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A Furukawa Company

Power Budget Ad Hoc Report

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Goal and Schedule

- Goal: produce draft of Tx and Rx characteristics tables, such as Tables 60-3, 5, 6, and 8 in Clause 60, for the three channel insertion loss cases.
- Conference calls were held
 - April 10/11
 - May 2
 - May 8/9
 - May 15/16

Channel IL (dB)	802.3ah EFM	802.3av 10GEPON
20	10km with 1:16 split (PX10)	10km with 1:16 split
24	20km with 1:16 split (PX20)	20km with 1:16 split 10km with 1:32 split
29	N/A	10/20km with 1:32 split

Summary

- Several draft budgets still exist – it is not obvious that we are close to consensus
 - Choice of technologies
 - Example: PIN vs. APD in downstream
 - Differences in penalties
 - Example: how to estimate sensitivity of 10G PIN-PD
- As of 5/21, the exercise of translating budgets into common IEEE parlance is not complete; will some apparent disagreements be resolved in the process?
- Assumptions about FEC still differ; some serious to go beyond standard 7% overhead FEC; others feel uneducated about “costs” associated with stronger FEC
- Several key questions relate to overload.

Downstream

- Significant disagreement w/r/t use of PIN vs. APD in ONU.
- Case: APD
 - Agreement on power budget for B+ +!
 - an EML with +3 dBm min. output power is required
- Case: PIN-PD
 - For PIN at ONU, disagreement over Rx sensitivity
 - Results in 3dB difference in power budget
 - EML+SOA/EDFA required, min avg. output +8 to +11 dBm

Upstream

- APD at OLT
 - 2dB difference in B++ budget
 - DML required providing 3 to 5 dBm min. avg. power over –40 to +65C
 - Cost estimates for such DMLs are 2-3x current 10G DMLs.
 - If an APD cannot be used with PX10 due to overload conditions, then a PX10 ONU Tx will be identical to the high cost B++ Tx.
- Intriguing ideas for using a pre-amplified PIN compatible dual rate Rx needs to be explored
 - It has been argued that this scheme is not compatible with dynamic range required
 - Ability to coexist with a 1G F-P laser solution must be cleared.