FUJITSU

shaping tomorrow with you

Call For Data of Real Device Return Loss

Yasuo Hidaka
Fujitsu Laboratories of America, Inc.
IEEE P802.3cd 50GbE & NGOATH Task Force Ad-Hoc
June 22, 2016

Background

FUJITSU

- In P802.3bs 200GbE SMF & 400GbE Task Force, I proposed to improve COM package model (#18 on D1.3)
  - Options to improve the package model of COM
    - Option A: Use the new T-Coil model in this presentation.
    - Option B: Reduce the device capacitance C_d to an equivalent lower value.
    - Option C: No change.
- Response to this comment
  - REJECT
  - Straw Poll on options in slide 27 of hidaka_3bs_01a_0516.pdf
    - Option A: 3
    - Option B: 4
    - Option C/More information needed: 11
  - More information and further presentations solicited
- Problem: neither of Option A nor B were justified by real device

Feedbacks at P802.3bs Electrical Ad Hoc

FUJITSU

- I made a similar presentation at P802.3bs Electrical Ad Hoc on June 6, 2016 (hidaka_01_060616_elect) and got feedbacks:
  - For P802.3bs (i.e. CDAUI-8 c2c), it may be still possible to build channels with current COM package model. Then, device vendors may not be willing to provide data which would cut margin for device.
  - For P802.3cd (i.e. 50GBASE-CR etc), it may be impossible to build channels with current COM package model. Then, device vendors may consider more seriously to provide data to revise COM package model.
  - I was recommended to take this activity in a longer time frame, and make the same presentation at P802.3cd Ad Hoc.

Justification by Real Device is Difficult

FUJITSU

- Various C_d values are assumed as an improved package model.
  - 250fF(Annex 93A) → 280fF(Annex 120D, D1.3) → hypothetical improvement 230/200/160/150/120/100fF (w/o T-Coil) or 600fF (w/ T-Coil)
    - In my simulation, 500fF w/ T-Coil showed similar performance to 100fF w/o T-Coil.
- Justification by real device is important to choose a relevant C_d value, regardless of with or without T-Coil.
- However, it is difficult for device vendors.
  - They do not want to disclose real device data, but want to keep it confidential.
    - In particular from their competitors.
  - They also want to keep margin for device as much as possible.
- It is also difficult for system or component vendors.
  - They do not have real device or real device data.
    - Even if they obtain a device sample, they have to characterize it by themselves.
      - They do not want to do characterization, because they want to focus on functional evaluation.
      - They may get characterization reports from device vendors, but only under NDA.

How to Move Forward

FUJITSU

- I will gather Return Loss Data from multiple device vendors.
- I will present anonymized data with spec candidates to TF.
- TF will choose a new return-loss spec and a new C_d value for the package model.

Call For Data

FUJITSU

- Return Loss Data of a real device for 50+Gbps
  - Measured or simulated S-parameter data from outside of package
- I am engaged in this activity as an individual
  - I will not share the raw data & information with my employer
    - I can sign up NDA as an individual with the provider of raw data
- Detail process can be shared with interested parties

Advantages and Risks for Device Vendors

FUJITSU

- Advantages for Device Vendors by Contributing Device Data
  - Your device is likely to meet the return loss spec.
  - Your device is likely to be well aligned with the COM C_d value.
- Risks for Device Vendors by Not Contributing Device Data
  - Your device may violate the return loss spec.
    - Because the spec will be chosen without consideration of your device.
  - Your device may not be well aligned with the COM C_d value.
    - You may need to consume extra margin allocated to Rx.
- Lower risks for excellent devices, higher risks for fair devices.

Conclusions

FUJITSU

- What I am requesting is just return loss data
  - Once the device is shipped, anybody can measure it. You cannot hide it.
- It is just to choose a new return-loss spec and a new C_d value for the package model
  - It is Not for the T-Coil model. It is a different issue.
- If you can provide real-device data, please let me know
  - yasuo.hidaka@us.fujitsu.com
- I hope to gather data over this summer, and present results in September or November, this year

FUJITSU

Questions?