Moving Forward with ERL

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ToC

- ❑ Summary so far
- ❑ Consequence and why
- ❑ How to incorporate
- ❑ Next Steps/Call for Action

Summary of the work so far and its conclusions

- Throughout the .3cd project the following issues were raised with a number of comments
  - Difficulty in making SNR_{ISI} measurements and the interactions with device test fixtures.
  - No real proof that violating return loss masks is directly tied to failures
    - A number false negatives have been shown
  - No easy way of interpreting return loss
    - On the average short package have better return loss the long packages but short packages perform better near COM performance limits
  - COM variability is caused by the interaction between the reference package and return loss specifications.
    - Return loss mask specification does not seem to limit false positives.
  - A mathematical relation (budget) between device and channel return and performance has not been shown.
- A number of presentation were made on how to compute an effective return loss (ERL) in which ERL
  - Can replace SNR_{ISI}
  - Can be a single value to grade return loss
  - Can reduce some COM variability compared to return loss mask control
  - Can relate device and package return loss

The consequence of what this work means for specifying 50Gb/s electrical interfaces and why the TF might want to incorporate the new approach

- ❑ Remove SNR_{ISI} and reduce the impact of device test fixture variation
- ❑ Remove return loss mask for channels and devices
- ❑ Simplification of these to one measurement parameter ERL
- ❑ Improve market design capability as it relates to return loss
  - Package design tradeoff could be made easier because grading return loss I straight forward,

How this could be incorporated into the spec

- Add and Annex in ERL (computation)
- In clause 137 for transmitter and receiver
  - Provide exception to Clause 93 and able 120D–1 for return loss
  - Add requirement for ERL
  - Specify two parameters, β_x and ρ_x, for transmitter and receiver ERL computation
- Remove requirement for SNR_{isi} for transmitters
- Replace 137.10.2 Channel return loss with effective return loss
- Do equivalent for Annex 135D

Next Steps/Call for Action

- ❑ More comparison to actual packages
- ❑ What would the Annex look like
- ❑ What would the markups to the draft look like
- ❑ Determine if ERL should/could be applied to CR
- ❑ Regular meeting to refine and review