IEEE P802.3bw 100BASE-T1
Procedure for conditional approval to forward a draft standard report

The following is the Clause 12 'Procedure for conditional approval to forward a draft standard' report for IEEE P802.3bw 100BASE-T1 which received conditional approval to proceed to Sponsor ballot at the March 2015 IEEE 802 Plenary meeting.

a) Recirculation ballot is completed. Generally, the recirculation ballot and resolution should occur in accordance with the schedule presented at the time of conditional approval

The recirculation balloting is complete. The second recirculation ballot occurred essentially in accordance of the plan presented.

The schedule presented to March 2015 closing IEEE 802 EC meeting when conditional approval was granted was:

18th March 2015	2nd Working Group recirculation ballot open date
1st April 2015	2nd Working Group recirculation ballot close date
9th April 2015	Comment resolution meeting

Ballot opened:	Wednesday 18th March 2015
Ballot closed:	Wednesday 1st April 2015 23:59 AOE
Comment resolution meeting:	Thursday 9th April 2015

b) After resolution of the recirculation ballot is completed, the approval percentage is at least 75% and there are no new valid DISAPPROVE votes.

The approval rate after resolution of the recirculation ballot is greater than 75% and there are no new disapprove votes.

The ballot results after resolution are:

Voters	266
Approve	110
Disapprove with comment	3
Disapprove without comment	0
Abstain	37
Returns	150
Response Rate	56.4%
Approval Rate	97.3%
Comments received	33

c) No technical changes, as determined by the WG Chair, were made as a result of the recirculation ballot.

No technical changes have been made.

A number of editorial changes were made to the draft. These changes are the removal of the table of instructions for inserting special characters and the addition of the objectives to the frontmatter; adding the heading 'Contents' to the Table of Contents; correction of two editing instruction; a spelling correction; a cross-reference correction; and grammar correction. These editorial changes are shown in the pages below.

In addition the copyright year was set to 2015, the page numbering was updated so that the printed and pdf page numbers match (see item (d) below), and a number of cross-references were updated to make them 'hot links'. The full compare file is available at <http://ieee802.org/3/bw/private/P802.3bw_D3.0-D1.4_CMP.pdf>.

d) No new valid DISAPPROVE comments on new issues that are not resolved to the satisfaction of the submitter from existing DISAPPROVE voters.

There were no new valid disapprove comments on new issues that are not resolved to the satisfaction of the submitter from existing disapprove voters.

There was one Editorial Required comment (#26) from existing disapprove voter Geoff Thompson in relation to matching the printed and pdf page numbering. This has been resolved to the satisfaction of the submitter with the publication for draft D3.0 for sponsor ballot which matches the printed and pdf page numbers.

Comment database: <http://ieee802.org/3/bw/comments/8023bw_D14_approved.pdf>

e) If the WG Chair determines that there is a new invalid DISAPPROVE comment or vote, the WG Chair shall promptly provide details to the Sponsor.

There were two disapprove comments received from existing disapprove voters, one was a restatement of an existing unresolved comment, the second was out of scope as it was on unchanged text.

The first comment (#30) is a Technical Required comment from existing disapprove voter Geoff Thompson in relation to the definition of the word 'vector'. This comment was a restatement of a comment submitted against the initial Working Group ballot (comment #315). It was rejected, rebutted and then recirculated during 1st Working Group recirculation ballot.

The second comment (#41) is a Technical Required comment from existing disapprove voter Piers Dawe in relation to management registers. This comment was out of scope of the recirculation ballot as it was in relation to text that was unchanged during the ballot.

Comment database: <http://ieee802.org/3/bw/comments/8023bw_D14_approved.pdf>

f) The WG Chair shall immediately report the results of the ballot to the Sponsor including: the date the ballot closed, vote tally and comments associated with any remaining disapproves (valid and invalid), the WG responses and the rationale for ruling any vote invalid.

Please see item (a) for the date the ballot closed and item (b) for the vote tally. There are a total of 9 unresolved negative comments from 3 disapprove voters that can be accessed at: <http://ieee802.org/3/bw/comments/P802p3bw_unresolved_byID.pdf>. This consists of 7 unresolved comments reported at the March 2015 closing IEEE 802 EC and two additional unresolved comments described in item (d).

~~Special characters can be inserted via File, Utilities, Character palette using the Hex number.~~

Table 00–1—Special characters

Insert	Keyboard shortcut	ALT	Hex	Character
Multiply	Ctrl-q 0	ALT-0180	B4	“×”
Plus or minus	Ctrl-q 1	ALT-0177	B1	“±”
Greater than or equal to	Ctrl-q 8 in Symbol font	ALT-0179	B3	“≥”
Less than or equal to	Ctrl-q # in Symbol font	ALT-0163	A3	“≤”
Approximately equal to	Symbol font	ALT-0187	BB	“≈”
Assignment operator	Symbol font	ALT-0220	DC	“⇐”
Trademark	Ctrl-q *	ALT-8482	2122	“™”
En dash (minus sign)	Ctrl-q Shft-p	ALT-8211	2013	“–”
Em dash (empty table cells)	Ctrl-q Shft-q	ALT-8212	2014	“—”
En space	Esc space n or Alt-Control-space			“ ”
Em space	Esc space m or Control-Shift-space			“ “
Thin space	Esc space t			““
Nonbreaking space	Esc space h or Control-space			“ “
Nonbreaking hyphen	Esc hyphen h			“-”
Suppress hyphenation symbol	Esc n s			word
Discretionary hyphen	Esc hyphen Shift-d or Control-hyphen			word
Forced return	Shift-Return			“ “

~~Insert new clause as follows:~~

P802.3bw (100BASE-T1) Project Objectives

The following are the objectives for the IEEE P802.3bw 100BASE-T1 PHY project adopted by the IEEE P802.3bw Task Force.

- Support 100 Mb/s operation in automotive environments (e.g. EMC, temperature) over a single balanced twisted pair.
- Provide electrical interoperability with existing single balanced twisted pair 100 Mb/s client interface (OABR[1] PHY).
- Preserve the IEEE 802.3/Ethernet frame format at the MAC client service interface.

[1] http://www.ieee802.org/3/1TPCESG/public/BroadR_Reach_Automotive_Spec_V3.0.pdf

- Preserve minimum and maximum frame size of the current IEEE 802.3 standard.

- Support full duplex operation only.

- Support a speed of 100 Mbit/s at the MAC/PLS service interface.

- Maintain a bit error ratio (BER) of less than or equal to 10^{-10} at the MAC/PLS service interface.

- Do not preclude the ability to survive automotive fault conditions (e.g. shorts, over voltage, EMC, ISO16750).

- Support fast-startup operation using predetermined configurations which enables the time from power_on[2] = 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_on[2] = FALSE to a state capable of transmitting and receiving valid data.

- The resulting standard will not preclude single pair auto-negotiation.

- Define the performance characteristics of a link segment and a PHY to support point-to-point operation over this link segment with single twisted pair supporting up to four inline connectors using balanced cabling for at least 15 m reach.

Editor's Note:
The material on this page will not be included in the publication of the approved standard. It is an element of the project approval documentation. It is provided to assist balloters in evaluating the draft with respect to the project requirements.

[2] Condition that is true until such time as the power supply for the device has reached the operating region

Contents

1.4.16a 100BASE-T1: IEEE 802.3 Physical Layer specification for a 100 Mb/s Ethernet full duplex local area network over a single balanced twisted-pair.(See IEEE Std 802.3, Clause ~~96~~96.)

Insert the following new definition into the list after 1.4.87 ~~4B/3B~~2-Event classification:

1.4.87a 4B/3B: For IEEE 802.3, the data encoding technique used by 100BASE-T1 when converting 4-bit (4B) MII data with 25 MHz clock to 3-bit (3B) data with 33.33$\overline{3}$ MHz clock. (See IEEE Std 802.3, ~~96.3.2.2.2~~96.3.2.2.2)

TCTL	~~ransverse~~ transverse conversion transmission loss Scd12/Scd21
VBW	video bandwidth
XTALK	crosstalk

45.2.1.10 PMA/PMD extended ability register (Register 1.11)

Change the reserved row in Table 45-~~13,~~ 14 and insert a new row immediately below the changed row as follows (unchanged rows not shown):

Table 45–14—PMA/PMD extended ability register bit definitions

Bit(s)	Name	Description	R/W[a]
1.11.15:~~11~~ 12	Reserved	Value always 0	RO
1.11.11	BASE-T1 extended abilities	1 = PMA/PMD has BASE-T1 extended abilities listed in register 1.18 0 = PMA/PMD does not have BASE-T1 extended abilities	RO

[a]RO = Read only

96.3.2.2.2 4B/3B conversion for MII data

The transmit data (TXD<3:0>) at the MII shall first be converted into 3 bits as a group (tx_data<2:0>). As shown in Figure 96–6b and Figure 96–6c, when the number of bits of a packet is not multiple of three, the 4B/3B conversion shall append stuff bits to the end of a packet (1 or 2 bits), and correspondingly, the tx_enable signal remains TRUE until all the bits in a packet (appended with stuff bits if applicable) are rate converted. Note, a packet includes preamble, SFD, and a MAC Frame as specified in 1.4.~~299~~312. Those stuff bits may be padded randomly, which is left to implementer, and shall be discarded at the receiver side upon the boundary of the last nibble at MII RX domain. The minimum 12 byte IPG period between packets helps to flush out the extra stuff bits to prevent FIFO overflow.

96.8.3 MDI fault tolerance

The wire pair of the MDI shall, under all operating conditions, withstand without damage the application of short circuits of any wire to the other wire of the same pair or Ground potential or positive voltages of up ~~50~~ to 50 V for an indefinite period of time and shall resume normal operation after the short circuit(s) ~~are~~ is(are) removed. The magnitude of the current through such a short circuit shall not exceed 150 mA.