent amendments. If planned as an amendment to 802.3-2012, then the list of descriptions is incomplete, it should include 802.3bj and 802.3bm in addition to the description of 802.3bw.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

This document will actually be an ammendment to 802.3-2015. List of parallel ammendments will be changed to reflect this.

Cl **96** *SC* **96.1** *P* **29** *L* **1** # 145

Booth, Brad Microsoft

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

This draft should be sent back to task force ballot as the format of the draft does not comply with the IEEE style guidelines. While there are no TBDs in the draft, the draft is missing information in Clause 45 and is not of the quality the working group normally sees when a draft enters working group ballot.

SuggestedRemedy

The task force needs to bring this draft up to the quality that should normally be seen by the working group at this phase of the project.

Response *Response Status* **U**

REJECT.

The suggested remedy does not provide specific suggestions on what changes or improvements must be made.

Cl **96** *SC* **96.3.2.3** *P* **41** *L* **28** # 190

Remein, Duane Huawei Technologies

Comment Type **ER** *Comment Status* **A**

Inconsistent ref to symbol as An. Sometimes A is in italic and sometime it is not. Sometime n is italic subscripted sometime not. Compare ln 28 to line 51.

SuggestedRemedy

Be consistent.
I suggest italics to be consistent with IEEE style guide (variables should be in italics) without subscripting (to be nicer to your editors).

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #433.

Cl **01** *SC* **1.4.313** *P* **17** *L* **5** # 196

Remein, Duane Huawei Technologies

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

The proposed additions to the examples in 1.4.313, 1.4.314 and 1.4.315 are extraneous. The list is an example and does not exhaustively list all PCS's, Many other examples exist in the standard. Unnecessary changes can introduce errors into the standard and should be avoided.

SuggestedRemedy

Strike these changes.

Response *Response Status* **U**

REJECT.

Definitions are still taken from published standards and included in the IEEE standards dictionary online. Due to this to provide context to the definition after it is included in the IEEE standards dictionary online we include the IEEE802.3 clause the definition relates to.

Cl **01** *SC* **1.4.x** *P* **18** *L* **15** # 197

Remein, Duane Huawei Technologies

Comment Type **ER** *Comment Status* **A**

These additions are incorrectly specified. Should include in the editing instruction "Insert the following after 1.4.x" where 1.4.x is the para preceding the added para.
For example:
"Insert the following after 1.4.95:
1.4.95a Automotive Cabling: Balanced 100 ohm one pair cable and associated hardware having specified transmission characteristics are provided in 96.7.1."

SuggestedRemedy

Correct para numbering and editing instructions to follow current style and template.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Staff editors will ensure that the new definitions are added in the appropriate order.

Cl **96A** *SC* **96A** *P* **79** *L* **1** # 200

Remein, Duane Huawei Technologies

Comment Type **ER** *Comment Status* **A** *CL45/22*

I believe this is superfluous, you mention CL 45 and MDIO in CL 96 this annex is not needed

SuggestedRemedy

Drop the annex.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment 580.

Cl **45** *SC* **45.2.1.2002.2** *P* **27** *L* **23** # 204

Remein, Duane Huawei Technologies

Comment Type **ER** *Comment Status* **A** *CL45/22*

Should be L4 header not L5

SuggestedRemedy

Change to L4 header,

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Cl **96** *SC* **96.3.2.4.10** *P* **50** *L* **20** # 221

Remein, Duane Huawei Technologies

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

If interleaving at the transmitter can be either TA/TB or TB/TA how does the receiver know how to de-interleave? Is there some provisioned parameter that controls this?

SuggestedRemedy

Clarify how the receive knows the proper de-interleaving order.
If the answer to this is something like "See 96.3.3.4 PCS Receive Automatic Polarity Detection" then 96.3.3.4 cannot be optional.

Response *Response Status* **U**

REJECT.

Finding the correct TA/TB or TB/TA order is implementation dependent, and it is different from polarity detection.

Cl **96** *SC* **96.3.3.4** *P* **40** *L* **42** # 225

Remein, Duane Huawei Technologies

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

802.3 prides itself on it's reputation as a "plug & play" technology. The required provisioning of MASTER/SLAVE will interfere with this functionality. If two PHYs provisioned both as MASTER or both as SLAVE are connected they will not operate correctly.
In all previous 802.3 PHY that I am aware of the MASTER/SLAVE relationship, if required, was either negotiated or very obvious (as in PON where the CLT is the master and all ONUs are slaves).
How will you prevent fault conditions due to misconfiguration of MASTER/SLAVE?

SuggestedRemedy

Add negotiable MASTER/SLAVE functionality.

Response *Response Status* **U**

REJECT.

This type of network does not have "plug & play" functionality, it is a pre-configured embedded network.

Cl **96** *SC* **96.5.1** *P* **62** *L* **28** # 226

Remein, Duane — Huawei Technologies

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

This EMC requirement is way to vague; what are the EMC requirements for automotive applications?
Systems containing a 100BASE-T1 Ethernet PHY shall be able to meet the Electromagnetic Compatibility (EMC) requirements of the automotive applications.

SuggestedRemedy

Add a reference to an external specification or include a full specification in this draft.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Change
"Systems containing a 100BASE-T1 Ethernet PHY shall be able to meet the Electromagnetic Compatibility (EMC) requirements of the automotive applications. In CISPR 25, test methods have been defined to measure the EMC performance of the PHY in terms of RF immunity and RF emission."

to

"A system integrating the 100BASE-T1 PHY shall comply with applicable local and national codes, or as agreed between customer and supplier, for the limitation of electromagnetic interference. CISPR 25 test methods have been defined to measure the EMC performance of the PHY in terms of RF immunity and RF emission."

Note: "or as agreed between customer and supplier" verbage is copied from ISO6722.

Cl **96** *SC* **96.3.3.1** *P* **50** *L* **34** # 251

Thompson, Geoff — GraCaSI

Comment Type **ER** *Comment Status* **A**

The grammar in this paragraph is pretty bad thus leaving the meaning fuzzy.

SuggestedRemedy

Replace with the following text (which I believe has the correct meaning): A JAB state machine as shown in Figure 96-10 is implemented to prevent any mis-detection of ESD1 and ESD2 that would make the PCS Receive state machine lock up in the DATA state.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Change
"To prevent any misdetection of ESD1 and ESD2 that make the PCS Receive state machine locked up in DATA state, a JAB state machine as shown in Figure 96-10 is implemented to make sure the maximum dwelling time in DATA state shall be less than a certain time specified by rcv_max_timer."
to
"A JAB state machine, as shown in Figure 96-10, is implemented to prevent any mis-detection of ESD1 and ESD2 that would make the PCS Receive state machine lock up in the DATA state. The maximum dwelling time in DATA state shall be less than a timer specified by rcv_max_timer."

Cl **96** *SC* **96.3.3.1** *P* **52** *L* **33** # 252

Thompson, Geoff — GraCaSI

Comment Type **ER** *Comment Status* **A**

Plurarity mismatch in 2nd sentence.

SuggestedRemedy

Change to one of the following two choices (2nd preferred): a) The received symbol is converted to a 2-D ternary pair (RAn", RBn) first. b) The received symbols are converted to 2-D ternary pairs (RAn," RBn) first."

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Change
"The received symbols are converted to 2-D ternary pair"
to
"The received symbols are converted to a 2-D ternary pair"

Cl **96** *SC* **96.3.3.1.2** *P* **53** *L* **40** # 253
Thompson, Geoff GraCaSI

Comment Type **ER** *Comment Status* **A**

The 2nd sentence of this paragraph is too long and is unparsable.

SuggestedRemedy

Fix. I can't figure out appropriate text.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Change

"The check_idle function operates on the current 2-D ternary symbols after de-interleaving rx_symb_vectors and the next five 2-D ternary symbols after de-interleaving rx_symb_vectors available via PMA_UNITDATA.indication and returns a Boolean value indicating whether the six consecutive 2-D ternary symbols after de-interleaving rx_symb_vectors contain symbols corresponding to the idle mode encoding or not, as specified in 96.3.2."

to

"The check_idle function operates on six consecutive 2-D ternary symbols after de-interleaving rx_symb_vectors. The check_idle function then returns a Boolean value indicating if these six consecutive symbols are idle symbols, as specified in 96.3.2."

Cl **96** *SC* **96.4.4** *P* **59** *L* **5** # 254
Thompson, Geoff GraCaSI

Comment Type **ER** *Comment Status* **A**

State name uses a proprietary trademark unnecessarily

SuggestedRemedy

Change state name from: DISABLE BroadR-Reach TRANSMITTER" TO: "DISABLE TRANSMITTER"

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment 577.

Cl **96** *SC* **96.5.1.3** *P* **62** *L* **48** # 255
Thompson, Geoff GraCaSI

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

The spec is not for a transmission" but rather a "transmission rate".

SuggestedRemedy

Change the text from: "The ternary symbol transmission at the MDI shall be.." TO: 'The ternary symbol transmission rate at the MDI shall be..."

Response *Response Status* **U**

REJECT.

See response to comment 78, propose deleting 96.5.1.3.

Cl **96** *SC* **96.5.2** *P* **63** *L* **12** # 256
Thompson, Geoff GraCaSI

Comment Type **ER** *Comment Status* **A**

The word Reserved" in test mode 3 is incorrect. The register is", in fact," not reserved.

SuggestedRemedy

Remove the word "Reserved"

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment 80.

Cl **96** *SC* **96.10** *P* **76** *L* **1** # 262
Thompson, Geoff GraCaSI

Comment Type **ER** *Comment Status* **A**

There is no substance to the PICs

SuggestedRemedy

Complete the PICs Pro Forma

Response *Response Status* **U**

ACCEPT.

Cl **30** *SC* **30.5.1.1.11** *P* **22** *L* **38** # 272
Thompson, Geoff GraCaSI

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

Doesn't cover all conditions of whether or not the media is available

SuggestedRemedy

Add definition for how this object should read when PHY is in FORCE or in TEST mode. Technical completion issue?)

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

The Link Monitor state diagram, Figure 96-16, will cover all states of the PHY, including FORCE and TEST mode.

Change: "For 100BASE-T1 PHYs the enumerations match the states within the link integrity state diagram Figure 96-16."
To
"For 100BASE-T1 PHYs the enumerations match the states within the link monitor state diagram Figure 96-16."

Cl **96** *SC* **96.1.2.3** *P* **30** *L* **22** # 273
Thompson, Geoff GraCaSI

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

Carrier extension is a) an obsolete artifact of CSMA/CD and b) was never a feature of 100 Mb/s operation.

SuggestedRemedy

Delete the words or carrier extension"

Response *Response Status* **U**

ACCEPT.

Cl **96** *SC* **96.5.1** *P* **62** *L* **28** # 275
Thompson, Geoff GraCaSI

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

The first sentence has a shall" requirement with non-specified"," generalized requirement. There is no way to respond to a PICs entry for this "shall".

SuggestedRemedy

Either remove the "shall" and say instead that it "is intended to meet" the requirement or provide a very specific test reference that constitutes the complete and specific testable requirements.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #226 for changed text.

Cl **96** *SC* **96.5.1.1** *P* **62** *L* **32** # 276
Thompson, Geoff GraCaSI

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

This is not an actual test specification. Test specifications have parametric values. This only calls out test method information.

SuggestedRemedy

Add the parametric value/limit that is to be used by the test as the pass/fail limit, either directly or by reference.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #595 for changed text.

Cl **96** *SC* **96.5.1.2** *P* **62** *L* **40** # 277
Thompson, Geoff GraCaSI

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

This is not an actual test specification. Test specifications have parametric values. This only calls out test method information.

SuggestedRemedy

Add the parametric value/limit that is to be used by the test as the pass/fail limit, either directly or by reference.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #596 for changed text.

Cl **96** *SC* **96.5.2** *P* **63** *L* **3** # 278

Thompson, Geoff GraCaSI

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

a 3 bit control register"? Just any one?

SuggestedRemedy

This needs to point ot the control register specification with a hot link. Where is the register specified?

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Modify text to read more similarly to 40.6.1.1.2.

Change
"The test modes for the 100BASE-T1 PHY described in Table 96-4 are provided to allow for testing of the transmitter waveform, transmitter distortion, transmitter jitter, and transmitter droop. The tests modes only change the data symbols provided to the transmitter circuitry and not alter the electrical and jitter characteristics of the transmitter and receiver from those of notmal operation. The shall be enabled by setting a 3-bit control register."

to

"The test modes described below shall be provided to allow testing of the transmitter waveform, transmitter distortion, transmitter jitter, and transmitter droop. The modes shall be enabled by setting bits 2102.13:15 (100BASE-T1 PMA/PMD test control register) of the the PHY Management register set as shown in Table 96-4. These test modes shall only change the data symbols provided to the transmitter circuitry and shall not alter the electrical and jitter characteristics of the transmitter and receiver from those of normal (non-test mode) operation."

Cl **96** *SC* **96.5.2** *P* **63** *L* **27** # 279

Thompson, Geoff GraCaSI

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

This is all flim flam

SuggestedRemedy

Specify the test in such a way that it is relevant to the in use" transmit waveform and its functional requirement with fully specified test conditions. Make the test mandatory.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Remove the whole paragraph. Also, in table 96-4, remove "Test mode 3 – Transmit jitter test in SLAVE mode (reserved)", and insert "Reserved, operations not defined".

Entire task force is offended!

Cl **96** *SC* **96.5.3** *P* **64** *L* **29** # 282

Thompson, Geoff GraCaSI

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

A high impedance" probe is called for with no specification.

SuggestedRemedy

Specify a minimum input impedance that will satisfy the "high Impedance" requirement of these tests.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Add "with resistance > 10KOhm and capacitance < 1pF" to Figures 96-17 and 96-18. Similar to Clause 55 10GBASE-T.

Cl **00** *SC* **0** *P* **2** *L* **36** # 302

Thompson, Geoff GraCaSI

Comment Type **ER** *Comment Status* **A**

Text that should accompany table is missing.

SuggestedRemedy

Add the following text: List of special symbols

The following is a list of special symbols and operators that may be used within this standard. When printing this document, this table should be checked to see that each printed symbol is appropriate for

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Suggested remedy is not complete but it is the assumption of the editor that there is missing text surrounding the Special Characters Table. This text will be updated appropriately.

Cl **00** *SC* **0** *P* **4** *L* **8** # 303

Thompson, Geoff GraCaSI

Comment Type **ER** *Comment Status* **A**

Page numbering does not follow 802.3 convention as it is called out in this note. This will cause great confusion during balloting. (Note that the balloting cover letter does not address this issue.

SuggestedRemedy

Change the page numbering on all subsequent drafts so that the printed page number matches the PDF page number for the duration of the balloting process. The IEEE editor will change this as appropriate during preparation for publication after the standar

Response *Response Status* **U**

ACCEPT.

See response to comment 198. Discard roman numerals and use arabic numerals for entire draft.

Cl **01** *SC* **1.4.x** *P* **18** *L* **28** # 304

Thompson, Geoff GraCaSI

Comment Type **ER** *Comment Status* **A**

RE: PHY-Initialization" This is a descriptive explanation and specification"," not a definition.

SuggestedRemedy

Move the specification and rationale aspect to the 100BASE-T1 clause and replace this with an actual definition.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #132. PHY-Initilization paragraph has been replaced with FORCE mode paragaph.

Also refer to comment #141

Cl **30** *SC* **30.5.1.1.11** *P* **22** *L* **38** # 305

Thompson, Geoff GraCaSI

Comment Type **ER** *Comment Status* **A**

Calls for insertion in 1st paragraph. First paragraph is limited to 10 Mb/s operation PHYs

SuggestedRemedy

Paragraph 3 looks like a better fit.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Change
"Change the first paragraph in BEHAVIOUR DEFINED AS section of 30.5.1.1.11 as follows:"
to
"Insert into the third paragraph in BEHAVIOUR DEFINED AS section of 30.5.1.1.4 as follows:"

See comment 64 for changing "30.5.1.1.11" to "30.5.1.1.4"

Cl **96** *SC* **General** *P* **0** *L* **0** # 315

Thompson, Geoff GraCaSI

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

The term vector" is broadly used throughout the draft. It is not a defined term in 802.3 (though I admit the term is used in earlier amendments"," it is not defined)

SuggestedRemedy

Add definition for "vector" to the main definitions clause.

Response *Response Status* **U**

REJECT.

As the Commenter acknowledges this currently exists in the 802.3 Standard, therefore the commenter is respectfully requested to submit a maintenance request.

Cl **96** *SC* **96.1.2** *P* **15** *L* **30** # 322

Zimmerman, George CME Consulting, Inc.

Comment Type **ER** *Comment Status* **A**

No reference is made to the most closely related PHY clause, Clause 25 - except by its common name.

SuggestedRemedy

Add sentence before line 30:
"IEEE 802.3 100BASE-TX PHY is specified in Clause 25, and it operates of two pairs of a channel comprising unshielded copper cabling or better. Like the 100BASE-T1 PHY, this PHY uses ternary signalling and interfaces to the Clause 22 MII. In contrast, the 100BASE-T1 PHY operates using full-duplex communications (using echo cancellation) over a single twisted pair channel.
(then continue with existing statement about 1000BASE-T...

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Insert on page 29, line 33:

"The 100BASE-T1 PHY operates using full-duplex communications (using echo cancellation) over a single balanced twisted-pair. In contrast, the IEEE 802.3 100BASE-TX PHY, specified in Clause 25, operates on two pairs of a channel comprising unshielded copper cabling or better. Like the 100BASE-T1 PHY, this PHY uses ternary signalling and interfaces to the Clause 22 MII. "

Cl **96** *SC* **96.1.3** *P* **16** *L* **30** # 323

Zimmerman, George CME Consulting, Inc.

Comment Type **ER** *Comment Status* **A**

the text in this clause and 96.1.4 looks like it is an instruction to the editor to insert, or a placeholder.
there are no explicit notational definitions that I can easily find in the referenced clause.

SuggestedRemedy

Change line 30 to read:
"The notation used in the state diagram follows the conventions of 21.5". (which is what other IEEE 802 clauses read).

Similarly address 96.1.4, line 35.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change
"Notation definitions in 21.5 are used in State diagrams, variable definitions, etc., in this clause."
to
"The notation used in the state diagram follows the conventions of 21.5."

Change
"Service specification methods in 1.2.2 are used in this clause."
to
"The method and notation used in the service specification follows the conventions of 1.2.2."

Cl **96** *SC* **96.2** *P* **18** *L* **3** # 324

Zimmerman, George CME Consulting, Inc.

Comment Type **ER** *Comment Status* **A**

Language is inconsistent with that of standards requirements.

This same general comment applies to 96.3.1, 96.3.2.4.1, 96.3.2.4.2, 96.3.3.3, 96.4.1

SuggestedRemedy

In 96.2, replace "adopts the service primitives.." with "shall use the service primitives in"

Similarly edit other referenced clauses.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Will use commentors suggested remedy for consistent language in 96.2, 96.3.1, 96.3.2.4.1, 96.3.2.4.2, 96.3.3.3, and 96.4.1.

Cl **96** *SC* **96.3.2.2.1** *P* **27** *L* **8** # 325
Zimmerman, George CME Consulting, Inc.

Comment Type **ER** *Comment Status* **A**

"could be" is improper language for a standards implementation option (used 3 times)

SuggestedRemedy

Replace "could be" with "may be" (2 places in 96.3.2.2.1, one in 96.3.2.2.2)

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to comment #3.

Cl **96** *SC* **96.3.3.1** *P* **37** *L* **1** # 326
Zimmerman, George CME Consulting, Inc.

Comment Type **ER** *Comment Status* **A**

Figure 96-9 text is too small to be readable

SuggestedRemedy

Redraw or scale so that font is consistent with 802.3 style and readable.

Response *Response Status* **W**

ACCEPT.

Cl **96** *SC* **96.5.4.1** *P* **52** *L* **32** # 327
Zimmerman, George CME Consulting, Inc.

Comment Type **ER** *Comment Status* **A**

MATLAB is a registered trademark of The Mathworks, Inc.

SuggestedRemedy

Mark and reference trademark.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to comment 558.

Cl **96** *SC* **96.5.4.5** *P* **56** *L* **33** # 328
Zimmerman, George CME Consulting, Inc.

Comment Type **ER** *Comment Status* **A**

table implies other modes, in confusing and difficult to read style.
Same comment applies for 96.5.5.2, Receiver Frequency tolerance

SuggestedRemedy

write the requirement inline in the sentence above, appending it after "within the range " to read (for each of 96.5.4.5 and 96.5.5.2):
"within the range 66.666 MHz +/- 100 ppm."
Delete tables

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to comment #442.

Cl **96A** *SC* *P* **65** *L* **13** # 329
Zimmerman, George CME Consulting, Inc.

Comment Type **ER** *Comment Status* **A**

Comments about "Typical standard Ethernet PHYs" seem general and not related to this PHY.

SuggestedRemedy

Delete Sentence beginning with "Typical standard Ethernet", and replace "So, PHY control settings..." with "100BASE-T1 PHY control settings..."

Response *Response Status* **W**

ACCEPT.

Cl **01** *SC* **1.4.377** *P* **3** *L* **43** # 331

Zimmerman, George CME Consulting, Inc.

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

Break in sentences breaks the link between the description of SSD code groups and 100BASE-T1 and makes it generic - statement shoudl only apply to 100BASE-T1.

SuggestedRemedy

Modify line 43, either by:
Replacing,"onto MDI. SSD consists..." with "onto MDI, so that the SSD consists..." (preferable)
or:
Insert, "For 100BASE-T1" prior to "SSD consists", (acceptable, but not preferred)

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Similar to comment #24, see the proposed change for this text.

Cl **96** *SC* **96.2** *P* **18** *L* **13** # 332

Zimmerman, George CME Consulting, Inc.

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

FORCE mode is used without definition or pointer to section describing what it is. While the concept appears clear, using it as a name of a mode, should have a pointer to the mode. It appears that the best definition is in 96.4.4.

SuggestedRemedy

Add cross-reference to end of line 13, after "FORCE mode". (e.g., See Clause 96.4.4)

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Comment #132 has made an appropiate change to define FORCE Mode. Use suggested remedy to add cross reference at end of line 13.

Cl **96** *SC* **96.5.5.3** *P* **57** *L* **11** # 333

Zimmerman, George CME Consulting, Inc.

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

Alien crosstalk is poorly represented by discrete-level ternary signals, due to the diverse coupling between link segments. The test is inadequate.
Additionally, the noise source is specified as a Broad-R Reach, which is a trademarked, non-referenced source.

SuggestedRemedy

Replace noise source with a 66 MHz gaussian noise source, see clause 55 for an example configuration.

Response *Response Status* **W**

REJECT.

The worst-case noise source is a 100BASE-T1 transmitter, similar to what is used in the 1000BASE-T test.

BroadR-Reach references have been removed based on other comments.

Cl **96** *SC* **96.3.3.1.3** *P* **40** *L* **4** # 334

Zimmerman, George CME Consulting, Inc.

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

Notation - is 36K +/- 1.8K 36*1024 +/- 1.8*1024 or is it * 1000?

SuggestedRemedy

write out numbers (e.g., 36000 +/- 1800)

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See the response to comment #33 for the updated rcv_max_timer definition.

Cl **96** *SC* **96.4.4** *P* **44** *L* **26** # 335

Zimmerman, George CME Consulting, Inc.

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

Figure 96-15 doesn't "illustrate" the PHY control, it is the PHY control state diagram. The requirement to comply with the state machine is missing as a result of this language.

same thing for link monitor state machine 96-16.

SuggestedRemedy

Insert, "PHY Control shall comply with the state diagram description given in Figure 96–15."
(same for link monitor, Figure 96-16, on page 46, line 40)

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change "Figure 96-15 illustrates the 100BASE-T1 PHY Control."
to
"PHY Control shall comply with the state diagram shown in Figure 96-15."

Change "In FORCE mode, Link Monitor State diagram supports the 100BASE-T1 PHY Control operation."
to
"Link Monitor operation as shown in state diagram of Figure 96-16, shall be provided to support PHY Control ."

Cl **96** *SC* **96.5.3** *P* **51** *L* **48** # 336

Zimmerman, George CME Consulting, Inc.

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

Is "the generator of the disturbing signal must have sufficient linearity and range..." - is this stating a requirement on the test fixture? if so, it needs further definition.

SuggestedRemedy

change "must have" to "shall have", and define "sufficient linearity and range" as well as "appreciable distortion" in measurable terms

Response *Response Status* **W**

REJECT.

"must have sufficient linearity and range" in the context of the disturber generator is the exact language used in 40.6.1.1.3. This text was adopted because the disturber generator used with 100BASE-T1 test fixture 2 is almost identical to 1000BASE-T test fixture 3.

Cl **96** *SC* **96.10.3** *P* **63** *L* **2** # 338

Zimmerman, George CME Consulting, Inc.

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

PICS are blank

SuggestedRemedy

Write, fill in and check PICS

Response *Response Status* **W**

ACCEPT.

See response to comment #571.

Cl **96** *SC* **96.1.1** *P* **29** *L* **16** # 356

D'Ambrosia, John Dell

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

The "Objectives" sub-clause should be removed. It is relevant to the 802.3bw project, but becomes dated once put into the 802.3 standard, especially if any new projects modify this text.

SuggestedRemedy

Delete 96.1.1

Response *Response Status* **U**

REJECT.

96.1.1 will be updated with all of the 802.3bw objectives.

Cl **96** *SC* *P* **29** *L* **1** # 359

D'Ambrosia, John Dell

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

Clause 96 appears to contain everything related to the PHY (outside of management). Therefore, there is no reason to do a clause correlation diagram such as Table 80-2. However, such a table is very useful to help the reader quickly understand what things are Mandatory or optional.

SuggestedRemedy

add a table similar in nature to 80-2 that looks at the various layers / key sections and states what is optional, mandatory, or applicable.

Response *Response Status* **U**

REJECT.

A table similar to 80-2 does not apply to Clause 96. In this ammendment, such a table would only contain one entry.

Cl **96B** *SC* *P* **81** *L* **1** # 365

D'Ambrosia, John — Dell

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

This text seems to imply a test mode. Is it normative requirement for PHY? This reads like a feature, as opposed to some statement whether it needs to be supported or not. Only two inferences found in the document of this text.

SuggestedRemedy

Specify whether these test modes are required and normative

Response *Response Status* **U**

REJECT.

These tests modes are not required. Annex 96B is informative.

Cl **96B** *SC* **96B** *P* **67** *L* **1** # 581

Wu, Peter — Marvell

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

This section describes two test modes but has no normative requirements to support them.

SuggestedRemedy

Suggest adding PCS loopback requirement in PCS section, enabled by 3.0.14.

Response *Response Status* **U**

REJECT.

These tests are not required for normal operation mode. See response to comment #365.

Cl **96** *SC* **96.5.1.1** *P* **48** *L* **37** # 595

Dawe, Piers — Mellanox

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

This says "The Direct Power Injection (DPI) test method according to IEC62132-4 shall be used to measure..." but 802.3 is not a test spec. Any "shall" must be applied to the interface under test, not to the test itself. There is no requirement to do the test, only to comply with the criterion it would measure, if carried out. Also, what constitutes a pass?

SuggestedRemedy

This should say something like:
The sensitivity of the PMA's receiver to radiofrequency CM RF noise shall [some criterion, e.g. be more than x dBm, or comply with Class X in the test method] if measured according to the Direct Power Injection (DPI) method of IEC 62132-4.

Note no "DUT". We don't specify devices, we specify interfaces, with everything behind them, not just the PMA. Is an IC spec suitable for specifying an equipment anyway?

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Change
"The Direct Power Injection (DPI) test method according to IEC62132-4 shall be used to measure the sensitivity of the DUT's PMA receiver to radiofrequency CM RF noise."

to

"The sensitivity of the PMA's receiver to radiofrequency CM RF noise shall be tested according to the Direct Power Injection (DPI) method of IEC 62132-4, and comply with test limits agreed between customer and supplier."

Cl **96** *SC* **96.5.1.1** *P* **48** *L* **42** # 596

Dawe, Piers Mellanox

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

This says "The 150Ohm test method according to IEC61967-4 shall be used to measure..." but 802.3 is not a test spec. Any "shall" must be applied to the interface under test, not to the test itself. There is no requirement to do the test, only to comply with the criterion it would measure, if carried out. Also, what constitutes a pass?

SuggestedRemedy

This should say something like:
The emission of the PMA transmitter to its electrical environment shall [some criterion, e.g. be less than x dBm, or comply with Class X in the test method] if measured according to the 1 ohm/150 ohms direct coupling method of IEC 61967-4.

Note no "DUT". We don't specify devices, we specify interfaces, with everything behind them, not just the PMA. Is an IC spec suitable for specifying an equipment anyway?

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Change
"The 150Ohm test method according to IEC61967-4 shall be used to measure the emission of the DUT's PMA transmitter to its electrical environment."

to

"The emission of the PMA transmitter to its electrical environment shall be tested according to the 150Ohm direct coupling method of IEC61967-4, and comply with test limits agreed between customer and supplier."

Cl **96** *SC* **96.5.3** *P* **50** *L* **19** # 598

Dawe, Piers Mellanox

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

This says "The following fixtures, or their equivalents... shall be used for measuring..." But 802.3 is not a test spec. Any "shall" must be applied to the interface under test, not to the test itself. There is no requirement to do the test, only to comply with the criterion it would measure, if carried out.

SuggestedRemedy

Change "shall be used" to "are used". (The shalls go in the text for each test, which refers to the relevant test fixture.)

Response *Response Status* **U**

REJECT.

For example, "shall be used" in the context of 1000BASE-T test fixtures is the exact language used in 40.6.1.1.3.

Cl **96** *SC* **96.5.3** *P* **50** *L* **20** # 599

Dawe, Piers Mellanox

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

This says "The tolerance of resistors shall be +/- 0.1%." But 802.3 is not a test spec. Tolerancing a load is the test implementer's problem - he must look after his tolerances according to e.g. the accuracy or cost that he needs. Compare e.g. 85.8.3.5 Test fixture - no tolerances. We have been over this in multiple projects.
And see another comment on this section.

SuggestedRemedy

Delete "The tolerance of resistors shall be +/- 0.1%."

Response *Response Status* **U**

REJECT.

Tolerances are specified to ensure repeatable results.

Cl **96** *SC* **96.5.4** *P* **52** *L* **1** # 601

Dawe, Piers Mellanox

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

This says "Where a load is not specified, the transmitter shall meet the requirements of this section with a 100 ohm (the value can vary within +/-1% range) resistive differential load connected to each transmitter output." But 802.3 is not a test spec. Tolerancing a load is the test implementer's problem - he must look after his tolerances according to e.g. the accuracy or cost that he needs, and writing it this way means that at least conceptually, an implementation must pass with 99 ohm and with 101 ohm - twice as many tests, not necessary.

SuggestedRemedy

Delete "(the value can vary within +/-1% range)". If they are 1%-critical, tweak the limits for e.g. droop.

Response *Response Status* **U**

REJECT.

See response to comment #599.