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| 8802-3/802.3 REVISION REQUEST 1158 |
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DATE: 8th Jul, 2004
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REQUESTED REVISION:
STANDARD: IEEE Std 802.3ah-2004
CLAUSE NUMBER: 65.2.3.2.3
CLAUSE TITLE: Special frame markers

PROPOSED REVISION TEXT:

- /T_FEC_E/ - end of FEC coded packet with even alignment.
If the starting running disparity is positive,
the T_FEC_E has the following pattern: /T/R/K28.5/D10.1/T/R/

If the starting running disparity is negative,
the T_FEC_E has the following pattern: /T/R/K28.5/D29.5/T/R/

RATIONALE FOR REVISION:

The FEC state machine looks ahead at the incoming bit stream and attempts to match 6 or 7 bytes to T_FEC_E or T_FEC_O. The match is declared is if received bit stream has Hamming distance of less than 6 from the bit sequence specified for T_FEC_O or T_FEC_E delimiters.

The problem is that T_FEC_E and T_FEC_O are only Hamming-distance 2 apart, and can be easily confused. The attached diagram shows an example where both T_FEC_O and T_FEC_E could be matched with only 2 bit errors each.

The FEC receive state machine can easily mistake Dx.x+T_FEC_E for T_FEC_O. When this happens, the FEC receive state machine discards the last byte of CRC32.

Page 2 in the attached diagram shows the increased Hamming distance when a modified T_FEC_E is used.

IMPACT ON EXISTING NETWORKS:

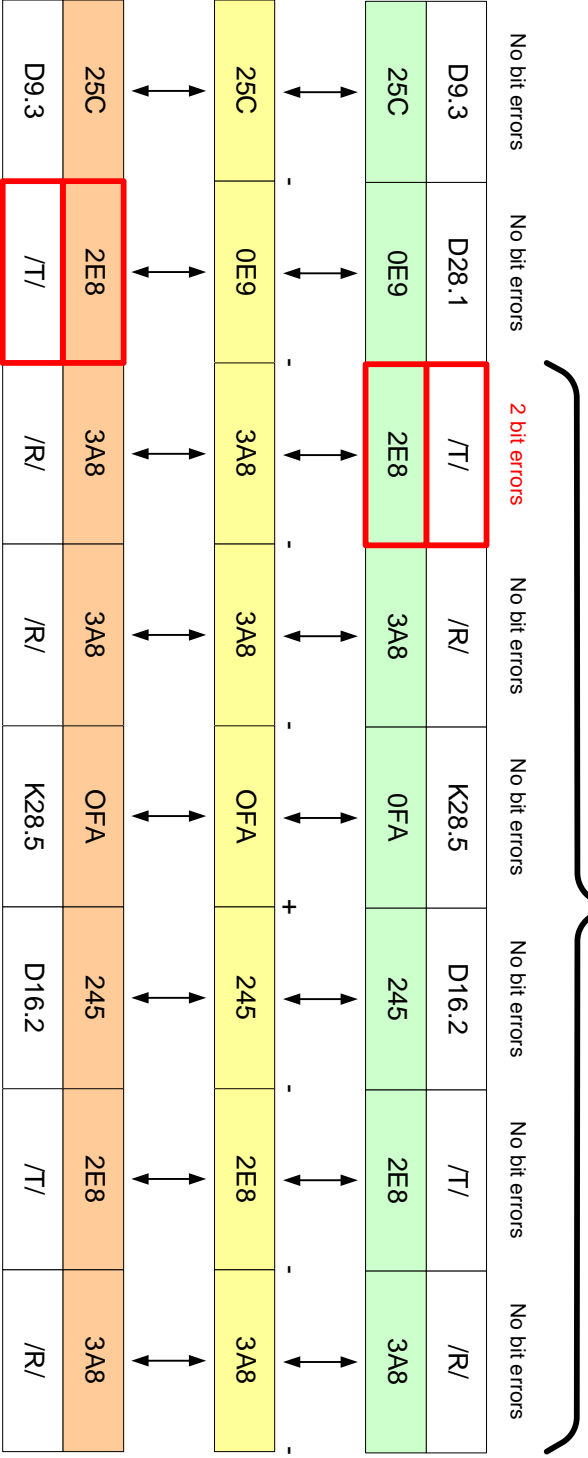
This modification may make FEC function not backward compatible.

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| Please attach supporting material, if any |
| Submit to:- Bob Grow, Chair IEEE 802.3 |
| E-Mail: Bob.Grow@intel.com |
|
| +----- For official 802.3 use -----+ |
| REV REQ NUMBER: 1158 |
| DATE RECEIVED: 8th Jul, 2004 |
| ~~EDITORIAL~~/TECHNICAL |
| ACCEPTED/~~DENIED~~ |
| BALLOT REQ'D YES/~~NO~~ |
| COMMENTS: 08-Mar-06 Ver: D2.0 Status: P |
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| For information about this Revision Request see - |
| http://www.ieee802.org/3/maint/requests/revision_history.html#REQ1158 |
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Correct match = T_FEC_E (2 bit errors)



Incorrect match = T_FEC_O (2 bit errors)

802.3ah allows up to 5 bit errors

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TFEC_E REPLACED

DATA	DATA	2E8 /T/	3A8 /R/	0FA /K28.5/	11A /D29.5/	2E8 /T/	3A8 /R/	PRTY	PRTY
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TFEC_O

DATA	2E8 /T/	3A8 /R/	3A8 /R/	0FA /K28.5/	245 /D16.2/	2E8 /T/	3A8 /R/	PRTY	PRTY
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10 Bit Error over 60 bits correlation

Hamming distance between modified TFEC_E and original TFEC_O when starting running disparity is negative

TFEC_E REPLACED

DATA	DATA	117 /T/	057 /R/	305 /K28.5/	159 /D10.1/	2E8 /T/	3A8 /R/	PRTY	PRTY
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TFEC_O

DATA	117 /T/	057 /R/	057 /R/	305 /K28.5/	296 /D5.6/	2E8 /T/	3A8 /R/	PRTY	PRTY
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10 Bit Error over 60 bits correlation

Hamming distance between modified TFEC_E and original TFEC_O when starting running disparity is positive