Minutes IEEE P802.3ch Multigig Automotive Ethernet PHY TF AdHoc meeting May 16, 2018

Prepared by Natalie Wienckowski

Proposed Agenda:

1. Agenda/Admin: George Zimmerman, agenda_3chah_01_051618.pdf
2. SG Chair's comments: no presentation
3. Presentations:

STP cable Measurement result of TCL, ELTCL and coupling attenuation	Taketo Kumada	Yazaki
TX-PSD for PAM-M for Multi-Gig Automotive PHY and TX-PSD MASK	Peter Wu	Marvell
Bandwidth, Modulation and SNR Comparison for Multi-Gigabit Automotive PHY	Tom Souvignier	Broadcom
2.5G and 10G PHYs Modulation Scheme Proposal	Sujan Pandey	NXP
Power/Area Tradeoffs in Multi-Gig BASE-T1 PHYs	Ramin Farjadrad George Zimmerman	Aquantia CME Consulting / Aquantia

4. Discussion & Next steps – All

See adhoc webpage for agenda deck and presentations

Agenda/Admin George Zimmerman acting as ad hoc chair:

Meeting began at 7:04am PT.

Introductions & Affiliations.

Presented file: agenda_3chah_01_051618.pdf

1. Reviewed the Attendance information related to the ad hoc.
2. Displayed the Participation slide and reviewed it.
3. Displayed patent slide deck, and reviewed it.
   Call for Patents was made at 7:11 Pacific Time, none responded
4. Reminded participants to indicate full names and employer/affiliation for the meeting minutes.

Instructions for subscribing to the reflector may be found at http://www.ieee802.org/3/ch/reflector.html. If you cannot subscribe to the reflector for some reason, and need additional assistance please contact the Task Force chair.

Chair's Comments – Steve Carlson

Steve Carlson, Chair of the IEEE P802.3ch Task Force thanked everyone for following the new deadlines so the presentations were available on Monday.

Meeting next week Thursday and Friday in Pittsburg, starting at 8 am on Thursday with a hard stop at 3 pm on Friday. Strawpolls will be held at the end of the meeting on Friday afternoon.

Presentations/Discussion:

Presentation: TX-PSD for PAM-M for Multi-Gig Automotive PHY and TX-PSD MASK, Peter Wu, Marvell

The presenter reviewed analysis of PHY transmit voltage limits for different PAM levels based on coupling attenuation mask and allowed TX PSD to ensure RE limits are not exceeded.
Recommends using a 2V p-p signal for 2.5GBASE-T1 and higher speeds.

Presentation: Bandwidth, Modulation and SNR Comparison for Multi-Gigabit Automotive PHY, Tom Souvignier, Broadcom

The presenter reviewed analysis of PHY coding and preferred options for 10GBASE-T1 based on cable capabilities and noise margin. The best options use 2 or 2.5 bits/symbol.
Analysis uses CAT7a and CAT8 PS-ANEXT and PS-AFEXT specification numbers. The CAT7a specification is worse than real cables are. CAT7a cables generally meet CAT8 limits and these should probably be considered for NGAUTO. CAT7a limits were defined to try to allow for the potential of unshielded cables.

Presentation: 2.5G and 10G PHYs Modulation Scheme Proposal, Sujan Pandey, NXP

The presenter reviewed important factors to consider when optimizing a PHY: Optimum bandwidth, Noise tolerance and Relative power.
10GBASE-T1: Propose PAM4 or PAM5 (2 to 2.5 bits/symbol)

2.5GBASE-T1: Propose PAM3

Required cable bandwidth is <3GHz for all speeds.

Presentation: Power/Area Tradeoffs in Multi-Gig BASE-T1 PHYs, Ramin Farjadrad, Aquantia

The presenter reviewed analysis of PHY modulation techniques with sufficient SNR margin and then narrowed down based on PHY power / PHY Si Area Tradeoff.
10GBASE-T1: Propose PAM4

Presentation: STP cable Measurement result of TCL, ELTCL and coupling attenuation, Taketo Kumada, Yazaki

The presentation was shown in the WebEx. The presenter was not able to connect to the phone so George shared the presentation and Taketo could answer questions through the chat window.
The plot on page 4 with the proposed limit line from wienckowski_3ch_01a_0118 was showing a RL limit line compared to reflected mode conversion. We currently don't have a mode conversion limit line. We need to determine if this is needed or not.

General Discussion

Should 2.5 and 5 be scaled from 10? Some thought 2.5 should be optimized and should not just be a scaled version of 10G, others thought it would be better to scale 10G to 2.5G.

Closing Business

The next meeting will be in Pittsburg. Future AdHoc schedule will be determined there.

Meeting closed – 9:03 PDT

Attendees (from Webex + emails)

PLEASE CHECK YOUR AFFILIATION. IF YOU ARE HIGHLIGHTED IN YELLOW, WE NEED YOUR INFORMATION

First	Last	Affiliation
Dale	Amason	NXP
Amir	Bar-Niv	Aquantia
Jim	Bauer	Marvell
Mark	Bohm	Microchip
David	Brandt	Rockwell
Stefan	Buntz	Daimler
Steven	Carlson	High Speed Design/Robert Bosch, Marvell, NXP
Clark	Carty	Cisco
Gerrit	den Besten	NXP
Eric	DiBiaso	TE
Michael	Doerndl	Md-Elektronik
Marc	Dupuis	Webindustries

Ramin	Farjad	Aquantia
German	Feyh	Broadcom
Matthias	Fritsche	HARTING
Mike	Gardner	Molex
Claude	Gauthier	NXP
Dalibor	Ignjatovic	Acome
Venkat	Iyer	Microchip
Tomohiro	Kikuta	Adamant
Taiji	Kondo	Megachips
Taketo	Kumada	Yazaki
Juergen	Mandel	Aptiv
Larry	Matola	Aptiv
Brett	McClellan	Marvell
Mike	Miller	
Wes	Mir	Aptiv
Sarah	Montgomery	GM
Philipp	Numberger	Md-Elektronik
Douglas	Oliver	Ford
Sujan	Pandey	NXP
Harsh	Patel	Molex
Phong	Pham	Usconec
Vimalli	Raman	Yazaki-europe
Thomas	Reinders	Aptiv
Tom	Souvignier	Broadcom
Yves	Stricot	Aptiv
Natalie	Wienckowski	GM
peter	wu	Marvell
Kent	Younglove	Yazaki
John	Yurtin	Aptiv
Fred	Zimm	
George	Zimmerman	CME Consulting/Aquantia & Commscope
david		
Mayke		Cisco
Sarah		
TOTAL	47	Attendees