

MPI and its relationship to P802.3dk

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Multi-path Interference

- MPI is a well known issue for PAM4 modulated links
- The currently standardized PMDs that use PAM4 manage the MPI problem by specifying
 - The minimum return loss of the fibers
 - The minimum return loss of the transmitter and receiver
- However, field experience has shown that actual return losses do not conform to these specifications

Current .3dk objectives

- The current objectives include
 - For each data rate define PHYs for operation up to at least 10 km
 - For each data rate define PHYs for operation up to at least 20 km
 - For each data rate define PHYs for operation up to at least 40 km
- One would assume that these objectives would be met using the same kind of return loss restrictions as standardized PMDs
 - Incidentally, this is the approach that the G.9806 Amd 3 work has taken
- So, our current plan is silent on the issue of low return loss fibers

How to address these problems

- For 100G and 200G, we could add new objectives to our project
 - For each data rate define PHYs for operation up to at least 10 km
 - For each data rate define PHYs for operation up to at least 20 km
 - For each data rate define PHYs for operation up to at least 40 km
 - For each data rate and reach combination, define PHYs that tolerate optical return losses of X and Y
- There are multiple ways that we could formulate these additional objectives, and we could also consider if all reaches need the low return loss option
- This would require the approval of 802.3

What about 50G?

- The previous .3cp project defined 50G PAM4, with the usual minimum return loss requirement
- Current field issues require a new PMD
- To enable .3dk to address this, we would have to amend our PAR to widen our scope
 - 5.2.b Scope of the project: Define physical layer specifications and management parameters for symmetric bidirectional operation at greater than 50 Gb/s over a single strand of single mode fiber of at least 10 km, **and for bidirectional operation at 50 Gb/s over a single strand of single mode fiber of at least 10 km with a minimum return loss of X.**
- This would require the approval by 802.3, 802 EC, and SASB

Thank you

Any questions?