IEEE 802.3ck 100Gb/s, 200Gb/s and 400Gb/s Electrical Interfaces Task Force Ad Hoc meeting –

June 20, 2018

Prepared by Tom Palkert and Beth Kochuparambil.
The proposed agenda for today:
- Approval of the Agenda
- Approval of May 9th Ad Hoc Minutes
- IEEE Patent Policy reminder:
- IEEE Participation Requirements reminder
- Logistics for July Plenary meeting
- .3ck Ad Hoc –
  – Verbal status of our Task Force, Beth Kochuparambil
  – "A Symbol Muxing PMA Option" - Mark Gustlin & Jeff Slavick (25min)
  – "COM Discussions" – Rich Mellitiz & Beth Kochuparambil (60min)
    *possibly one or two straw polls at the end.

Presentations posted at: http://www.ieee802.org/3/ck/public/adhoc/index.html

Meeting began at ~9:00 a.m. Pacific by Beth Kochuparambil, Task Force Chair.

Meeting began with the agenda presentation:
http://www.ieee802.org/3/ck/public/adhoc/june20_18/agenda_180620_3ck_adhoc.pdf

The chair reminded participants to indicate full names and employer/affiliation correctly for the meeting minutes. Beth reminded participants to mute lines when not speaking and reviewed the steps to unmute.

Showed the links to the 100 Gb/s, 200 Gb/s, and 400 Gb/s Electrical Interfaces P802.3ck Task Force ad hoc page and the email reflector.

Presented the proposed agenda and asked if there was objection as written.   The agenda was approved by the ad hoc.

Chair noted that the minutes from the previous meeting were recently posted to the ad hoc web page. Chair asked if there was opposition to approving them. No one responded.

Reminded participants of the IEEE patent policy. Chair asked if anyone was unfamiliar with the IEEE patent policy. No one responded.

Reminded participants of the IEEE Participation Requirements and showed the slide with the Participation requirements. Chair asked if anyone was unfamiliar with the IEEE Participation Requirements. No one responded.

Agenda Items

Study Group Update – Beth Kochuparambil
- Reviewed the logistics for the July Plenary; meeting on Wed all day and Thurs morning.
- Presentation requests due June 29 (Fri), AOE. Presentations due July 5 (Thurs), 5pm PDT.
- Goals for July meeting:
  - Facilitate deep technical discussions
  - Understand where we need to focus our energy and study before baselines.
- Status of Task Force: Target is to adopt baselines in Sept/Nov. Draft 1.0 in January 2019
- Likely Ad Hocs: 7/25, 8/8, 8/22

Presentation #1:
"A Symbol Muxing PMA Option", Mark Gustlin and Jeff Slavick
See: http://www.ieee802.org/3/ck/public/adhoc/june20_18/gustlin_3ck_adhoc_01_062018.pdf
- Discussed the possibility of RX symbol muxing instead of bit muxing for difficult channels.
- DFE will introduce burst errors which causes a reduction in FEC gain.
- Need to explore much this would help preserve FEC gain.
- Options to choose from for a given PHY type: (In order of preference)
  - 1) Current bit muxing - Simplest
  - 2) RS Symbol muxing - Adds a little complexity, not backward compatible for optical
  - 3) New FEC scheme - Unknown higher complexity

Presentation #2:
"COM discussions", Rich Mellitz and Beth Kochuparambil
See: http://www.ieee802.org/3/ck/public/adhoc/june20_18/mellitz_3ck_adhoc_01_062018.pdf
- Many responded to COM feeler on reflector
- Attempt at organizing COM issues:
  - 1) Design Parity
  - 2) Use Cases
  - 3) Ref Signal Architecture
  - 4) COM parameters
- Overlaying the standards process:
  - 1) Design Parity (Today?)
  - 2) Use Cases (May, July & ad hocs (7/25, 8/8, 8/22)
  - 3) Ref Signal Architecture (May, July & ad hocs (7/25, 8/8, 8/22)
  - 4) COM parameters (Sept and ad hocs)

Discussions about reference receiver specifications vs implementation.
Discussions about using a long DFE with zero forcing function vs FFE.
Discussions about balancing the COM margins.

Discussion about feasibility of existing COM reference receiver to work over channels.
Challenge for people to present options for reference receiver. (DFE vs FFE etc)

Proposal that a TX FIR should be taken into consideration along with link tuning.

Chair asked how people envisioned creating focus groups to study the topics defined by COM presentation outlines (numbers 1-4 above). No one responded. Chair requested to put a question on the floor so she and vice chair can help facilitate the discussion.

Question posed to the floor;
Select 1-2 focus topics might you best be able to contribute to:
a) Channel priority for PHY specification (CR/KR/C2M/C2C)
b) End user needs: channel/package material and construction
c) End user needs: power tradeoff and symmetry
d) Should COM be used for C2M?
e) TX/RX balance
f) Power consideration of various activities
g) Relationship between architecture and channel impairmenets
h) How much reference FFE, DFE and CTLE is needed
i) Computational efficiency

Action Item – Chair to help connect those who responded to the above question.

Reminder that ppt request due on Friday, 29 June.

The ad hoc meeting ended at ~12:24 pm Pacific.

Update (6/27/18): After the meeting, the chair sent an email stating (to attendees that were on the call during the question) she lost the data from the question on the floor asking for people to re-answer the question. Here are the results. Several stated that they are interested in many of these topics, but answered the question as it was asked.

Select 1-2 focus topics might you best be able to contribute to:
  a) Channel priority for PHY specification: CR/KR/C2M/C2C
        a. Rick Rabinovich
        b. Howard Heck
        c. Ali Ghiasi
        d. Mike Dudek
        e. Arturo
        f. Andy Zambell
        g. Nathan Tracy
        h. Adee Ran
        i. Rob Stone
  b) End User needs: channel/ package material and construction
        a. Rick Rabinovich
        b. Howard Heck
        c. Arturo

      d.   Andy Zambell
      e.   Nathan Tracy
      f.   Jacov Brener
      g.   Rob Stone
      h.   Liav BenArtsi

c) End User needs: power tradeoff and symmetry
      a.   Rob Stone

d) Should COM be used for C2M?
      a.   Rick Rabinovich
      b.   Ali Ghiasi
      c.   Mike Dudek
      d.   Greg LeCheminant
      e.   Jacov Brener
      f.   Arturo
      g.   Nathan Tracy
      h.   Adee Ran
      i.   Toshiaki Saki

e) TX/RX Balance
      a.   Ali Ghiasi
      b.   Greg LeCheminant
      c.   Phil Sun
      d.   Adam Healey

f) Power consideration of various architectures
      a.   Phil Sun
      b.   Toshiaki Saki

g) Relationship between architecture and channel impairments
      a.   Upen Kareti
      b.   Ted Sprague
      c.   Arturo
      d.   Nathan Tracy
      e.   Adee Ran
      f.   Liav BenArtsi
      g.   Toshiaki Saki

h) How much reference FFE, DFE, and CTF is needed
      a.   Mau-Lin Wu
      b.   Howard Heck
      c.   Ali Ghiasi
      d.   Mike Dudek
      e.   Upen Kareti
      f.   Jacov Brener
      g.   Adam Healey

i) Computational efficiency
      a.   Mau-Lin Wu
      b.   Upen Kareti

List of attendees (captured from Webex tool)

Name	Affiliation
Adam Healey	Broadcom
Adee Ran	Intel
Adrian Butter	Global Foundries
Alexander Rysin	Mellanox
Ali Ghiasi	GhiasiQuantum LLC
Andy Zambell	Amphenol
Arturo Pachon	TE Connectivity
Ben Jones (Xilinx)	Xilinx
Beth Kochuparambil	Cisco
Brian Holden	Kandou
David Chalupsky	Intel
David Malicoat	Senko
David Ofelt	Juniper
David Tetzlaff	Rockley Photonics
Eric Baden	Broadcom
Gary Nicholl	Cisco
Geoff Zhang	Xilinx
George Zimmerman	ADI, APL Group, Aquantia, BMW, Cisco Systems, Commscope
Greg LeCheminant	Keysight
Howard Heck	Intel
Jacov Brener	Marvell
Jane Lim	Cisco
Jeff Slavick	Broadcom
jim nadolny	Samtec
John Calvin	Vital Technical marketting
Kapil Shrikhande	Innovium
KARTHIK GOPALAKRISHNAN	Inphi
Liav Ben-Artsi	Marvell
Mark Gustlin	Xilinx
Matt Brown	Macom
Mau-Lin Wu	Mediatek
Mike Dudek	Cavium
Nathan Tracy	TE Connectivity
Paul Kolesar	CommScope
Phil Sun	Credo
Piers Dawe	Mellanox
Pirooz Tooyserkani	Cisco
Rita Horner	Synopsys
Scott Sommers	Molex
Steve Sekel	Keysight
Takeshi Nishimura	Yamaichi Electronics, USA
Ted Sprague	Infinera

Tom Palkert	Molex/Macom
Toshiaki Sakai	Socionext
Upen Kareti	Cisco
Vivek Telang	Broadcom
Wendy Wu	Cadence
Yang Zhiwei	ZTE
Yasuo Hidaka	Independent
Zvi Rechtman	Mellanox