Cl **00** *SC* **0** *P* *L* # i-14

Carlson, Steven — Marvell Semiconducto

Comment Type **TR** *Comment Status* **X**

The draft doe not align with its objectives.
Support 100 Mb/s operation in automotive environments (e.g. EMC, temperature) over a single balanced twisted pair.
Do not preclude the ability to survive automotive fault conditions (e.g. shorts, over voltage, EMC,
ISO16750).

No reference is made to temperature or ISO16750 in the draft. There is some material on overvoltage, but it is not referenced to ISO16750.

SuggestedRemedy

Incorporate Clause 97.10 Environmental Specifications in P802.3bp D1.4. This will supply all the relevant references, and will align 100BASE-T1 and 1000BASE-T1.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* *L* # i-15

Carlson, Steven — Marvell Semiconducto

Comment Type **TR** *Comment Status* **X**

The draft is not aligned with the project objectives.

Support fast-startup operation using predetermined configurations which enables the time from power_on2 = FALSE to a state capable of transmitting and receiving valid data to be less than 100 ms.

Support optional operation with run-time configuration, that specifies a maximum allowable time from power_on2 = FALSE to a state capable of transmitting and receiving valid data.

There is no mention of the 100 msec. start-up requirement in the draft and no value is given for the "maximum allowable time." If a maximum allowable time is an objective, then it must be stated, incorporated into the PICs, and a test method developed.

SuggestedRemedy

Create a new subclause (not sure where) "Start-up Time", and provide the necessary information.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **2** *L* **1** # i-28

Law, David — Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

This amendment to IEEE Std 802.3-201x defines type 100BASE-T1 PCS, type 100BASE-T1 PMA sublayer, and type 100BASE-T1 Medium Dependent Interface, used in 100BASE-T1 PHY. This specification provides fully functional and electrical specifications for the type 100BASE-T1 PHY. This specification also specifies the baseband medium used with 100BASE-T1.

SuggestedRemedy

This amendment to IEEE 802.3 Standard for Ethernet defines the 100BASE-T1 Physical Layer (PHY) specifications and management parameters for point-to-point full duplex 100 Mb/s operation over single twisted pair balanced cabling.

This specification provides fully functional and electrical specifications for the type 100BASE-T1 PHY. This specification also specifies the baseband medium used with 100BASE-T1.

Proposed Response *Response Status* **O**

Cl **01** *SC* **1.3** *P* **18** *L* **14** # i-29

Law, David — Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

Typo, missing space.

SuggestedRemedy

The text '... engines -Radio ...' should read '... engines - Radio ...'.

Proposed Response *Response Status* **O**

Cl **01** *SC* **1.3** *P* **18** *L* **14** # i-16

Turner, Michelle

Comment Type **GR** *Comment Status* **X**

IEC CISPR 25 Edition 3.0 is cited in the normative reference clause, however it is not cited in text. Does this document appear in previous amendments or in the base? If not please cite in text. If it's not needed for the implementation of the standard, it shouldn't be in the normative reference clause.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **01** *SC* **1.5** *P* **20** *L* **52** # i-6

Anslow, Peter — Ciena Corporation

Comment Type **ER** *Comment Status* **X**

The abbreviations "RBW" and "VBW" only appear once in the draft (apart from here in the abbreviations list). In this case, we do not include the abbreviation in 1.5 but expand the abbreviation where it is used instead.

SuggestedRemedy

Remove the abbreviations "RBW" and "VBW" from 1.5.
In 96.5.4.4, change:
"... should be RBW=10 kHz, VBW=30 kHz, ..." to:
"... should be resolution bandwidth = 10 kHz, video bandwidth = 30 kHz, ..."

Proposed Response *Response Status* **O**

Cl **22** *SC* **22.1** *P* **22** *L* **1** # i-12

Grow, Robert — Self Employed

Comment Type **GR** *Comment Status* **X**

*** Comment submitted with the file 85554200003-Clause 22 changes.docx attached ***

The project needs changes to Clause 22 to be compatible with the base document. This is highlighted on P802.3/D3.0, page 45, line 40.

The statement that the MII is for PHYs of 10 Mb/s and above is clearly wrong. The MII is only specified for 10 Mb/s and 100 Mb/s, and the MII management interface is also only applicable to some of the 1000 Mb/s PHYs that have been specified. P802.3bw does not propose use of either the MII management interface nor the MII register set.

Examples of problematic text (P802.3/D3.0):

22.1.1, c) -- P802.3bw does not use these signals, only the MII data paths, so the management interface needs to be optional to claim use of the MII.

22.1.2 -- This subclause describes exposed interfaces, not a logical interface, where components are separable (e.g., use data paths but not management interface, electrical specifications do not apply to a logical interface.)

22.1.5 -- "to determine PHY capabilities for any supported speed of operation". This is not true for many Ethernet PHYs. Since P802.3bw is 100 Mb/s PHYs and it does not use MII capabilities for management, it has the greatest burden to make sure Clause 22 is corrected.

22.2.4, 3rd para. -- "All PHYs that provide an MII shall incorporate the basic register set. All PHYs that provide a GMII shall incorporate an extended basic register set consisting of the Control register (Register 0), Status register (Register 1), and Extended Status register (Register 15). The status and control functions defined here are considered basic and fundamental to 100 Mb/s and 1000 Mb/s PHYs. Registers 2 through 14 are part of the extended register set." P802.3bw is, I believe, the first 100 Mb/s PHY for which this is not true, so it has to be fixed.

22.8.3.5, MF45 and MF 59 -- "all PHYs". Not true of a P802.3bw PHY.

SuggestedRemedy

The attached file proposes changes to Clauses 22 to fix the text. A more comprehensive comment has been submitted on P802.3 (to also fix for Gigabit). If accepted, the PICS for Clause 22 will also need to be revised to provide optionality similar to that in Clause 35. The P802.3bw TF should take the lead in correction of the PICS whether the changes are done in P802 or P802.3bw.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.3.2.1.2** *P* **23** *L* **12** # i-30

Law, David — Hewlett-Packard Ltd

Comment Type **ER** *Comment Status* **X**

Please provide clear instructions in respect to where to place the new entry in the aPhyType and aPhyTypeList attributes.

SuggestedRemedy

Change the editing instruction for aPhyType and aPhyTypeList to read 'Insert the following new entry in APPROPRIATE SYNTAX after the entry for 100BASE-T2:'.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.2** *P* **23** *L* **35** # i-31

Law, David — Hewlett-Packard Ltd

Comment Type **ER** *Comment Status* **X**

The instructions state that the 100BASE-T1 entry be inserted '... below 100BASE-T2' however that could mean between the entry for 100BASE-T2 and 100BASE-T2HD which I don't think is correct. Instead the 100BASE-T1 entry should be inserted after the 100BASE-T2FD entry.

SuggestedRemedy

Change the editing instruction for aMAUType to read 'Insert the following new entry in APPROPRIATE SYNTAX after the entry for 100BASE-T2FD:'.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.4** *P* **23** *L* **46** # i-1

Hajduczenia, Marek — Bright House Network

Comment Type **E** *Comment Status* **X**

Enumeration values are typically presented in "" and not in ''. For example: Offline maps to the enumeration "offline,"

SuggestedRemedy

Change

For 100BASE-T1, a link_status of OK maps to the enumeration 'available'. All other states of
link_status map to the enumeration 'not available'.

to

For 100BASE-T1, a link_status of OK maps to the enumeration "available". All other states of
link_status map to the enumeration "not available".

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1** *P* **24** *L* **10** # i-35

Mcclellan, Brett — Marvell Semiconducto

Comment Type **TR** *Comment Status* **X**

page 26 section 45.2.1.14b defined a new register "BASE-T1 PMA/PMD extended ability register (1.18)", however the new register is not listed in Table 45-3.

SuggestedRemedy

Add the new register to Table 45-3.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1** *P* **24** *L* **10** # i-3

Marris, Arthur — Cadence Design Syst

Comment Type **TR** *Comment Status* **X**

Table 45-3 needs to include register 1.18

SuggestedRemedy

Insert row for Register 1.18 for "BASE-T1 PMA/PMD extended ability"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1** *P* **24** *L* **3** # i-7

Anslow, Peter Ciena Corporation

Comment Type **E** *Comment Status* **X**

For the existing clauses that are being modified by the amendment, we show one heading of each level down to the heading for the text being modified. (As was shown in the 802.3 FrameMaker template).
Headings for 45.2, 45.2.3, and 45.2.3.1 are missing

SuggestedRemedy

Add the headings for 45.2, 45.2.3, and 45.2.3.1

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1** *P* **24** *L* **5** # i-8

Anslow, Peter Ciena Corporation

Comment Type **TR** *Comment Status* **X**

Register 1.18 has been allocated in 45.2.1.14b. This means that Table 45-3 should show the change from the base standard where this register is reserved:
"1.17 through 1.29 Reserved"

SuggestedRemedy

Insert a change to Table 45-3 above the existing change in a similar manner as was done in IEEE Std 802.3bj-2014.
Make the editing instruction:
"Replace the reserved row for 1.17 through 1.29 in Table 45-3 with the following three rows (unchanged rows not shown):"
Add a new Table 45-3 with three rows plus headings (no underline or strikethrough font, make 45.2.1.14b a cross-reference):

1.17	Reserved	
1.18	BASE-T1 PMA/PMD extended ability	45.2.1.14b
1.19 through 1.29	Reserved	

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.131** *P* **26** *L* **30** # i-36

Mcclellan, Brett Marvell Semiconducto

Comment Type **TR** *Comment Status* **X**

MASTER-SLAVE manual config enable description says "Value always 1, writes ignored" but the last column indicates R/W. The description should not say that writes are ignored which contradicts the objective of not precluding auto-negotiation.

SuggestedRemedy

change description to "Set to 1 for manual configuration"
on line 46 change "Bit 1.2100.15 returns a one to indicate that MASTER or SLAVE configuration is set manually."
to "Bit 1.2100.15 is set to one for manual MASTER or SLAVE configuration."

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.131** *P* **26** *L* **30** # i-9

Anslow, Peter Ciena Corporation

Comment Type **TR** *Comment Status* **X**

In Table 45-98a, the Description for bit 1.2100.15 is "Value always 1, writes ignored" and the R/W column has "R/W". If writes are ignored, then the bit is not R/W.
Note - There are no table entries in Clause 45 which say "writes ignored" where the R/W column contains "R/W"

SuggestedRemedy

Either remove ", writes ignored" from the description or change to "RO"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.131.1** *P* **26** *L* **47** # i-10

Anslow, Peter Ciena Corporation

Comment Type **E** *Comment Status* **X**

The first sentence of 45.2.1.131.1 is: "Bit 1.2100.15 returns a one to indicate that MASTER or SLAVE configuration is set manually."
The second sentence starts "In that case," which doesn't make sense because the bit is always a 1.

SuggestedRemedy

Delete the start of the sentence "In that case,"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.131.2** *P* **26** *L* **52** # i-11

Anslow, Peter — Ciena Corporation

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

The first sentence of 45.2.1.131.2 is: "Bit 1.2100.14 is used to select MASTER or SLAVE operation if MASTER-SLAVE manual config enable bit 1.2100.15 is set to one."
This doesn't make sense because bit 1.2100.15 is always one.

SuggestedRemedy

Delete "if MASTER-SLAVE manual config enable bit 1.2100.15 is set to one".

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.132** *P* **27** *L* **23** # i-13

Scantamburlo, Nicola — Canova Tech

Comment Type **G** *Comment Status* **X**

Typo in register number

SuggestedRemedy

Written Register 1.2101.12:0, should be 1.2102.12:0

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.1** *P* **28** *L* **35** # i-4

Marris, Arthur — Cadence Design Syst

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

There is no need to say MII is optional

SuggestedRemedy

Delete "* MII is optional for 100 Mb/s systems."

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.1** *P* **28** *L* **40** # i-5

Marris, Arthur — Cadence Design Syst

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

Reword the following:
"This clause defines the 100BASE-T1 PHY type, operating at 100 Mb/s, Physical Coding Sublayer and type Physical Medium Attachment sublayer. Together, the PCS and the PMA sublayers comprise the 100BASE-T1 Physical layer."

The RS is included in the Physical layer (but not the PHY)>

SuggestedRemedy

Change:
"This clause defines the 100BASE-T1 PHY type, operating at 100 Mb/s, Physical Coding Sublayer and type Physical Medium Attachment sublayer. Together, the PCS and the PMA sublayers comprise the 100BASE-T1 Physical layer."
To:
"This clause defines the PCS and PMA sublayers of the 100BASE-T1 PHY."

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.1** *P* **29** *L* **24** # i-57

Law, David — Hewlett-Packard Ltd

Comment Type **TR** *Comment Status* **X**

The MII TX_EN signal is shown crossing the PMA service interface to the PHY CONTROL block yet the PMA Service Interface defined in 96.2.2, and illustrated in Figure 96-3, does not support this. Further the PHY CONTROL state diagram does not use TX_EN, although it does use tx_enable (see page 62, line 1).

SuggestedRemedy

[1] Remove the TX_EN connection to PHY CONTROL in Figure 96-2 and 96-14.
[2] If tx_enable is required by PHT CONTROL, updated the PMA Service Interface defined in 96.2.2 to provide a primitive to signal tx_enable across the PMA Service Interface and update in Figure 96-2 and 96-14 accordingly.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.1** *P* **29** *L* **3** # i-56

Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

The Technology Dependent Interface should be designated with a dashed line and a cross reference to Clause 28 where it is defined should be added.

SuggestedRemedy

[1] Add a dashed line to designate the Technology Dependent Interface.
[2] Change the text 'Technology Dependent Interface' to read 'Technology Dependent Interface (Clause 28)'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.1.1.2** *P* **30** *L* **36** # i-2

Hajduczenia, Marek Bright House Network

Comment Type **E** *Comment Status* **X**

Stray underline under the word "management" in line 36

SuggestedRemedy

Remove the said underline

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.1.2** *P* **31** *L* **1** # i-20

Law, David Hewlett-Packard Ltd

Comment Type **TR** *Comment Status* **X**

The definition of the notation, service and timer specification should be placed under their own subclause heading. In addition there is no statement that the state diagrams takes precedence over text.

SuggestedRemedy

[1] Add a new subclause 96.1.2 as follows:

96.1.2 'Conventions in this clause'.

The body of this clause contains state diagrams, including definitions of variables, constants, and functions. Should there be a discrepancy between a state diagram and descriptive text, the state diagram prevails.

[2] Renumber and rename existing subclause 96.1.2 'Notation' to be 96.1.2.1 'State Diagram Notation'.

[3] Renumber, reorder and rename existing subclause 96.1.3 'Service specification' to be '96.1.2.3 'Service specification'.

[4] Renumber, reorder and rename existing subclause 96.1.4 'Timer specification' to be '96.1.2.2 'State Diagram Timer specification'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.2.2** *P* **33** *L* **2** # i-58

Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

Why is Figure 96-3, which is an overview, placed after Figure 96-2, which is the more detailed view of the signals.

SuggestedRemedy

Swap the order of Figure 96-3 and Figure 96-2.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3** *P* **38** *L* **19** # i-60

Law, David — Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

The block is labelled 'PCS DATA TRANSMIT ENABLE' yet subclause 96.3.2.1 is 'PCS data transmission enable'.

SuggestedRemedy

Suggest that these should match.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3** *P* **38** *L* **20** # i-59

Law, David — Hewlett-Packard Ltd

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

pcs_reset is missing as an input to the PCS TRANSMIT ENABLE block.

SuggestedRemedy

Add pcs_reset as an input.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3** *P* **38** *L* **37** # i-61

Law, David — Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

There should be a vertical dashed line to designate the Media Independent In-terface as there is for the PMA Service interface.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.1** *P* **39** *L* **5** # i-62

Law, David — Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

The title of subclause 96.3.2.1 'PCS data transmission enable' yet on this line the reference is to '... the PCS data transmission enabling ...' and the name of the state diagram is 'PCS data transmission enabling state diagram'.

SuggestedRemedy

Consistently use either 'transmission enable' or 'transmission enabling'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.1.1** *P* **39** *L* **47** # i-17

Zhang, Jin — Marvell Semiconducto

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

The definition of tx_error_mii is counter-intuitive. False - errored transmission, True- No error. It also contradicts the definition of TX_ER, where 1 means error, 0 means no error.

SuggestedRemedy

False: no error. True: error transmission.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.11** *P* **39** *L* **48** # i-18

Wu, Peter — Marvell Semiconducto

Comment Type **GR** *Comment Status* **X**

FALSE and TRUE descriptions are inverted.

SuggestedRemedy

The tx_error_mii variable is generated in the PCS data transmission enabling state diagram as specified in Figure 96-5.When this variable is set to FALSE it indicates a non-errored transmission, when set to TRUE it indicates an errored transmission.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.2** *P* **39** *L* **4** # i-63

Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

According to figure 96-4 the 4B/3B conversion function is part of the PCS TRANSMIT since this has TXD<3:0>, tx_error_mii and tx_enable_mii as inputs. Since subclause 96.3.2.3 is the PCS Transmit subclause, suggest that the 4B/3B subclause 96.3.2.2, and its subclauses, should be moved under 96.3.2.3.

SuggestedRemedy

[1] Insert new heading 96.3.3 PCS Transmit to match block in Figure 96-4.
[2] Renumber 96.3.2.2 to 96.3.3.1 as the first subclause (function) of the PCS transmit.
[3] Renumber remaining subclauses.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.2.2** *P* **40** *L* **30** # i-64

Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

Suggest '... shall be discarded at the receiver side upon ...' should read '... shall be discarded at the receiver upon ...'.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.2.2** *P* **40** *L* **30** # i-65

Law, David Hewlett-Packard Ltd

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

It seems odd to include a shall statement in respect to the receiver in the transmit PCS section.

SuggestedRemedy

Suggest '... shall be discarded at the receiver side upon ...' should read '... will be discarded at the receiver upon ...'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.3** *P* **42** *L* **19** # i-66

Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

This text, and the following subclauses, only relates to the state diagram, the 4B/3B function for example is also part of the PCS transmit (see my previous comment).

SuggestedRemedy

Rename this subclause to be 'PCS Transmit state diagram'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.3.1** *P* **43** *L* **11** # i-68

Law, David Hewlett-Packard Ltd

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

Delete the DATA variable as it is not used in the transmit state diagrams.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.3.1** *P* **43** *L* **50** # i-69

Law, David Hewlett-Packard Ltd

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

Delete the tx_symb_vector variable as it is not used in the transmit state diagrams.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.3.1** *P* **43** *L* **8** # i-67

Law, David Hewlett-Packard Ltd

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

Delete the config variable as it is not used in the transmit state diagrams.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.4** *P* **45** *L* **34** # i-70

Law, David Hewlett-Packard Ltd

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

The text states that 'The reference diagram of PCS transmit symbol mapping is indicated in Figure 96-8.' however the figure shown in Figure 96-8 is much broader that just PCS transmit symbol mapping, for example the 4B/3B conversion block is shown, and one of the blocks itself is labled 'SYMBOL MAPPING'.

SuggestedRemedy

Suggest text be changed to read ' 'The reference diagram of PCS transmit is shown in Figure 96-8.' . The title of Figure 96-8 should also be changed.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.4** *P* **46** *L* **15** # i-71

Law, David Hewlett-Packard Ltd

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

Based on the equation in subclause 96.3.2.4.3, tx_mode is an input to the side stream scrambler.

SuggestedRemedy

Add tx_mode as an input to the block 'SIDE STREAM SCRAMBLER'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.4** *P* **46** *L* **3** # i-72

Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

Please label the signals from the block 'SYMBOL MAPPING' to the block '2D to 1D'.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.4** *P* **46** *L* **4** # i-73

Law, David Hewlett-Packard Ltd

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

Based on the equations in subclause 96.3.2.4.6 'Generation of (TAn, TBn) when tx_mode = SEND_I', 96.3.2.4.7 'Generation of (TAn, TBn) when tx_mode = SEND_N, tx_enable = 1' and 96.3.2.4.8 'Generation of (TAn, TBn) for idle sequence when tx_mode=SEND_N' all using tx_mode as an input, add both tx_mode and tx_enable as an inputs to the block 'SYMBOL MAPPING'.

SuggestedRemedy

Add tx_mode and tx_enable as inputs to the block 'SYMBOL MAPPING'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.4** *P* **46** *L* **8** # i-75

Law, David Hewlett-Packard Ltd

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

It is not clear how the PCS transmit state diagram fits within the figure. As an example in the state 'TRANSMIT DATA' the tx_sym_pair is set equal to ENCODE of tx_data<2:0> which would appear to the equivalent of sdn<2:0>.

SuggestedRemedy

Show where the PCS transmit state diagram fits within this figure.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.2.4** *P* **46** *L* **8** # i-74

Law, David Hewlett-Packard Ltd

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

Based on the equations in subclause 96.3.2.4.4 using both tx_enable and loc_rcvr_status as inputs, these need to be added as inputs to the 'DATA SCRAMBLER' block.

SuggestedRemedy

Add both tx_enable and loc_rcvr_status as inputs to the 'DATA SCRAMBLER' block.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **50** *L* **12** # i-38

Law, David — Hewlett-Packard Ltd

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

The values IDLE, SSD1, SSD2, SSD3, ESD1, ESD2, ESD3 and ERR_ESD3 that Rxn are tested against in Figure 96-10a and 96-10b are not defined.

SuggestedRemedy

Define the values IDLE, SSD1, SSD2, SSD3, ESD1, ESD2, ESD3 and ERR_ESD3.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **50** *L* **15** # i-37

Mcclellan, Brett — Marvell Semiconducto

Comment Type **E** *Comment Status* **X**

transitions that do not share the same conditions should not share an entrance to a state. This also applies to other figures in this draft.

SuggestedRemedy

Change the figures such that each transition has it's own entrance to a state

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **50** *L* **21** # i-26

Law, David — Hewlett-Packard Ltd

Comment Type **TR** *Comment Status* **X**

The variable 'mii_fc_err' is set TRUE in the 'BAD SSD' state of the 'PCS Receive state diagram', set FALSE elsewhere, but is never used. Further, a false carrier error is already correctly signalled across the MII through the use of 'pcs_rx_er = TRUE' and 'pcs_rx_dv = FALSE' in the 'BAD SSD' state.

SuggestedRemedy

Delete the 'mii_fc_err' variable and remove from the 'BAD SSD' and 'IDLE' states of the 'PCS Receive state diagram'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **50** *L* **3** # i-25

Law, David — Hewlett-Packard Ltd

Comment Type **TR** *Comment Status* **X**

The variable 'JBstate' is generated based on the JAB state diagram state and its only use is to control the Receive state diagram, forcing it back to the IDLE state is 'JBstate = JAB'. The variable rcv_jab_detected is generated by the JAB state diagram, it is TRUE in the JAB state, and false in all other states. It is therefore equivalent to 'JBstate = JAB', however the variable is never used.

I suggest that it is clearer to use a variable set in the JAB state diagram to control the Receive state diagram, rather than variable that is generated in text.

SuggestedRemedy

Delete the 'JBstate' variable definition. Change 'JBstate = JAB' on the open arrow to the IDLE state in the Receive state diagram to read 'rcv_jab_detected = TRUE'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **50** *L* **39** # i-27

Law, David — Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

Typo

SuggestedRemedy

Receiving' should read 'receiving' in state 'SSD'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **52** *L* **20** # i-24

Law, David — Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

Please remove the bolding of 'receiving = TRUE + rcv_max_timer_done = TRUE'.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **52** *L* **26** # i-43
Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

If this is a note, please use the correct formatting for a note.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **52** *L* **26** # i-39
Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

Typo.

SuggestedRemedy

Suggest that '... before DATA state;' should read '... before the DATA state;'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **52** *L* **26** # i-40
Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

Typo.

SuggestedRemedy

Suggest that '... there are total of ...' should read '... there are a total of ...'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **52** *L* **27** # i-41
Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

Typo.

SuggestedRemedy

Suggest that '... states before IDLE state (including DATA state) ...' should read '... states before the IDLE state (including the DATA state) ...'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **52** *L* **27** # i-42
Law, David Hewlett-Packard Ltd

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

Suggest reword without the use if shall statement as state diagram contains the normative requirements.

SuggestedRemedy

Suggest that '... that shall do DATA decoding.' be changed to read '... that perform DATA decoding.'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **52** *L* **28** # i-44
Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

Suggested rewording of the second sentence of the note.

SuggestedRemedy

Suggest that the second sentence of the note be changed to read 'As a result, the depth of data flush-in delay line is the same as the flush-out delay line ensuring correct packet reception at the MII.'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **52** *L* **32** # i-45
Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

There are variables, functions and timers defined for these state diagrams.

SuggestedRemedy

Change the text 'The state variables in Figure ...' to read 'The variables, functions and timers used in Figure ...'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **52** *L* **7** # i-22

Law, David Hewlett-Packard Ltd

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

Subclause 96.1.4 'Timer specification' states that 'All timers operate in the manner described in 40.4.5.2.'. Based on this there is no definition for what assigning a timer with the value zero will have, and regardless, the state diagram only ever tests the value of rcv_max_timer_done.

Further, the rcv_max timer is started in the 'MONJAB' state, the action 'start rcv_max_timer', so as defined by 40.4.5.2 through its reference to 14.2.3.2, the variable rcv_max_timer_done is set to FALSE at that point. Based on this I don't see the need for the action 'rcv_max_timer <= 0' in the state 'JABIDLE'.

SuggestedRemedy

Delete the action 'rcv_max_timer <= 0' in the state 'JABIDLE'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1** *P* **53** *L* **1** # i-19

Wu, Peter Marvell Semiconducto

Comment Type **G** *Comment Status* **X**

The Figure 96-10a is not aligned well, some of the first line letters are not fully shown

SuggestedRemedy

Re-align the figure

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1.1** *P* **52** *L* **36** # i-23

Law, David Hewlett-Packard Ltd

Comment Type **ER** *Comment Status* **X**

Please format the variable definitions as found in subclause 40.4.5.1 'State diagram variables' here and elsewhere in the draft.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1.1** *P* **53** *L* **7** # i-32

Law, David Hewlett-Packard Ltd

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

Delete the variable definitions for RXD<3:0>, RX_DV and RX_ER since these variables are not used in the in Figure 96-10a, Figure 96-10b or Figure 96-11.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1.2** *P* **53** *L* **36** # i-21

Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

The text states that 'The symbol conversion is as specified in 96.3.3.1.'. Is this the correct cross-reference, subclause 96.3.3.1 is the 'PCS Receive overview' whereas subclause 96.3.3.2 is the 'PCS Receive symbol decoding'.

SuggestedRemedy

Change the cross-reference from 96.3.3.1 to 96.3.3.2. Alternatively delete this sentence as it doesn't seem particularly relevant to the definition of this timer.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.1.4** *P* **53** *L* **43** # i-33

Law, David Hewlett-Packard Ltd

Comment Type **TR** *Comment Status* **X**

Subclause 96.3.3.1.4 'Messages' defines 'PUDI' however this is never used. Further there is no clear description that I can find of now the 'rx_symb_vector' ternary symbols supplied by the PMA_UNITDATA.indication primitive from the PMA are mapped to rx_symb_pair other than a mention on de-interleaving rx_symb_vectors in the check_idle function defined in subclause 96.3.3.1.2 'Functions' and a statement that 'received symbols are converted to a 2-D ternary pair (RAn, RBn) first' in subclause 96.3.3.2 'PCS Receive symbol decoding'.

SuggestedRemedy

[1] Update the description in subclause 96.3.3.2 'PCS Receive symbol decoding' to use the variables rx_symb_vector and rx_symb_pair.

[2] Remove subclause 96.3.3.1.4 'Messages' and it definition of 'PUDI' as it is not used by the state diagrams. Alternatively, provide a state diagram that uses PUDI and describes how the rx_symb_vector received in the message PUDI is mapped to rx_symb_pair which is used by the DECODE function of the state diagram.

[3] Suggest a diagram similar to 96-8 'PCS transmit symbol mapping' be provided for the PCS receive symbol mapping.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.3.3.2** *P* **54** *L* **1** # i-46

Law, David Hewlett-Packard Ltd

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

Subclause 96.3.3.2 'PCS Receive symbol decoding' states that 'The received ternary pairs (RAn, RBn) are decoded to generate signals rx_data<2:0>, rx_dv, and rx_error.' and that ' These signals are processed through 3B/4B conversion to generate signals RXD<3:0>, RX_DV and RX_ER at the MII'. Is this correct as Figure 96-10 'PCS Receive state diagram' generates pcs_rx_er, pcs_rx_dv and rx_data<2:0> and isn't it these that are converted by the 3B/4B conversion.

SuggestedRemedy

Suggest that the text '... generate signals rx_data<2:0>, rx_dv, and rx_error.' Should be changed to read '... generate signals rx_data<2:0>, pcs_rx_dv, and pcs_rx_error.'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.4** *P* **56** *L* **4** # i-54

Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

Suggest reword of the text 'The PMA provides full duplex communications employing to and from medium using ...'.

SuggestedRemedy

Suggest the text 'The PMA provides full duplex communications employing to and from medium using 3-level ...' be changed to read 'The PMA provides full duplex communications to and from medium employing 3-level ...'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.4.1** *P* **56** *L* **12** # i-55

Law, David Hewlett-Packard Ltd

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

This text reads 'This function shall conform to 40.4.2.1 without any exceptions, noting that the 36.2.5.1.3 reference is valid and the optional LPI reference is not used.' I don't see the point of stating that 'the 36.2.5.1.3 reference is valid' since it is already stated that subclause 40.4.2.1 will be followed without any exceptions. Further, on examination of 40.4.2.1 I don't see any reference to 'optional LPI'. The definition of power_on in subclause 36.2.5.1.3 does mention the low power mode bit (0.11) in the Clause 22 MII Control register, but this is not related to LPI. Instead this is a Power down bit which places the PHY in a mode whereby it is only required to respond to management transactions (see IEEE Std 802.3-2012 subclause 22.2.4.1.5). Since 100BASE-T1 is supporting Clause 45 registers this bit will not be supported.

SuggestedRemedy

Change the text 'This function shall conform to 40.4.2.1 without any exceptions, noting that the 36.2.5.1.3 reference is valid and the optional LPI reference is not used.' to read 'This function shall conform to 40.4.2.1.'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.4.2** *P* **58** *L* **15** # i-50

Law, David Hewlett-Packard Ltd

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

The text reads 'PHY Control config sets tx_mode to ...'. config and tx_mode are two separate variables, see subclause 96.4.7.1 for their definitions. I believe this text should read 'PHY Control sets tx_mode to ...' as it is tx_mode that can take the values SEND_N, SEND_I and SEND_Z described, not config. Based on this Figure 96-14 and 96-25 both need updated to show the connection of tx_mode to the PMA TRANSMIT block.

SuggestedRemedy

[1] Change the text 'PHY Control config sets tx_mode to ...' to read 'PHY Control sets tx_mode to ...'.

[2] In Figure 96-14 add a connection of tx_mode to the PMA TRANSMIT block.

[3] In Figure 96-15 add a input arrow labled tx_mode.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.4.2** *P* **58** *L* **19** # i-51

Law, David Hewlett-Packard Ltd

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

The text reads 'When PMA_CONFIG indicates MASTER mode then the PMA Transmit Function derives the TX_TCLK from a local clock source. When PMA_CONFIG indicates SLAVE mode ...'. It is the parameter config contained in the primitive PMA_CONFIG that can take the vales MASTER or SLAVE.

SuggestedRemedy

Suggest that text 'When PMA_CONFIG indicates MASTER mode then the PMA Transmit Function derives the TX_TCLK from a local clock source. When PMA_CONFIG indicates SLAVE mode ...' be changed to read 'When the config parameter in the PMA_CONFIG primitive indicates MASTER mode, the PMA Transmit Function derives the TX_TCLK from a local clock source. When the config parameter in the PMA_CONFIG primitive indicates SLAVE mode ...'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.4.3** *P* **58** *L* **37** # i-52

Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

The text reads '... and generate loc_rcvr_status (general status of local receiver).' It then states 'The parameter loc_rcvr_status is generated by PMA Receive to indicate the status of the receive link at the local PHY.'. The parenthetical text seems redundant as the following sentence provides an explanation of what loc_rcvr_status is.

SuggestedRemedy

Delete the text '(general status of local receiver)'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.4.3** *P* **58** *L* **39** # i-53

Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

Suggest the text '... conveys the information ...' is unnecessary as the sentence goes on to describe what information, whether the status of the overall received link is ok or not, in detail.

SuggestedRemedy

Delete the text '... conveys the information ...'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.4.4** *P* **59** *L* **21** # i-47

Law, David Hewlett-Packard Ltd

Comment Type **E** *Comment Status* **X**

Suggest reword of text as 100BASE-T1 can only operate at 100Mb/s, and just because a link comes up does not mean frames will be exchanged.

SuggestedRemedy

Suggest the text '... the PHY into the 100BASE-T1 mode of operation in 100Mb/s when frames are exchanged with the link partner.' should be changed to read '... the PHY into the 100BASE-T1 mode of operation so that frames can be exchanged with the link partner.'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.4.7.1** *P* **59** *L* **42** # i-48

Law, David — Hewlett-Packard Ltd

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

The description of the config variable states that 'The PMA shall generate this variable continuously and pass it to the PCS via the PMA_CONFIG.indication primitive.' which implies it is a output of the state diagram, and Figure 96-14 shows it as an output of the PHY CONTROL block, yet it is actually used as an input to Figure 96-17 'PHY Control state diagram' controlling the transition from the 'SLAVE SILENT' to 'TRAINING'.

SuggestedRemedy

Please provide details of how this variable is generated.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.4.7.1** *P* **59** *L* **45** # i-49

Law, David — Hewlett-Packard Ltd

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

Add text to state that this variable is passed to the PMA via the PMA_LINK.request primitive.

SuggestedRemedy

Change the text ' This variable is configured by management or set by default and is defined in 28.2.6.2.' to read ' This variable is configured by management or set by default and is passed to the PMA via the PMA_LINK.request primitive (see 28.2.6.2).'.

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.6** *P* **71** *L* **26** # i-34

Thompson, Geoffrey — INDEPENDENT

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

In 802.3, management is optional (see quotation from 30.1, Management Overview, below), and the way of doing management registers and the management interface are also optional (see quotations from 80.2.7 Management interface (MDIO/MDC) and Clause 55, 10GBASE-T, below). This is desirable: some small or highly integrated products won't have an exposed MDIO interface, and some (e.g. SFP+ modules) use a different memory map and interface that provides an equivalent function to Clause 45, and can be converted by another part of the system.
This sentence "100BASE-T1 shall use the management interface as specified in Clause 45 and the PHY-Initialization which is described in the following section." joins two separate requirements with one "shall" (also it lacks a PICS). The first one, "shall use the management interface as specified in Clause 45" was a response to D1.2 comment 91 which asked "is the management interface normative or optional?" The text needs to be changed to show that Clause 45 is optional. Also, the "shall be configured" in 96.6.1 won't work, because shalls in this clause apply to just the PHY, and something else would do the configuring.
Editorials: it's the following two sections, and they should be called subclause or explicitly identified. PHY-initialization, MASTER-SLAVE configuration and MASTER-SLAVE assignment are the same thing, so must be identified by the same name.
Rogue capital in "PHY-Initialization", line 28.

From 30.1 Overview
In CSMA/CD no peer management facilities are necessary for initiating or terminating normal protocol operations or for handling abnormal protocol conditions. Since these activities are subsumed by the normal operation of the protocol, they are not considered to be a function of Layer Management and are, therefore, not discussed in this clause. Implementation of part or all of Layer Management is not a requirement for conformance to any other clause of this standard.

80.2.7 Management interface (MDIO/MDC)
The optional MDIO/MDC management interface (Clause 45) provides an interconnection between MDIO Manageable Devices (MMDs) and Station Management (STA) entities.

55.3.7 PCS management
The following objects apply to PCS management. If an MDIO Interface is provided (see Clause 45), they are accessed via that interface. If not, it is recommended that an equivalent access be provided.

55.5.2 Test modes
The test modes described below shall be provided to allow for testing of the transmitter waveform, transmitter distortion, transmitted jitter, transmitter droop and BER testing. For a PHY with an MDIO management interface, these modes shall be enabled by setting bits...

55.6 Management interfaces
10GBASE-T makes extensive use of the management functions that may be provided by

the MDIO (Clause 45)...

SuggestedRemedy

Change 96.6, 96.6.1 and 96.6.2 to:
96.6 MASTER-SLAVE assignment
100BASE-T1 uses MASTER-SLAVE assignment. A method for configuring a PHY as MASTER or SLAVE shall be provided. The optional MDIO/MDC management interface (Clause 45) may be used; if not, it is recommended that an equivalent access be provided. MASTER-SLAVE assignment for each link configuration is necessary for establishing the timing control of each PHY. In 100BASE-T1, one PHY is configured as MASTER and one PHY is configured as SLAVE to operate. In case both PHYs are configured to be MASTER or SLAVE, operation is undefined.
[Then, text as in present 96.6.2 PHY-initialization]

Add PICS for "A method for configuring a PHY as MASTER or SLAVE shall be provided."

Proposed Response *Response Status* **O**