50GBASE-AU PCS and PMA baseline adoption

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Introduction and objectives

- In [1] it was demonstrated that 50 Gb/s is feasible in extreme temperatures (-40ºC, 25ºC and 125ºC) using PAM4 modulation scheme, even using a 850nm VCSEL not designed for that aim, when the proper transmitter and receiver are used (i.e. TX FFE, RX timing-recovery & equalization, etc)

- In [2] a worst link budget assessment was presented for 50 Gb/s operation over 40 m OM3 fiber with 950 MHz·km EMB and 2 inline connections using the 850nm VCSEL of [1]

- In [3] a 980nm VCSEL was tested using 50 Gb/s PAM4, real-time transmissions across extreme temperatures (from -40 to 125ºC backside temperature), demonstrating the superior speed and signal integrity of the 980nm VCSELs compared to 850nm VCSELs, which allow to reduce the transceiver complexity, power consumption and relative cost, therefore reinforcing even more the technical feasibility of PAM4 transmission scheme for 50 Gb/s

- In [4] a PCS and PMA baseline was proposed for 50 Gb/s, which is consistent with [1], [2], [3] and the currently adopted PCS and PMA sublayers of 25, 10, 5 and 2.5 Gb/s

Straw poll

- I support adoption of the PCS and PMA baselines for 50GBASE-AU operation as described in [4] (perezaranda_3cz_03_110521_50Gbps_pcs_pma.pdf)
  - Yes:
  - No:
  - Abstain

References

- [1] R. Pérez-Aranda, “Test methods for VCSEL characterization,” July 2020, [Online], Available: https://www.ieee802.org/3/cz/public/jul_2020/perezaranda_OMEGA_01b_0720_VCSEL_test_methods.pdf

- [2] R. Pérez-Aranda, “50 Gb/s demonstration in extreme temperatures using 850nm VCSELs,” May 2021, [Online], Available: https://www.ieee802.org/3/cz/public/11_may_2021/perezaranda_3cz_01a_110521_50Gbps_850nm_demo.pdf

- [3] R. Pérez-Aranda, “980nm VCSEL Performance in extreme temperatures,” May 2021, [Online], Available: https://www.ieee802.org/3/cz/public/18_may_2021/perezaranda_3cz_01_180521_VCSEL_980nm.pdf

- [4] R. Pérez-Aranda, “50GBASE-AU baseline proposal,” May 2021, [Online], Available: https://www.ieee802.org/3/cz/public/11_may_2021/perezaranda_3cz_03_110521_50Gbps_pcs_pma.pdf

Thank you!