100GBASE-KP4 Overhead bits
Addresses comment 142

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Introduction

- Addressing 802.3bj Draft 1.2 Comment 142.

- The contents of the overhead bits are not currently defined.

Proposal, Transmit

- For the encoder, the 40 overhead bits are programmable from MDIO registers:
  - 1.x.15:0 = overhead(15:0)
  - 1.x+1.15:0 = overhead(31:16)
  - 1.x+2.7:0 = overhead(39:32)
  - The default value for all overhead bits is zero.
  - Need to determine appropriate address x.
  - 40 bits shared by all four lanes
- Scramble the 40 overhead bits using the PRBS13 generator used for the termination bits.
  - PRBS13 generator proposed in lusted_3bj_01_1112.
    - PRBS13 generates 92 bits per termination block.
    - The first two bits are used for the termination bits; the rest are unused
  - For the overhead bits, use PRBS13 bits 3:42 to scramble the overhead by XORing corresponding bits.

Proposal, Receive

- For the decoder, the 40 overhead bits detected are stored in MDIO registers:
    - 1.x+3.15:0 = overhead(15:0)
    - 1.x+4.15:0 = overhead(31:16)
    - 1.x+5.7:0 = overhead(39:32)
    - 40 bits shared by all four lanes

- Descramble the 40 overhead bits using the PRBS13 generator used for the termination bits.
    - A PRBS13 generator, similar to transmit, is required in order to predict the termination bits.
    - For the overhead bits, use PRBS13 bits 3:42 to de-scramble the overhead by XORing corresponding bits.
    - The receiver should not assume any particular values in the de-scrambled overhead bits.

Summary

- The overhead bits, with any bit pattern, can be explicitly programmed and detected.

- To ensure random content on the encoded signal, the overhead bits are scrambled using the termination-bit PRBS13 generator.

- The transmitted overhead bits are programmable in MDIO registers.

- The received overhead bits are readable in MDIO registers.

- Use of the overhead bits it at the discretion of the end user.

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Thanks!

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