

Performance Improvements due to FEC Interleaving on a 100G Link

IEEE P802.3ck

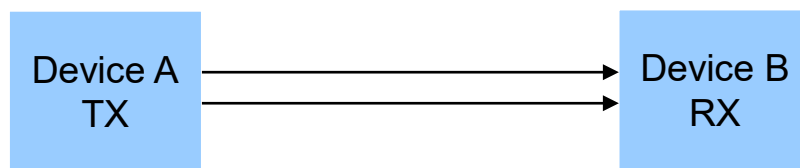
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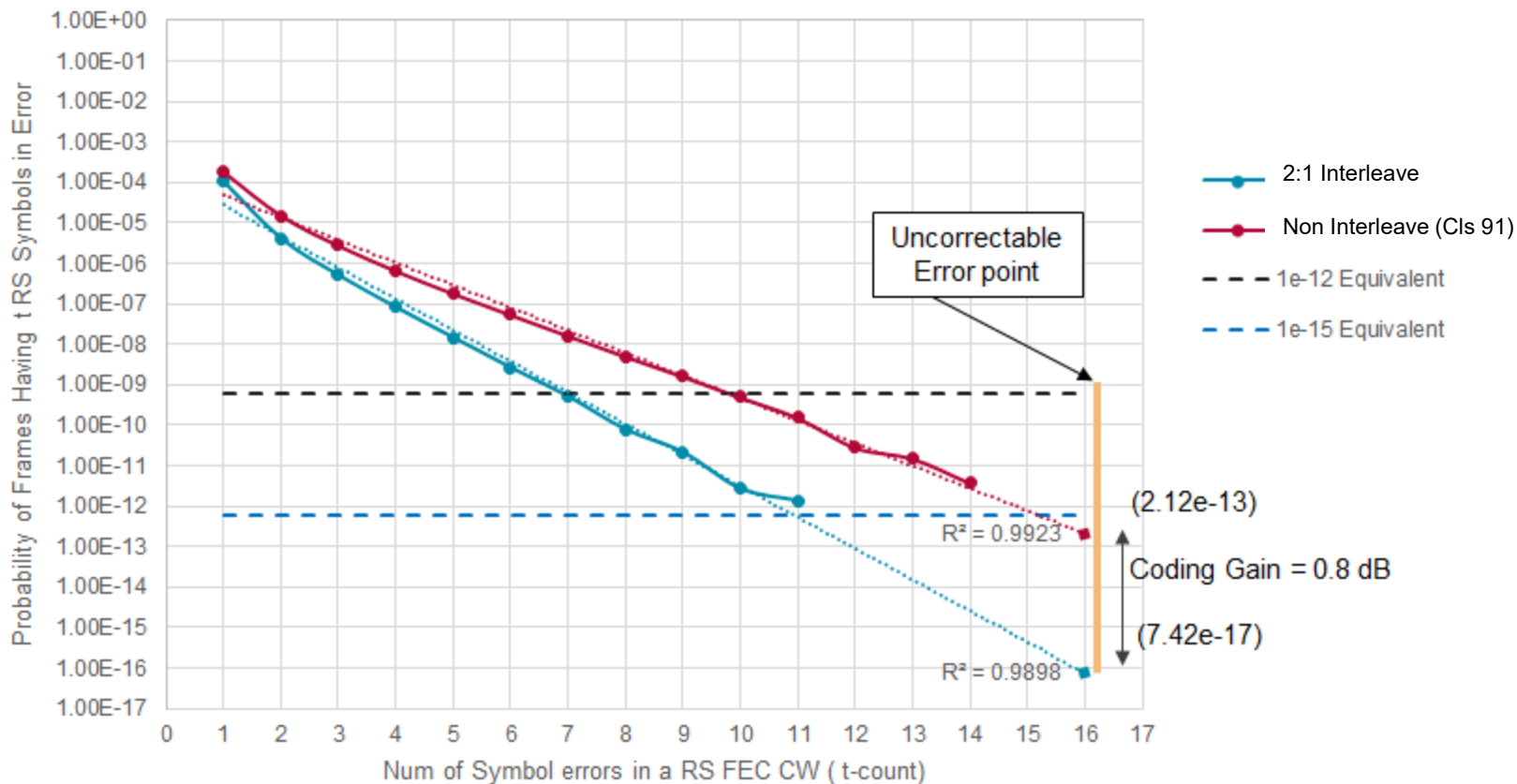
Introduction

- We present data from one 2x25GBaud PAM4 channel
- Very long channel with high loss
- We ran this 100G port two ways, standard non-interleaved FEC (clause 91) and non-standard interleaved FEC
 - 2:1 bit mux
 - Both use RS(544,514)
- No precoding for this data
 - Turning on precoding worsens the FLR in this case



Performance Comparison

Impact of Interleave of CW in 100G (2x50G)



Raw Data

- Raw data histograms for both interleaved and non interleaved data
- ~ 10^{14} bits sent

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | Burst Error (2) | Burst Error (3) |
|-----------------|----------|------------|-----------|-----------|---------|--------|--------|-------|-------|-----|-----|----|----|----|----|----|----|-----------------|-----------------|
| Interleaved | 8.37E+10 | 77,487,265 | 3,067,381 | 380,905 | 61,605 | 10,941 | 1,981 | 384 | 58 | 16 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Non-Interleaved | 5.92E+10 | 94,372,393 | 7,899,371 | 1,445,151 | 343,691 | 94,263 | 28,021 | 8,508 | 2,655 | 852 | 258 | 81 | 15 | 8 | 2 | 0 | 0 | 40 | 0 |

Summary

- At least for this channel and setup, interleaved FEC can improve the FLR by a couple of orders of magnitude
- This is for 50Gb/s/lane, 100Gb/s/lane will be more difficult

Thanks!