C2M Update – January 2019

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01a changes in this color

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Recap – From November 2018 Update

Challenges

- Uncertainty of total loss in reference package model (feasibility of lower loss per mm, required package route lengths, etc)
- Limited resources available to perform the work; need help running experiments

Next Steps

- Repeat COM analysis with the candidate reference package model(s)
- Continue to investigate and refine the COM parameters required to support the targeted C2M channels for each proposed RX equalizer
- Compare the RX performance sensitivity to equalizer settings (i.e. impact due to missing the best EQ by one or two steps.)

Progress Since 2018 November Plenary

- Updated the package model to align to benartsi_3ck_adhoc_01_121218.pdf, slide 4. COM margin was consequently reduced.
- Analyzed performance of provided C2M channel contributions with 4 different reference RX equalizers candidates using many COM tool versions , including 2.57/2.58:
  - Receiver A (4-tap DFE, b1max 0.5)
  - Receiver B (5-tap FFE (4 post) + 1-tap DFE, b1max 0.5)
  - Receiver C (5-tap FFE (4 post))
  - Receiver D (4-tap DFE, b1max 0.1)
- Constrained the DFE tap weights on Receiver A to reduce the impact of DFE error propagation (to avoid FEC code word interleaving for 100GAUI-1)
  - The current proposed C2M DFE limits for Receiver A's multi-tap DFE are:
    - $0 < t1 < 0.5$
    - $-0.05 <= t2 <= 0.2$
    - $-0.05 <= t3 <= 0.1$
    - $-0.05 <= t4 <= 0.05$
  - Analysis shows these values result in adequate performance for Cl 91 FEC.
- Explored the impact of various CTLE settings.
- COM tool results show that Receiver A and Receiver B architectures support more of the contributed C2M channels than Receiver C.
  - Some channels from Mellitz are very challenging for all three of the reference equalizers
  - Lim channels can pass with Receiver A & B, but are difficult with C.
- Started discussion on potential TP1a reference model candidates for transmitter testing

- See anslow_3ck_01_0119, sun_3ck_01_0119, and ghiasi_3ck_01_0119 for more information

Working towards March

- Determine which of the contributed C2M channels must be supported.
- Continue analysis and (hopefully!) reduce number of reference receiver architectures under consideration
  - Monitor backplane & copper cable effort, as well as package effort, to understand impacts to C2M
- Identify baseline proposal elements and build consensus on proposed values, including but not limited to:
  - Transmitter requirements
  - Receiver requirements
  - Channel operating margin parameters
  - Test patterns
  - Transmitter and Receiver compliance methodologies
  - Compliance board requirements
  - TP1a reference model and TP4a compliance details
- Develop a set of parameters that distinguish between the supported and unsupported channels
  - E.g. ERL, ILD, ICN, COM, etc.

Thanks!