Minutes IEEE P802.3ch Multigig Automotive Ethernet PHY TF AdHoc meeting April 3, 2019

Prepared by George Zimmerman

Proposed Agenda:

1. Agenda/Admin: George Zimmerman, agenda_3chah_01_040319.pdf
2. TF Chair's comments: no presentation
3. Presentations:

Title	Presenters(s)	Affiliation(s)
Agenda	George Zimmerman	CME Consulting/ADI, APL Group, Aquantia, BMW, Cisco, CommScope
TF Chair's Comments / Chief Editor's comments	Steve Carlson/ Natalie Wienckowski	High Speed Design and Robert Bosch GmbH General Motors, NA
Delay Constraints	William Lo	Axonne
Clarification on Partial Frames and LPI	William Lo	Axonne
EEE Improvements for Highly Sparse Traffic (rev b)	Saeid Benyamin Ramin FarjadRad George Zimmerman	Aquantia Aquantia CME Consulting/Aquantia
Proposed Changes to State Diagrams	Mike Tu, Steven Chen, Tom Souvignier	Broadcom
On Transmit Power Levels	Mike Tu, Kambiz Vakilian, Tom Souvignier	Broadcom
Deterministic Jitter Concern (rev b)	Ramin FarjadRad	Aquantia
Review of the to-do-list	Natalie Wienckowski	General Motors, NA

4.   Discussion & Next steps – All

Agenda/Admin George Zimmerman as ad hoc chair:

Meeting began at 7:01 am PT.

Introductions & Affiliations.

Presented file: agenda_3chah_01_022719.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 7:08am 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.

Task Force Chair and Chief Editor's Comments –Steve Carlson & Natalie Wienckowski

The Task Force Chair, Steve Carlson, reminded the group that we were working towards a technically complete draft by the May meeting, and should focus on filling in TBDs and any missing specifications rather than fine refinements for the existing specifications. (those could be resolved with future comments).

Presentations/Discussion:

Presentation: Delay Constraints, William Lo, Axonne

The presenter discussed budgeting the delay based on the RS frame time. The proposed allocation was based on buffering at both the transmitter and receiver of interleaved RS frames, plus a margin for other signal processing (2x RS frame time). Participants were encouraged to consider the numbers and any modifications desirable to reach consensus.

Presentation: Clarification on Partial Frames and LPI, William Lo, Axonne

The presenter reviewed a number of comments to the text of the draft including definitions of training frames, RS frames, partial frames, and other parameters for LPI. Discussion suggested that it was desirable to avoid conflicts between a table of parameters and textual definition of those same values, either by a precedence statement or removing the textual definitions in preference for requiring the table values. The presenter also asked commenters to consider the wording for describing partial frame counts, and one participant suggested they might consider a state diagram (which could wait for working group ballot).

Presentation: EEE Improvements for Highly Sparse Traffic, Saeid Benyamin, Aquantia

The presenter proposed some minor modifications to EEE to improve power efficiency when the traffic load was asymmetric. These included replacing the alert signal with a PAM-4 sequence representing a low frequency sine wave (in discussion clarified to be a defined PAM-4 sequence which could be detected without using an equalizer, but rather by a bandpass filter technique); increasing the quiet-refresh ratio for the master receiver (which the presenter said did not require changes to the standard), and allowing a slow wake enable, which restricted when alert could be asserted, and the longer Tw_sys_tx would be communicated via the existing LLDP. There was some discussion of whether the slow wake could be negotiated as another mode, rather than through LLDP, but the existing primitives were an issue, and LLDP was the defined way for changing Tw_sys_tx in the standard. Another participant reminded the group that Tw_sys_tx is set also via different phy types in the standard. Another participant asked whether sequences other than sine wave might be used for ALERT. Discussion was encouraged to continue on the reflector prior to the meeting.

Presentation: Proposed Changes to State Diagrams, Mike Tu, Broadcom

The presenter discussed changes to the phy control and link monitor state diagrams. These added a pcs_data_mode indication, which was used to control whether the PHY goes back to link synchronization/autoneg or whether it retries PHY Control training until maxwait_timer expires. There was brisk discussion on both sides as to whether this was desirable, and analysis and discussion was encouraged on the reflector to help build consensus.

Presentation: On Transmit Power Levels, Mike Tu, Broadcom

The presenter discussed allowing the transmit power level to have an increased range, going down 1 dB lower to -2dBm to account for variable board losses. There was discussion about the tradeoff of controlling the transmit power at the MDI vs. requiring increased receiver performance due to lower receive levels in the presence of the same noise levels. A participant noted this may also affect alien crosstalk specifications for the cabling which are still an open item.

Presentation: Deterministic Jitter Concern, Ramin FarjadRad, Aquantia

The presenter discussed the need for an even/odd jitter specification in these high-rate PHYs as is used in serdes, and proposed text based on clause 94. There were no questions.

Discussion: Review of Editor's to-do list: Natalie Wienckowski

Natalie shared the 'to do list', and updates she had found during draft 1.2. Participants are invited to review the todo list (holes to fill with comments on the draft). There was discussion on getting closure on the open items, particularly the alien crosstalk levels.

The updated list was to be uploaded following the meeting.

Closing Business

Steve Carlson reminded the group that the deadline for comments was April 7, and presentation requests was Tuesday, April 9. He urged that presentations be related to comments and called out in the comments.

A participant asked about hotel arrangements for the meeting, and the response was that there was no specific meeting hotel, but a number of hotels within a 5 minute walk to the meeting.

Meeting adjourned at 9:01 AM PT.

Attendees (from Webex + emails)

First	Last	Affiliation
Koichi	Abe	Megachips
Jim	Bauer	Marvell
Saied	Benyamin	Aquantia
Rich	Boyer	Aptiv
Phillip	Brownlee	Self/TDK Semiconductor
Steven	Carlson	High Speed Design/Robert Bosch, Marvell
Gerrit	denBesten	NXP
Eric	DiBiaso	TE
Dominik	Eberl	Draexlmaier
Ramin	Farjad	Aquantia
German	Feyh	Broadcom
Oscar	Freitas	ON Semiconductor
Jim	Graba	Broadcom
Bob	Grow	RMG Consulting
Marty	Gubow	Keysight Technologies
Craig	Gunther	Craig Gunther Consulting/Bosch
William	Lo	Axonne
Brett	McClellan	Marvell
Wes	Mir	Aptiv
Thomas	Müller	Rosenberger
Jim	Nadolny	Samtec
Paul	Neveux	Superior Essex
Josef	Ohni	MD-Electronik
Douglas	Oliver	Ford
Olindo	Savi	Hubble
Hossein	Sedarat	Ethernovia
Steve	Sedio	TDK
Masood	Shariff	Commscope
Tom	Souvignier	Broadcom
Geoff	Thompson	GraCaSi/Independent
Mike	Tu	Broadcom
Kambiz	Vakilian	Broadcom
Natalie	Wienckowski	GM

Peter	Wu	Marvell
George	Zimmerman	CME Consulting/ADI, Aquantia, APL Group, BMW, Cisco, Commscope, SenTekSe
TOTAL	**35**	**Attendees**