Some proposed directional decisions

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Introduction

Some opportunities exist to make some directional decisions in P802.3ct to make progress on the 400 GbE objective.

Key topics:

- 75 GHz spacing
  - End frequencies
- EVM test methodology approach

75 GHz spacing

Several cloud customers have expressed needs in 400GBASE ZR operating over 75GHz grid which is aligned w/ broad market potential for IEEE

- see http://www.ieee802.org/3/ct/public/19_09/du_3ct_01b_0919.pdf

Several technical presentations on 75GHz spacing analysis thus far

- see http://www.ieee802.org/3/ct/public/19_11/way_3ct_02a_1119.pdf
- see http://www.ieee802.org/3/ct/public/19_11/ogawa_3ct_01_1119.pdf
- see http://www.ieee802.org/3/ct/public/19_09/deandrea_3ct_01a_0919.pdf
- see http://www.ieee802.org/3/ct/public/20_01/sluyski_3ct_01_0120.pdf
- See http://www.ieee802.org/3/ct/public/20_01/zhang_3ct_01_0120.pdf

P802.3ct decisions and polls on spacing topic

Original motion to adopt 100 GHz spacing for both 100 GbE and 400 GbE

- **March 2019 Motion #6:** Move to adopt 100 GHz channel spacing for 100 GbE and 400 GbE 80 km objectives. Y/N/A 30/0/6

Interest started to grow in 75 GHz spacing for 400 GbE objective

- **July 2019 Straw Poll #3:** I am interested in hearing more information related to supporting a 75 GHz grid spacing for 400 GbE Y/N 26/6

Continued contributions on 75 GHz spacing showed increasing shift

- Straw poll #1 - For the grid for 400 GbE objective I would support:
  A. Keeping the currently adopted 100 GHz spacing only
  B. Add 75 GHz spacing to currently adopted 100 GHz spacing
  C. Replacing the 100 GHz spacing with 75 GHz spacing
  D. Need more information

November meeting: A. 0 B. 7 C. 16 D. 8

September meeting: A. 1 B. 17 C. 6 D. 23

Case for 75 GHz spacing

- Clear market demand for 75 GHz spacing @ 400 GbE
- No contributions or requests for 100 GHz spacing since debate started
- Technical concerns have been examined.
  - Feasibility show by multiple contributions without spectral shaping
  - Some penalty increase observed due to narrower spacing
  - Detailed baselines values still need to be determined
  - No additional power (due to no spectral shaping)
  - Sensitivity to filter shape observed and specifics TBD
- Time to focus the TF on defining specific values for 75 GHz-based link budget

Proposed motion

- Move to adopt 75 GHz channel spacing for 400 GbE 80 km objective.

- Note: this would be a directional decision. Still technical work and contributions before detailed specifications are adopted

Defining the End Frequencies

- 75 GHz spacing enables 64 channels

Do we need to make a decision on the end frequencies?

Propose to match OIF 400ZR:
Min ch: 191.375 THz
Max ch: 196.1 THz

Review of Channel Frequency Ranges*

	OIF 400ZR		ITU-T G.698.1	ITU.T G.698.2	Cablelabs	Open ROADM
Spacing (GHz)	75	100	100	100	100	50
Min ch (THz)	191.375	191.4	191.5	191.5	191.3	191.35
Max ch (THz)	196.1	196.1	196.2	196.2	196.2	196.1
Channel Count	64	48	48	48	50	96

- Motion #6, Mar 2019 – 100 GHz spacing selected for 100 GbE and 400 GbE objectives - Approved
- Strawpoll #1 ,Mar 2019 – Support for 191.3 /196.1 – Y: 12 N: 1 Need info: 17 Abstain: 5
- Strawpoll #2, Mar 2019 - Support for 191.5 / 196.1 - Y: 11 N: 0 Need info: 10 Abstain: 9
- Strawpoll #7 Nov 2018 – For the 400 GbE – 80km objective I would support the following channel spacing (Chicago Rules): 75GHz – 0 100 GHz – 51 Need more information – 4 Abstain – 9
- Strawpoll #8 Nov 2018 – For 100 GbE 80km objectives I would support the following channel spacing (Chicago Rules): 50GHz – 6 75GHz – 0 100GHz – 37 Need more information – 11 Abstain - 9

* Data for ITU-T G.698.1, ITU-T G.698.2, Cablelabs, and Open ROADM per deandrea_3ct_01a_0319.
Data for OIF 400ZR from OIF 5/19/19 Liaison to IEEE 802.3

Joint IEEE P802.3cn / IEEE P802.3ct Task Force
Interim Teleconference Meeting, June 20, 2019
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http://www.ieee802.org/3/ct/public/tf_interim/19_0620/dambrosia_3ct_01b_190620.pdf

EVM measurement

- EVM methodology has been adopted for 100 GbE specifications
- Proposals underway to adopt and extend EVM methodology for 400 GbE use: http://www.ieee802.org/3/ct/public/tf_interim/19_1205/pittala_3ct_01a_191205.pdf
- Discussions in interim teleconference (12/5/19) suggested no objections to adopting EVM as methodology
- Still technical contribution required to establish the technical specifics

Propose a straw poll (motion?) to establish the direction for the TF to progress.

Summary

In order to make progress on the specifications for the 400 GbE objectives, it is proposed to take some decisions that still allow the technical debate to progress but remove the uncertainty of the direction

Thanks