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| 8802-3/802.3 REVISION REQUEST 1263 |
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DATE: 2nd July, 2014
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REQUESTED REVISION:
STANDARD: 802.3-2012_SECTION4
CLAUSE NUMBER: 49
CLAUSE TITLE: Physical Coding Sublayer (PCS) for 64B/66B, type 10GBASE-R

PROPOSED REVISION TEXT:

This is an issue regarding 64/66 bit encoding defined in Clause-49. There are Illegal IPG scenarios when there are chances that the Terminate Character of the last packet (8'hFD) and the Start Character of the current packet (8'hFB) are combined in a single 64-bit block to be used for 64->66 bit encoding.

An example pattern among these which is going for 64/66 bit encoding at the transmitter is 64'h555555FB_070707FD with a Control value of 8'b0001_1111. When this pattern goes into the 64/66 bit encoder, then according to the specification there is no matching encoding pattern found for this input. And whenever a matching pattern is not found, then it is encoded as an Error Code which is having all 8'hFE characters in the 66-bit data with the Block Type field as 0x1E. When this pattern goes towards the 66 to 64 bit decoding inside the receptor, then this 66 bit blocks gets converted to an actual 64-bit Error Propagation Data having all 8-characters as 8'hFE. Since the pattern which started from XGMII of the transmitter was having 8'hFD and 8'hFB both in a single 64-bit block, and after the conversion it got converted into 8'hFE characters, hence for the receptor the termination for last packet and start of current packet all get lost and it was treated as an error propagation.

Hence the two packets got joined at the receptor with error propagation.

At a first glance, it seems that the reason for not adding this data pattern in 64/66 bit encoding may be that the minimum IPG standardized is 40-bits.

However, according to all the patterns written in Clause-49 64/66 bit encoding, it is clear that there are still the cases when Short IPGs of upto 1-byte can be sent. An example of this is D0D1D2D3/D4D5D6T7 followed by S0D1D2D3/D4D5D6D7. In this case the IPG will be 1-byte and it will also not be having any encoding errors because they are valid patterns as defined in 64/66 bit encoding.

Hence it seems that these patterns (having Termination Character and Start Character in a single 66-bit Block) should have actually been

added in the 64/66 bit encoding table.

Summary :

The exact patterns that should be added to the Figure 49-7 - 64B/66B block formats are :

1.)T0C1C2C3/S4D5D6D7

2.)C0T1C2C3/S4D5D6D7

3.)C0C1T2C3/S4D5D6D7

4.)C0C1C2T3/S4D5D6D7

Could you please confirm that these missing patterns should be added to the 64/66 bit Encoding table.

RATIONALE FOR REVISION:

All the 64-bit patterns having Terminate Character and Start Character in a single 64-bit Block should be covered in the 64/66 bit encoding table.

IMPACT ON EXISTING NETWORKS:

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| Please attach supporting material, if any
| Submit to:- David Law, Chair IEEE 802.3
|   and copy:- Adam Healey, Vice-Chair IEEE 802.3
|
| At:-          E-Mail: stds-802-3-maint-req@ieee.org
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