# CHANNEL OPERATING MARGIN (COM) PROPOSAL FOR CDAUI-8 C2C (UPDATED)


**Raj Hegde & Magesh Valliappan**

IEEE 802.3bs 400Gb/s Task Force – Electrical Ad-hoc

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# OVERVIEW

- **COM BER target update – follow up from last weeks discussion**
- **Receiver Interference Tolerance test in CDAUI-8**

# COM BER TARGET UPDATE

With symbol interleave from 2 FEC code words and bit-muxing in the PMA (Option 8 from anslow_3bs_03_0915)

- For multi-part link with 0.1dB optical penalty, to achieve FLR = 6.2e-11, total BER target for the electrical segments:

| Case | DER0 | BER |
|---|---|---|
| Random | 1.6e-4 | 8.0e-5 |
| a=0.5 | 4.5e-5 | 4.5e-5 |

- With the same BER target, on an electrical only link, FLR < 6.2e-16 is achieved!
- **BER target to 1e-5 (proposed earlier @ 2e-5), SNR-TX = 29dB, and COM = 3dB**

| Test Case | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Insertion Loss (dB) | 19.2 | 14.34 | 7.22 | 18.93 | 17.24 | 11.14 | 9.24 | 18.75 |
| 802.3bs D1.1 (but Rd=40 Ohms, COM=3dB) | 2.65 | 3.36 | 3.37 | 2.43 | 1.92 | 3.32 | 3.17 | 4.45 |
| Rd = 55 Ohms, SNR-TX = 29dB and $DER_0$ = 1E-5 | 2.57 | 3.15 | 2.93 | 2.41 | 1.87 | 3.04 | 2.88 | 3.96 |

# RECEIVER INTERFERENCE TOLERANCE TEST

- **Symbol error ratio (SER):**
  - Referenced to  93C.2-Receiver interference tolerance test set up.
  - The transmit bit ordering in 91.5.2.9 assigns FEC symbols to lanes in a round robin fashion
  - Each lane *i* has a corresponding FEC_symbol_error_counter_*i*
- **CDAUI-8 PMA is different**
  - Bit interleaving distributes symbols across lanes
  - FEC error count may not be available to all the receivers.
- **BER as an alternative measure penalizes non-DFE receivers**

| Case | Receiver Type | BER | SNR penalty (BER=1e-5) |
|---|---|---|---|
| Random | No DFE | 8.0e-5 | 0.7dB |
| a=0.5 | Constrained DFE | 4.5e-5 | 0.37dB |
| a=0.75 | Full tap DFE | 3.2e-5 | 0.2dB |

- **Propose using a ‘pseudo’ error counter to count symbol errors in RX without FEC**

# CONCLUSIONS

- **COM parameters proposal updated to reflect discussion since the last ad-hoc**
- **Issue of BER for receiver interference tolerance test addressed**