

Questions, comments and concerns on 400GBASE-ZR baseline proposal

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Introduction

During the IEEE 802.3 cw interim teleconference call on 23 April 2020 as baseline specification for 400GBASE-ZR was proposed in [sluyski_3cw_01a_200423](#)

After a short but significant discussion a straw poll was taken:

Strawpoll #1 -	I would support adopting the baseline proposed in sluyski_3cw_01a_200423.pdf
Yes	14
No	0
Need More Discussion /Information	23

Indicating that there was a significant amount of attendees that felt that more discussion / information beyond that provided in the presentation would be necessary before they felt that a baseline specification should be adopted

This presentation contains some questions, comments and concerns from the author of this presentation

Acknowledgement

We want to express our appreciation for Mike Sluyski and co-authors of sluyski_3cw_01a_200423 for stepping up and prepare the proposal for the baseline specification for 400GBASE-ZR.

Now a document is available that can serve as a starting point to develop a basis for a suitable baseline specification.

Concerns

The basis for this baseline proposal has been the recently published OIF [400ZR implementation agreement](#) (IA version OIF-400ZR-01.0).

However:

- This OIF IA is based upon 100 GHz spacing and not yet 75 GHz.
- In this OIF IA the fundamental element of a fully specified metric for the quality of a transmitter is still missing, which is crucially relevant for a specification supporting multi-vendor interoperable optical interfaces.
- It is the authors' view that there needs to be a sufficiently well established metric for the quality of the 400G transmitter before adopting a baseline specification.
- Expressing that “gap” via just a TBD is insufficiently showing the relevance and the work ahead of us to establish an appropriate value and a DP-16QAM specific definition and reference receiver.

Concerns, continued

- **Experimental work from multiple sources following the agreed test plan agreed in Geneva January 2020 is required to support the establishment of a metric.**
- **This work is more efficiently done before initiating TF review than during comment resolution on an established baseline specification.**
- **Is a specification where the Tx metric is missing, done for 90% or 10%?**
- **The baseline proposal also contains several new parameters and values (not yet addressed in OIF 400ZR) to support black links with 75 GHz spacing, for which the relation with OSNR performance has not yet been established by test results.**

Questions / comments

Spectral excursion definitions

- In ITU-T G.698.2 for 100G the maximum spectral excursion is expressing the minimum width of the “canal” through the black link and the maximum excursion of the optical transmitter signal to permit undistorted transmission through the “canal”.
- This definition of maximum spectral excursion for 100G (i.e. the levels at which widths are specified) has been established after analysis of multi-source test results relating the Tx excursion behaviour with system OSNR penalties.
- The results of this work have been shared with IEEE 802.3 in an [LS](#) from ITU-T SG15/Q6, submitted to the May 2019 IEEE 802.3 interim meeting

Questions / comments

Spectral excursion definitions, continued

- The baseline proposal proposes max spectral excursion of +/- 32 GHz @ -3 dB (also in the OIF 400ZR for 100GHz spacing) and +/- 39 GHz @ -10 dB (not in OIF 400ZR):
 - Need to see data supporting this proposal (for definition and values) and what is the correlation between the proposed values and the OSNR performance?
- The baseline proposal proposes a new parameter minimum spectral excursion (only for the transmitter and under consideration in the OIF) of +/- 32 GHz:
 - Need to see measurements results that support this proposal (for definition and values) and what is the correlation between the proposed values and the OSNR performance?

Questions / comments

Tx I-Q offset

- **The baseline proposal proposes a max Tx I-Q offset of -26 dB:**
 - **Need to see measurements results that support this value.**

Questions / comments

Black Link Parameters

- The baseline proposal proposes an average Polarization Mode Dispersion of 10 ps:
 - What is the value of including this parameter, currently neither used for 100G in Clause 154 nor in ITU-T G.698.2, in addition to max Differential Group Delay?
- The baseline proposal proposes an inter-channel crosstalk at TP3 of -27 dB max (OIF 400ZR specifies -8 dB) on the basis of the information in [way 3cw 01a 200423](#):
 - During the interim teleconference meeting of 23 April 2020 concerns were expressed because test data in [way 3cw 01a 200423](#) showed a large mismatch with simulation data, with an offset of 7 dB, suggesting an OSNR penalty of about 2 dB instead of 1 dB.
 - Insufficient clarification of that potential shift was provided during the call and it will be necessary to see experimental verification of the results established by simulation.

Thanks!