



AREAS OF COMMONALITY AND STEPS FORWARD FOR 802.3CT 100G OPTICAL PARAMETERS

MATT SCHMITT, CABLELABS

PROPOSALS FROM MARCH PLENARY

- http://www.ieee802.org/3/ct/public/19_03/stassar_3ct_01_0319.pdf proposed to adopt the methodology used for 100 Gb/s coherent optics specified in G.698.2, with modifications
 - To use the list of parameters defined in G.698.2 as a starting point, and make modifications from there
 - To compare these values to those from other relevant specifications
 - To use this as a means to arrive at a final list of parameters
- This contribution picks up from that point in order to attempt to move this work forward, identify areas where initial consensus may be possible, and identify where additional contributions are needed

STRAWMAN TABLES

- The following slides include the tables for 100G that were presented in http://www.ieee802.org/3/ct/public/19_03/stassar_3ct_01_0319.pdf, with the addition of a column for “Proposed Strawman” values
- The “Proposed Strawman” column has been populated as follows:
 - Where G.698.2 and the CableLabs PHYv1.0 spec agree on a parameter, that value has been added to the “Proposed Strawman”
 - Where G.698.2 has a value and the CableLabs spec is silent, that value has also been added to the “Proposed Strawman”
 - Where G.698.2 and the CableLabs spec disagree, a “TBD” has been added to the “Proposed Strawman”
- If we can provisionally agree on that approach, the TBDs will represent areas requiring further work/contributions

100GBASE-ZR TRANSMIT CHARACTERISTICS

Parameter Name	Units	G.698.2 Value	CL PHYv1.0	Proposed Strawman
Maximum mean channel output power	dBm	-3	+7	TBD
Minimum mean channel output power	dBm	-8	-6.5	TBD
Minimum central frequency	THz	191.5	191.3	TBD
Maximum central frequency	THz	196.2	196.2	TBD
Maximum spectral excursion	GHz	± 15	NA	± 15
Minimum side mode suppression ratio	dB	30	NA	30
Maximum laser linewidth	kHz	500	1000	TBD
Maximum offset between the carrier and the nominal central frequency	GHz	1.8	1.8	1.8
Maximum power difference between polarizations	dB	1.5	1.5	1.5
Maximum skew between the two polarizations	ps	10	6	TBD
Maximum error vector magnitude	%	23	NA	23
Maximum I-Q offset	dB	-25	NA	-25
Minimum Transmitter OSNR	dB	NA	35 ^{4/25/19}	TBD ⁴

100GBASE-ZR RECEIVE CHARACTERISTICS

Parameter Name	Units	G.698.2 Value	CL PHYv1.0	Proposed Strawman
Maximum mean input power	dBm	0	NA	0
Minimum mean input power [amplified]	dBm	-18	-10	TBD
<i>Minimum mean input power [unamplified]</i>	dBm	NA	-30	TBD
Minimum OSNR(193.6) [amplified]	dB (0.1 nm)	24	18.5 (?)	TBD
<i>Minimum OSNR(193.6) [unamplified]</i>	dB (0.1 nm)	NA	35	TBD
Receiver OSNR tolerance(193.6)	dB (0.1 nm)	19	15.5 (?)	TBD
Maximum reflectance of receiver	dB	-27	-20	TBD

100GBASE-ZR BLACK LINK CHARACTERISTICS

Parameter Name	Units	G.698.2 Value	CL PHYv1.0	Proposed Strawman
Maximum ripple	dB	2.5	NA	2.5
Maximum (residual) chromatic dispersion	ps/nm	2400	2400	2400
Minimum (residual) chromatic dispersion	ps/nm	-200	NA	-200
Minimum optical return loss at S_5	dB	24	25	TBD
Maximum discrete reflectance between S_5 and R_5	dB	-27	-20	TBD
Maximum differential group delay	ps	20	20	20
Maximum polarization dependent loss	dB	1.5	2.0*	TBD
Maximum polarization rotation speed	krad/s	50	50	50
Maximum inter-channel crosstalk at R_5	dB	-16	NA	-16
Maximum interferometric crosstalk at R_5	dB	-25	NA	-25
Maximum optical path OSNR penalty	dB	5	3 (?)	TBD

*Updated from March

AREAS REQUIRING ADDITIONAL CONTRIBUTIONS

- Based on the proposed methodology, the following areas need further study/contributions to select strawman values:
 - Output/Input power
 - Max/min frequency
 - OSNR
 - Reflectance/Return Loss
 - Laser Linewidth
 - Max PDL
- Propose soliciting contributions in coming weeks to address these areas
- Goal is to develop a more complete strawman that we can potentially adopt at the May meeting as a baseline for the 802.3ct 100G objective

TASK FORCE FEEDBACK REQUEST

- Is the Task Force comfortable with this approach?
- Are there additional areas that require study/contributions to support the adoption of a baseline proposal in the *May* meeting?



THANKS!