

Considerations on establishing physical layer specifications for 100 Gb/s and 400 Gb/s over 80 km DWDM systems

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IEEE 802.3cn, 50 Gb/s, 100 Gb/s, 200 Gb/s, and 400 Gb/s over Single-Mode Fiber and DWDM Task Force

IEEE 802.3 Plenary Meeting, Bangkok, 12 – 15 November 2018

Introduction

- This presentation provides considerations on the Task Force work necessary to create specifications for the following objectives:
 - *Provide a physical layer specification supporting 100 Gb/s operation on a single wavelength capable of at least 80 km over a DWDM system.*
 - *Provide a physical layer specification supporting 400 Gb/s operation on a single wavelength capable of at least 80 km over a DWDM system.*

Topics of previous presentations

- **Some presentations to the SG meeting in Spokane in September and to the P802.3cn ad hocs already contained some detailed considerations on architecture, FEC & Framing choices, values for optical power and OSNR values.**
- **We suggest that first the Task Force should make some high level decisions.**

High Level Decisions

- What is the reference model for the link?
 - Purely 80 km? Is it using the same model as in OIF for 400ZR?
 - Loss assumption? 0.25 dB/km? Amplified and unamplified?
- Number of channels and spacing?
 - 40 Channels? 75 GHz or 100GHz or both?
 - C-band, L-band or both?
- What is the modulation format?
 - DP-DQPSK for 100G? DP-16QAM for 400G?
- What are the frame assumptions?
 - 400G – Same as OIF? 400ZR frame, GMP, CFEC, 20ppm?
 - 100G – Similar choices to 400G? FEC?
- Then before being able to take decisions on OSNR values, we need to agree on a metric to specify the quality of the transmitter.

Options for 100 Gb/s 80 km DWDM

- Leverage optical specification methodology and parameter definitions and values from recently consented Recommendation ITU-T G.698.2.
- Adopt DP-DQPSK modulation format.
- Adopt parameter definitions for black-link methodology:
 - Maximum spectral excursion & ripple
 - Etcetera.
- Adopt parameter definitions for quality of transmitter:
 - Maximum spectral excursion.
 - Maximum EVM_{rms} & Maximum I-Q offset
 - Etcetera
- SC-FEC as in G.709.2 and G.709.3

Options for 400 Gb/s 80 km DWDM

- Leverage specification from OIF's 400ZR IA draft.
 - DP-16QAM modulation format.
 - 400ZR frame, GMP mapping, CFEC, 20ppm?
- Follow optical specification principles from ITU-T G.698.2 and develop methodology for quality of 400G transmitter (may be different from 100G transmitter)
 - Maximum spectral excursion and ripple
 - Quality of Tx via EVM_{rms} and IQ-offset.

Q & A?

Thanks