

Concerns on resolutions to comments #34, #35, #36 and #37 to P802.3CW D1.4

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Apologies

The author would like to offer his apologies to the CW Task Force for the late submission of this presentation

Introduction

During the Interim Teleconference Meeting on 28 March 2022 the CW Task Force achieved consensus to maintain the Tx parameter EVM and to add the following new Transmitter parameters:

- IQ amplitude imbalance (mean) with value 1 dB
- IQ phase error (min) with value -5 deg
- IQ phase error (max) with value +5 deg
- IQ quadrature skew (max) with value 0.75 ps

The justification for comments #34 - #37 is given in [sluyski_3cw_01a_220328](#).

Author's concerns on adding 4 new Tx parameters

During the Interim Teleconference Meeting on 28 March 2022 the author expressed his concerns that the addition of new Tx parameters would be premature at this moment.

The author wants to expressed his continued concerns for a variety of reasons outlined on the following slides.

Concerns 1

Slide 6 of [sluyski_3cw_01a_220328](#) contains the following statement:

“Other Standards Organizations that have specified and released 400G 16QAM specifications with demonstrated interoperability...”

During the call reference was made to OIF’s 400ZR implementation agreement and the Open ROADM MSA.

- [sluyski_3cw_01a_220328](#) does not contain (beyond statements) any technical information why adding the four Tx parameters would improve the quality of the draft.
- No technical information from the work of OIF on the 400ZR implementation has been made available to the CW TF on the choice of the four parameters and their values.

Concerns 1, continued

- [Version 5.0 of the public Open ROADM MSA](#) does not contain any of the four Tx parameters and only EVM as a TBD with the following comment:
“Transmitter Quality - EVM captures many parameters in one metric. Things like X/Y polarization orthogonally, I/Q power balance, I/Q orthogonality, Carrier Suppression, etc. The problem is that when it fails this test it cannot determine what the source of the failure is. Perhaps that isn't as important at this level (more for the design of the transmitter); however, some of these parameters have different effects on the quality of the received signal. In addition, different DSP implementations will be sensitive in different ways, e.g. dithers interacting with receiver control loops. Intention is to follow work in ITU to define this. In addition, ITU only specifies EVM for QPSK modulation. 16QAM is currently under-development in ITU. No current plan for 8QAM in ITU.”
Apparently it is still the expectation of Open ROADM that they will be able to reuse the work on EVM for DP-16QAM transmitters by the ITU-T.
- The author is of the view that the CW Task Force will need detailed technical information and analysis to enable a proper judgement on the addition of the four Tx parameters. Maybe we need to send an LS to both the OIF and Open ROADM.

Concerns 2

[sluyski_3cw_01a_220328](#) also contains the following statements:

- Slide 5: “Currently, the lack of EVM qualification as a TQM is limiting P802.3cw progress”
- Slide 6: “EVM methodology as a hurdle to progressing the 802.3cw draft”.
- Slide 4: “Crux of EVM as a TX Quality Metric is that the ROSNR performance is still a combination of the TX/RX performance. Vendor to vendor performance will vary. As a result, where do you define the limit?”

The author is of the strong view that a TQM such as EVM is NOT just a hurdle limiting the progress of a project towards Working Group Ballot, but rather a fundamental and indispensable characteristic of multi-vendor interoperable optical interface specifications intended for high-volume Ethernet applications.

This aspect was already outlined on slide 3 of [stassar_3cw_01a_220117](#), shown again on the next slide.

Specifications supporting optical multi-vendor interoperability

- It is the authors understanding that for true Ethernet applications it's fundamental to develop specifications for optical PMDs which support optical multi-vendor interoperability.
- Without that element, applying to optical transmitter, link/channel and receiver, true plug-and-play deployment without additional (link or transceiver) engineering will not be possible.

Concerns 3

[sluyski_3cw_01a_220328](#) further contains the following statement:

- Slide 5: “Other Standards Organizations that have specified and released 400G 16QAM specifications with demonstrated interoperability by:
 - Taking a parametric approach -Fully specifying ALL Tx parameters.
 - Identifying a common set(s) of Test vectors and test methodologies.
 - Private and Independent verification of the specified parameters have occurred.
 - Public multi multi-vendor interop demonstrations – e.g., OFC”

The author is of the view that detailed technical information on the aforementioned interoperability testing needs to be made available to the CW TF in order to assess the conditions of the testing efforts and to assess the implications of extending its conclusions to the worst case specification approach that IEEE 802.3 usually undertakes.

A key question is whether the adding of the four parameters warrants high manufacturing yield of high volume devices.

Concerns 4

Slide 4 of [sluyski_3cw_01a_220328](#) makes reference to the test results contained in [maniloff_3cw_01_220314](#), without making a technical analysis.

During the call on 28 March 2022 verbal reference was made to the results in [maniloff_3cw_01_220314](#) to justify the inclusion of the four Tx parameters.

The author is of the view that the TF should review a presentation with a technical analysis of that justification.

Concerns 5

The author is concerned that when reviewing future comments to draft D1.5, prepared on the basis of the currently closed comments, claims will be made that the draft is technically complete with the addition of the four Tx parameters and that a (TBD) EVM specification will no longer be necessary.

[maniloff_3cw_01_220404](#) contains some statements on the usefulness of the four additional Tx parameters, while emphasizing the need for a TQM such as EVM. The author of this presentation appreciates the clarification on the necessity of EVM in [maniloff_3cw_01_220404](#).

The author is of the view that the TF should review a detailed technical analysis of the value of adding the four additional Tx parameters.

The author's view on four additional Tx parameters

The author of this presentation is sympathetic to adding additional transmitter parameters, but would strongly prefer to defer this addition until reviewing comments to D1.5 because:

- It would enable the TF to review a detailed technical analysis of the benefits of the four additional parameters.
- The TF should await the promised sets of test results on EVM at least until the May 2022 interim.

Therefore the author is of the continued view that the addition of four Tx parameters already in D1.4 is premature.

Proposal

It is the authors view that resolution to comments #34, #35, #36 and #37 to P802.3CW D1.4 should be reopened and changed to “reject” instead of “accept in principle” with the following proposed rebuttal.

“Insufficient justification provided to add separate TX parameters and associated values”.

Thanks!