

Proposals to Address Some TBDs in 802.3ct D1.1

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Supporters

- Ade Brittain, Liberty Global
- Alberto Campos, CableLabs
- Curtis Knittle, CableLabs
- Eric Menu, Videotron
- George Hart, Rogers Communications
- Hideki Isono, Fujitsu Optical Components
- Jack Morrison, Liberty Global
- Jeff Finkelstein, Cox Communications
- John DeAndrea, II-VI
- Kevin Kwasny, Charter Communications
- Peter Noutsios, Fujitsu Optical Components
- Steve Jia, CableLabs

References

- Schmitt_3ct_01_191219 (http://www.ieee802.org/3/ct/public/tf_interim/19_1219/schmitt_3ct_01_191219.pdf)
 - Experimental Data on Transmitter and Receiver Reflectance Parameters
- CableLabs P2PCO-PHYv1.0 specification (<https://specification-search.cablelabs.com/P2PCO-SP-PHYv1.0>)
 - Previously contributed to 802.3ct
- ITU G.698.2 (<https://www.itu.int/rec/T-REC-G.698.2/en>)

Introduction

- In the 802.3ct D1.1 release, there are several parameters that are listed as TBD for one reason or another
- In my comments against the D1.1 version, I proposed values for a number of these TBDs
- This contribution walks through each of the proposed values, and the reason why I'm proposing each one (with the exception of Tx and Rx reflectance, which is addressed in a separate contribution)

Comment #86

Skew between two polarizations (1 of 2)

- In Table 154-8, the parameter “Skew between the two polarizations (max)” is listed as TBD
- Other specifications have adopted the following:
 - ITU G.698.2 adopted a value of 10 ps
 - CableLabs P2PCO-PHYv1.0 adopted a value of 6 ps
- In my comment against 802.3ct D1.1, I proposed adopting a value of 10 ps
 - This is the more relaxed of the two, and therefore seemed preferable
- I have since reconsidered my position, and am changing my proposal relative to what I included in my comment

Comment #86

Skew between two polarizations (2 of 2)

- However, in reviewing this contribution with potential supporters, I received the following feedback points
 - It was pointed out that in Deandrea_3ct_01 from the November plenary, it was demonstrated that 6 ps was easily achievable with room to spare; therefore, selecting a more relaxed value is unlikely to represent a cost savings for the transmitter
 - However, relaxing the transmitter would require the receiver to handle greater polarization skew, which could make it more expensive and/or result in performance issues
- Based on this feedback, I am now proposing we adopt a value of 6 ps for “Skew between the two polarizations (max)” in Table 154-8

Comment #88

Optical Return Loss Tolerance (1 of 2)

- In Table 154-8, the parameter “Optical return loss tolerance (max)” is listed as TBD
- Other specifications have adopted the following:
 - ITU G.698.2 has what appears to be an equivalent parameter with a value of 24 dB
 - CableLabs P2PCO-PHYv1.0 adopted a value of -25 dB; the equation is inverted relative to G.698.2, so the equivalent is actually 25 dB
- Since this is a ratio of reflected signal to actual signal, the CableLabs requirement is slightly relaxed relative to the ITU requirement

Comment #88

Optical Return Loss Tolerance (2 of 2)

- Given the minimal difference between the two values, that does not provide a specific direction for choosing one or the other
 - Either could work
- However, choosing a more relaxed value could have potential cost benefits
 - Admittedly minimal, but still possible
- Therefore, propose adopting the more relaxed of the two:
 - Optical return loss tolerance (max) of 25 dB (or -25 dB depending on how we define it)

Comment #91

Minimum optical return loss at TP2

- In Table 154-10, the parameter “Minimum optical return loss at TP2” is listed as TBD
- After reviewing the equivalent parameters and associated definitions in ITU G.698.2, I believe this parameter is functionally equivalent to “Optical return loss tolerance (max)” in Table 154-8
- Therefore, I propose deleting this row from the table, and this parameter from the 802.3ct draft
- (note: a more detailed explanation follows on slide 11)

Comment #92

Maximum discrete reflectance between TP2 & TP3

- In Table 154-10, the parameter “Maximum discrete reflectance between TP2 and TP3” is listed as TBD
- After reviewing the equivalent parameters and associated definitions in ITU G.698.2, I believe this parameter is functionally equivalent to “Transmitter reflectance (max)” in Table 154-8
- Therefore, I propose deleting this row from the table, and this parameter from the 802.3ct draft
- (note: a more detailed explanation follows on slide 11)

Comments 91 and 92: Details (1 of 3)

- With regards to reflectance and return loss, we currently have the following parameters in the 802.3ct draft:
 - In Table 154-8 (Tx characteristics)
 - Optical return loss tolerance (max)
 - Transmitter reflectance (max)
 - In Table 154-9 (Rx characteristics)
 - Receiver reflectance (max)
 - In Table 154-10 (black link characteristics)
 - Minimum optical return loss at TP2
 - Maximum discrete reflectance between TP2 and TP3
- It appears that these parameters derive from ITU G.698.2 and/or CableLabs P2PCO-PHYv1.0, so I looked to those specifications for definitions and comparisons

Comments 91 and 92: Details (2 of 3)

- In ITU G.698.2, we have the following related parameters (noting that S_s is equivalent to TP2, and R_s is equivalent to TP3):
 - Under “Optical path from point S_s to R_s ”
 - Minimum optical return loss at S_s
 - Maximum discrete reflectance between S_s and R_s
 - Under “Interface at point R_s ”
 - Maximum reflectance of receiver
- And in the CableLabs P2PCO-PHYv1.0, we have the following:
 - In Transmitter Requirements
 - Transmitter Reflectance
 - Transmitter System Optical Return Loss [tolerance]
 - In Receiver Requirements
 - Receiver Reflectance

Comments 91 and 92: Details (3 of 3)

- Therefore, it appears that what we currently have across Tables 154-8, 154-9, and 154-10 is a combination of the parameters from ITU G.698.2 and CableLabs P2PCO-PHYv1.0
 - Each of those specs has 3 parameters to define reflectance and return loss
 - 802.3ct D1.1 has 5: 2 apparently from G.698.2, 2 apparently from P2PCO-PHYv1.0, and 1 that is common to both
- I next reviewed the definitions for the parameters not in common, and came to the following conclusions
 - “Minimum optical return loss at S_s ” appears to define the maximum return loss that can come from the black link, and that therefore the transmitter has to tolerate; this is functionally equivalent to “Transmitter return loss tolerance” and therefore redundant
 - “Maximum discrete reflectance between S_s and R_s ” appears to define the maximum reflectance in the black link coming from the transmitter; this is functionally equivalent to “Transmitter reflectance” and therefore redundant
- Therefore, propose eliminating the return loss/reflectance parameters from either Table 154-8 or 154-10
 - My personal preference is to eliminate them from 154-10, but either is workable

Summary

- 802.3ct D1.1 contains several “TBD” parameter values
- As identified in my comments, I am proposing the following
 - Skew between the two polarizations (max): 6 ps
 - Optical return loss tolerance (max): 25 dB
 - Minimum optical return loss at TP2: remove parameter
 - Maximum discrete reflectance between TP2 and TP3: remove parameter
- Thank you for your consideration