

Further considerations on 400Gb/s Ethernet SMF PMDs

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Confirmation position on 56G versus 112G per lane solutions

- We still support the preference for 56G solutions as stated in stassar_3bs_01b_0914 in the September 2014 meeting in Kanata

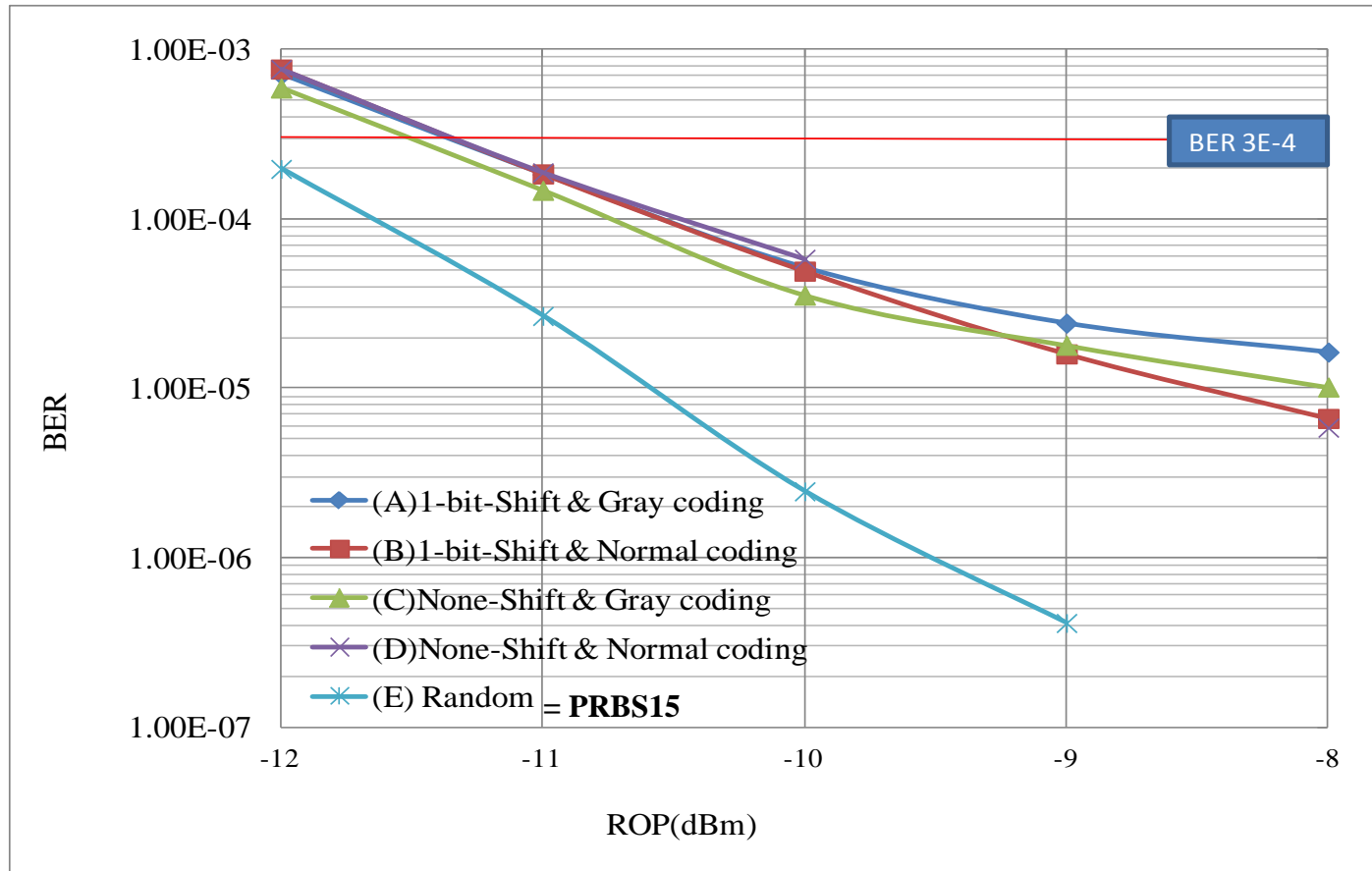
- Therefore we support choosing between the following baseline proposals made in the November 2014 meeting in San Antonio:
 - cole_3bs_01a_1114 for 2km & 10km duplex SMF NRZ PMD
 - cole_3bs_02a_1114 for 2km & 10km duplex SMF PAM-4 PMD

Performance 56Gb/s NRZ

- Performance results on 56Gb/s solutions are presented in other (new and existing) presentations

Recap of our latest results on 56Gb/s PAM4 performance

- In stassar_01_1118_smf it was demonstrated that the 56Gb/s PAM4 BER performance is sufficiently below the pre-FEC BER-level of 3×10^{-4} for KP4 FEC even under SSPR testing



Further work necessary for 56G PAM4

- ❑ Complete and reconfirm error performance analysis under SSPR conditions
- ❑ Establish whether KP4 FEC provides sufficient gain for 2km and 10km applications or whether a stronger FEC is necessary
- ❑ Perform chromatic dispersion testing under worst case conditions of positive and negative chromatic dispersion to establish a reasonable maximum TDP
- ❑ Establish a maximum MPI penalty on the basis of a (to be built) consensus set of worst case conditions
- ❑ Complete analysis on power budgets for both 2km and 10km duplex fibers

Concerns on 112Gb/s proposals

- ❑ For either of the 112Gb/s proposals (PAM4 or DMT) no test results have been shown of BER performance using a sufficiently harsh pattern from baseline wander and clock content perspective (SSPR or alternative)
- ❑ Specific concerns have been raised about 112Gb/s PAM4 that all test results presented show an error floor around 1×10^{-4} even for a “relaxed” PRBS15 test pattern, creating doubts about the robustness of the proposed solution
- ❑ Further concerns have been raised about the complexity of very strong FEC schemes probably necessary for both 112Gb/s PAM4 and DMT to provide satisfactory error performance.

Further concerns on 112Gb/s proposals

- ❑ Further concerns have been raised about the limited power budget apparently achievable for 112Gb/s PAM4 and DMT, so that these solutions may only be useful in very short distance (perhaps only 500m) applications.
- ❑ Until the above concerns are sufficiently addressed by adequate test results, we will not be able to support proposals for 112Gb/s solutions.

Are we ready to make decisions?

- ❑ Currently we don't think so.
- ❑ Nevertheless we strongly feel that solutions/proposals supporting 56Gb/s per lane are the right way to go

Summary

- ❑ We have reconfirmed our position that proposals/solution for 56Gb/s currently are the right direction for SMF PMDs in the BS project
- ❑ We have reconfirmed why we don't think 112Gb/s is the right direction
- ❑ We are aware that still some significant amount of work needs to be done before being able to make the best (optimum) decision on solutions for SMF PMDs

Q & A

Thank you