



BCI Profile vs. DFE Taps

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IEEE 802.3bp RTPGE Task Force – May 2014 Interim





Agenda

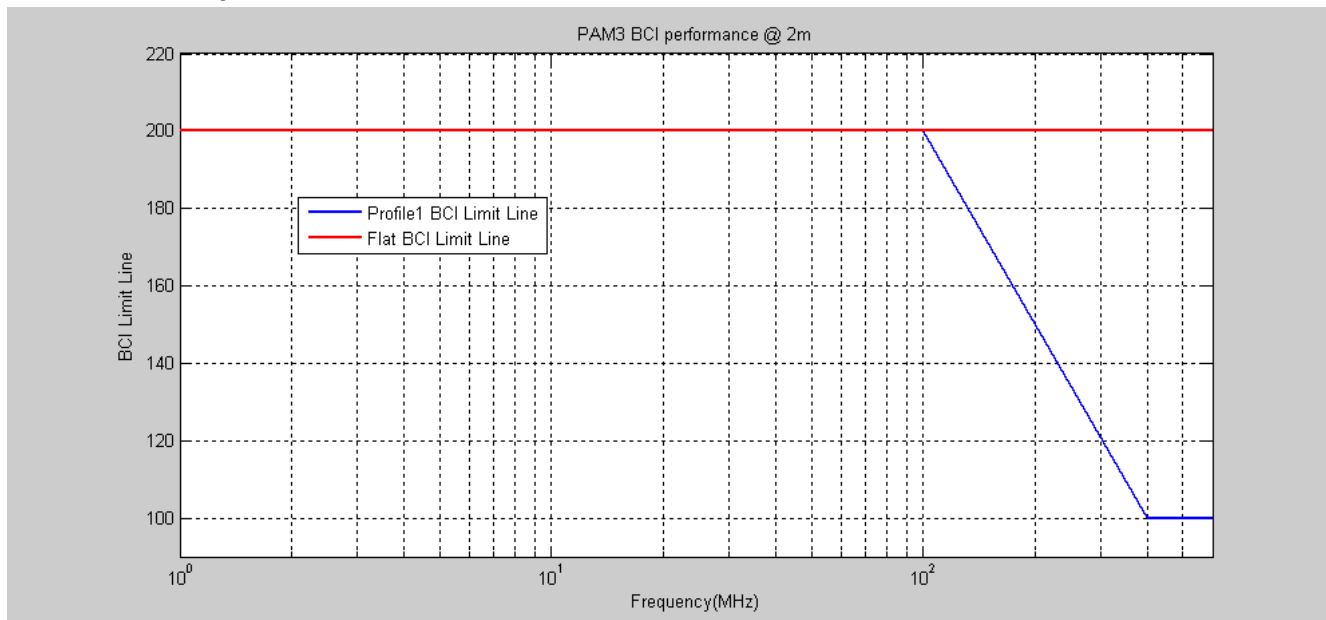
- BCI Limit Line Profile
- TX PSD Mask Limit Line
- DFE Taps vs. BCI Profiles
- Conclusions

BCI Limit Lines

- Different BCI Limit Line Profiles

- Flat Limit Line and Frequency Dependent Limit Line

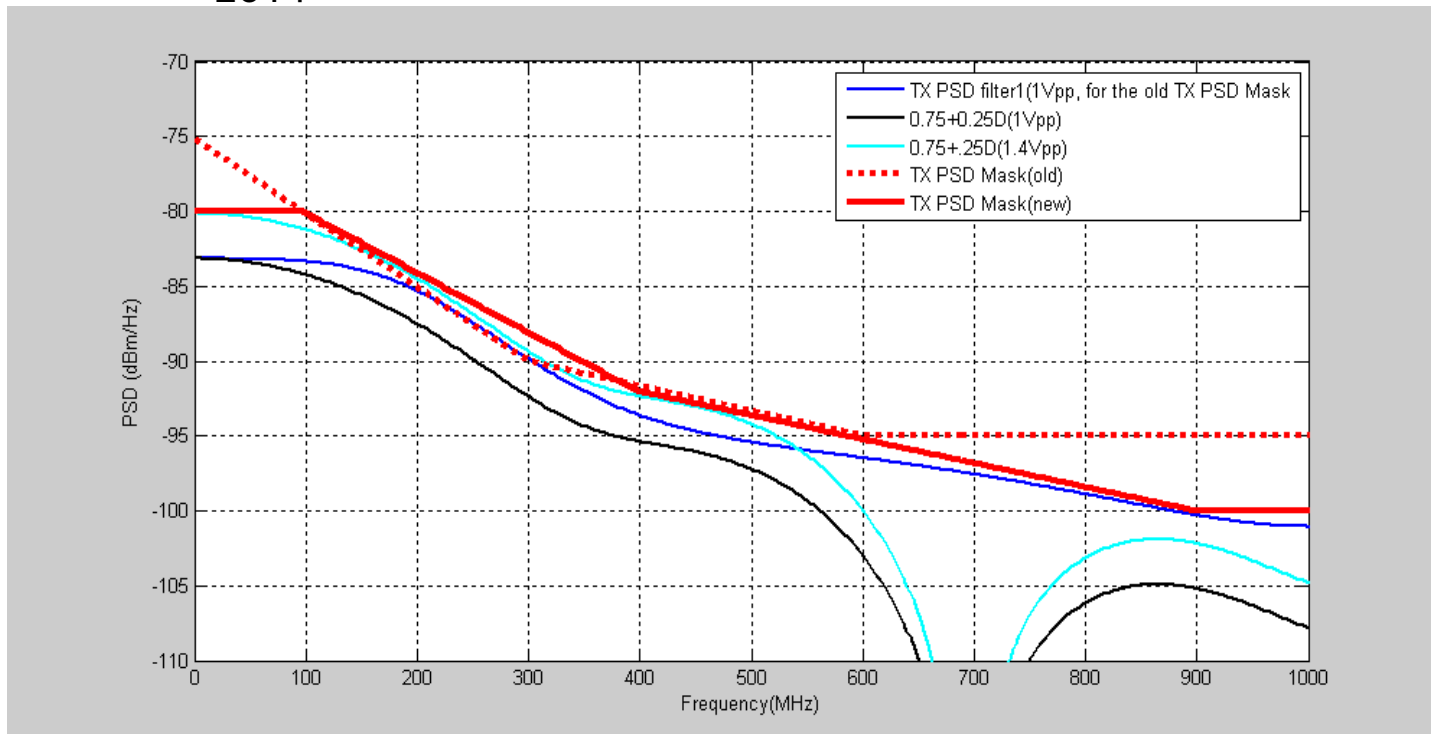
http://grouper.ieee.org/groups/802/3/bp/public/nov13/bunzt_3bp_01_1113.pdf



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TX PSD Mask

- The new TX PSD
 - 1000BASE-T1 TX PSD Mask Proposal from the PHY Ad Hoc on April 25, 2014



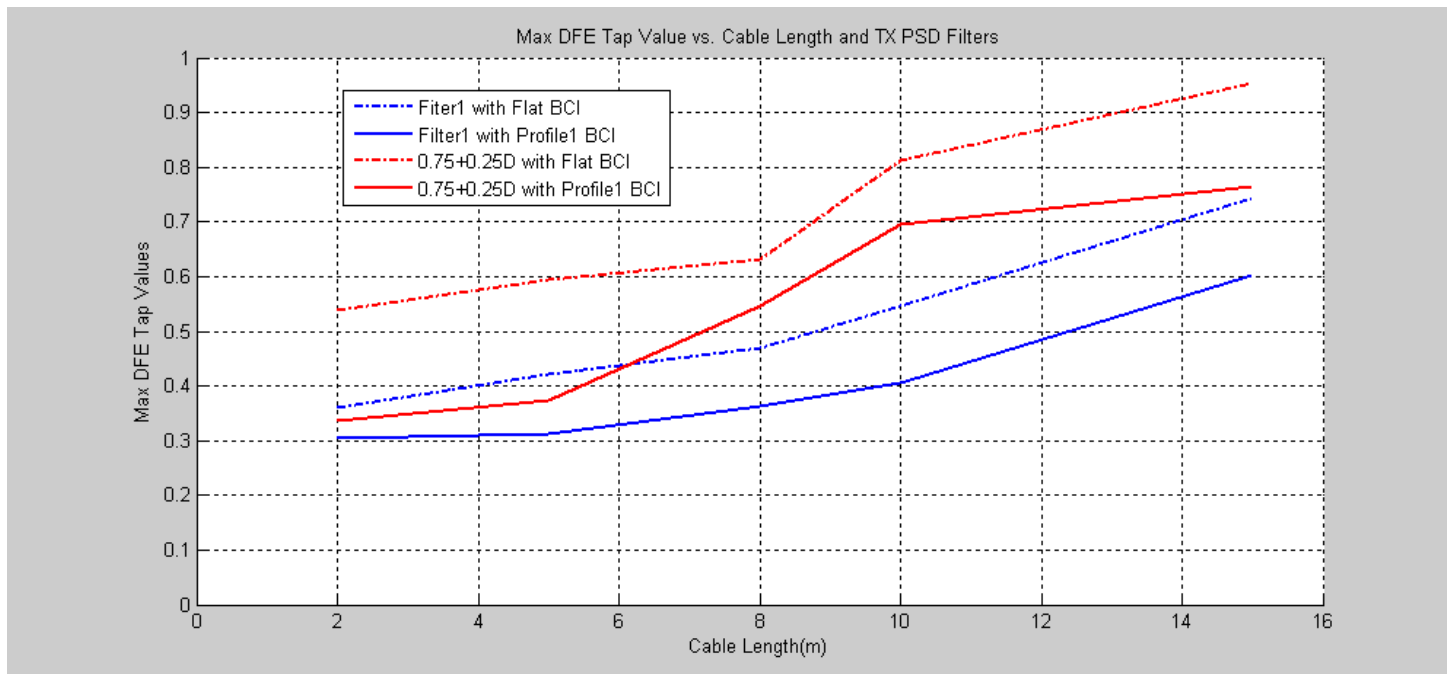


BCI Profiles vs. DFE Taps

- For the flat BCI Limit Line
 - Feed-Forward Equalization Looks Like All Pass Filter
 - Higher DFE Taps' Values
- For the specific BCI Limit Line Profiles
 - FFE Response Is Less Constrained in Higher Frequency Ranges
 - Lower the DFE Taps' Values
- Large DFE Values
 - Cause Error Propagation Issues

BCI Profiles vs. DFE Taps

Max DFE Taps vs. Cable Length, TX PSD Filters and BCI Limit Line Profiles



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Conclusions

- 0.75+0.25D TX PSD Filter
 - 0.75+0.25D filter at 1Vpp simpler implementation, but not better than the filter1 optimized for PSD limit line,
 - 0.75+0.25D at 1.4Vpp meets the PSD Mask, get more margin for BCI performance
- TX PSD Filter: leave up to PHY Vendors' design to optimize the system performance
 - For example, 0.875+0.125D for 1Vpp or others.



Conclusions --continued

- Profiled BCI Limit Line
 - Smaller DFE Taps, to improve Error Propagation issue
- Recommendation:
 - Make the BCI Limit Line Frequency Dependent
 - Is flat BCI profile really needed or is it over specification?
 - Frequency dependent BCI limit line allows equalizer to be optimized for
 - Better error propagation performance
- Can the OEMs revisit shaping BCI limit line?



Thank You!

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