

Minutes IEEE P802.3cy Greater than 10 Gb/s Electrical Automotive Ethernet PHY TF AdHoc meeting October 28, 2020

Prepared by Natalie Wienckowski

Proposed Agenda:

Title	Presenters(s)	Affiliation(s)
Agenda	Natalie Wienckowski (ad hoc Chair)	General Motors
TF Chair's Comments	Steve Carlson	High Speed Design, Robert Bosch GmbH, Ethernovia
Link Segment Topology Proposal for Testing	Thomas Müller	Rosenberger
Link Segment Insertion Loss Measurements Updated with 7 m	Eric DiBiaso, Bert Bergner, Emilio Cuesta	TE Connectivity
Evaluation of different Shielded Differential Pair (SDP) raw cables AWG26	Erwin Koeppendoerfer	Leoni
Asymmetry in 802.3cy	Kamal Dalmia	Independent
Evaluation of Expected Channel Performance	Ragnar Jonsson	Marvell
P802.3cy To-do list	Natalie Wienckowski	General Motors
Closing Remarks	Steve Carlson	High Speed Design, Robert Bosch GmbH, Ethernovia

[See adhoc webpage for agenda deck and presentations](#)

Agenda/Admin Natalie Wienckowski as ad hoc chair:

Meeting began at 10:03 am ET.

Introductions & Affiliations.

Presented file: [cy Task Force adhoc agenda 10 28 20a.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 10:07 am Eastern 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/cy/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: None at this time

Presentations/Discussion:

Presentation: [Link Segment Topology Proposal for Testing \(Thomas Müller, Rosenberger\)](#)

Thomas proposed cable segments that could be built to make cables from 1m to 11 m in length, in 1 m increments. This did not include segments less than 1 m.

There was a question about building cables with shorter segments. This can be done to just create a high RL cable for testing. There was also a question related to having different segments having different impedances and requesting that this be done. It may be easier to do this with simulations of cable models. Thomas will do some simulations to look at impact of max and min cable impedance as it is difficult to get worst case cables. We may need to include a cable impedance variation requirement. Propose to use 100 +/- 3 Ohm as used in ch.

Presentation: [Link Segment Insertion Loss Measurements Updated with 7 m \(Eric DiBiaso, Bert Bergner, Emilio Cuesta; TE Connectivity\)](#)

This was an update to the presentation given on September 16th adding test data for 7 m cables and test data after 1000 hours of storage at 105 C. There was a question asking if the cables are brought back to "hot" temperature and are measured there, what would be the result? It was speculated that the change would be similar to the change from room to hot before aging. There was a question about whether the "notch" can be moved to a higher frequency. Different cable constructions and materials can move the notch higher and lower.

Presentation: [Evaluation of different Shielded Differential Pair \(SDP\) raw cables AWG26 \(Erwin Koepf, Leoni\)](#)

Erwin shared data on 3 different cables designed for different frequency ranges. This shows that the "notch" frequency varies with construction. Different cables behave differently after high temperature ageing. It is possible to have cables where IL does not significantly increase after high temperature ageing. Assuming 4 dB loss of the MDI, PCB and connector, only 20 dB is available for the cable. Current cables can't meet this at 11 m.

There is a question on what the behavior of SPP cables would be as all the tested cables are STP. Erwin does not have any SPP cables to test. There was a question on what changes there are in the cables for different frequencies. They are constructed differently, but the specifics in construction can't be shared.

Testing is done at 130 °C for 240 hours instead of at 105 °C for 3000 hours to shorten the test time.

Presentation: [Asymmetry in 802.3cy](#) (Kamal Dalmia, Independent)

Introduce an alternative for asymmetry without echo cancellation. EEE works with full duplex MACs by temporarily stopping the transmission from the MAC with CARRIER_ON/OFF. This can be done by using the CARRIER_ON/OFF signal to operate in asymmetrical mode by ensuring there is communication in only one direction at a time.

It isn't clear if the cable requirements are impacted echo cancellation is done.

There will be additional presentations in the future exploring if a single pair can be used for asymmetrical 25 Gb/s to allow longer cables (11m which seems difficult based on current cable data) and 2 pair for symmetrical 25Gb/s with unidirectional traffic on each pair.

Presentation: [Evaluation of Expected Channel Performance](#) (Ragnar Jonsson, Marvell)

Ragnar shared a presentation explaining a spreadsheet he has shared that can be used to analyze PHY behavior based on different assumptions for different cable data. This can be used to do trade-off analysis of PHY parameters and how they perform with different cables using presented cable data. The values in the spreadsheet as provided are based on the 802.3ch standard.

Please send questions regarding the spreadsheet to the reflector.

Is AFE-noise all noise sources combined – yes.

It would be helpful if cable IL could be provided in a table so they don't have to be read off the plot. This would make those more accurate. They could also provide the coefficients for the cables they test.

Could this be used to provide a target for the cable to meet? Yes, it can be. Ragnar will try to provide directions on how to do this through the reflector.

Presentation: [P802.3cy To-do list usage](#) (Natalie Wienckowski, General Motors)

The To-Do list was not reviewed or updated. Participants are urged to review the list for topics they can support and for missing topics. Please send a message to the reflector with requested changes to the list.

The current list can be found on this page: [To Do spreadsheets](#)

Closing Discussion

The virtual plenary for 802.3 is November 9th to 19th.

P802.3cy will meet November 16th & 18th. These will be Interim meetings with attendance taken by IMAT.

Ad-hocs will be moved to Tuesday going forward as there are other meetings at the same time on Wednesday and there aren't any on Tuesday. These meetings will be scheduled every week and will be cancelled if there are no topics.

Thanks to everyone for staying on schedule.

Please send requests for presentations on November 16/18 by November 4th. If you don't send your request by this deadline it may have to wait for a future ad hoc.




































Meeting adjourned at 12:02 PM ET.

Attendees (snapshot of participants in meeting, email)

First	Last	Affiliation
Benny	Prujan	Huawei
Bert	Bergner	TE
Bob	Grow	RMG Consulting
Brett	McClellan	Marvell
Christian	Neulinger	MD Elektronik
Clark	Carty	Cisco
Cliff	Fung	Marvell
Dance	Wu	Marvell
Daniel	Hopf	Continental
Dennis	Kountz	Chemours
Eric	DiBiaso	TE Connectivity
Erwin	Koependoerfer	Leoni Kabel GmbH
Fred	Dawson	Chemours
George	Zimmerman	CME Consulting / ADI, Cisco, CommScope, Marvell, SenTekSe
German	Feyh	Broadcom
Harsh	Patel	Molex
Haysam	Kadry	Ford
Hideki	Goto	Toyota
Hossein	Sedarat	Ethernovia
J.	Nachtrab	Leoni
Jan	De Geest	Amphenol
Jonathan	Silvano de Sousa	GG - Austria
Kamal	Dalmia	Independent
Kambiz	Vakilian	Broadcom
Kazuya	Takayama	Nitto Denko Corp.
Liang	Zhu	Marvell
Luisma	Torres	KDPOF
Makoto	Nariya	Sony
Manabu	Kagami	NITech (Nagoya Institute of Technology)
Masato	Shiino	Furukawa
Massad	Eyal	Valens
Michael	Reinhard	SEI ANTech
Michikazu	Aono	Yazaki
Mike	Tu	Broadcom
Natalie	Wienckowski	General Motors
Nobuyasu	Araki	Yazaki
Partha	Raju	Tektronix
Peter	Wu	Marvell
Ragnar	Jonsson	Marvell
Ramana	Murty	Broadcom
Rich	Boyer	Aptiv
Roland	Preis	MD Elektronik
Ryan	Petrarca	TDK
Sanaz	Mortazavi	VW
Sandeep	Sankararaman	Rosenberger

Stefan	Gianordoli	GG Group
Stephan	Hartmann	Siliconally GmbH
Steve	Carlson	HSD, Bosch, Ethernovia
Sujan	Pandey	Huawei
Taiji	Kondo	MegaChips
Takashi	Fukuoka	Sumitomo Electric
Terry	Little	Foxconn Interconnect Technology
Thomas	Mueller	Rosenberger
Tom	Souvignier	Broadcom
Toshihiro	Ichimaru	Sumitomo
Trent	Hayes	CommScope
Tzahi	Madgar	Valens
Wayne	Hopkinson	CommScope
Yoshihiro	Niihara	Fujikura Ltd.
TOTAL	63	Attendees

Presenters (59)

-  Benny Prujan / Huawei Guest
-  Bert Bergner (TE) Guest
-  Bob Grow, RMG Consulting Guest
-  ● Boyer, Rich - Signal and Power Solutions
-  Brett McClellan (Marvell) Guest
-  Christian Neulinger - MD Elektronik Guest
-  Clark Carty (Cisco) Guest
-  Cliff Fung (Marvell) Guest
-  Dance Wu (Marvell) Guest
-  Daniel Hopf (Continental) Guest
-  Dennis Kountz - Chemours Guest
-  Eric DiBiaso - TE Guest
-  Erwin Koeppendoerfer; Leoni Kabel GmbH Guest
-  Fred Dawson -Chemours Guest
-  George Zimmerman (CME Consulting/ADI, Cisco Com... Guest
-  German Feyh (Broadcom) Guest
-  Haysam M. Kadry (Ford) Guest
-  Hideki Goto (Toyota) Guest
-  Hossein Sedarat (Ethernovia) Guest
-  J. Nachtrab LEONI Guest
-  Jan De Geest (Amphenol) Guest
-  Jonathan Silvano de Sousa (GG - AUSTRIA) Guest
-  Kamal Dalmia (independent) Guest
-  Kambiz Vakilian -Broadcom Guest
-  Liang Zhu (Marvell) Guest
-  Luisa Torres (KDPOF) Guest
-  Manabu Kagami - NITech Guest
-  Masato Shiino (FURUKAWA) Guest
-  Massad Eyal - Valens Guest
-  Michael Reinhard - SEI ANTech Guest
-  Michikazu Aono - (Yazaki) Guest
-  Mike Tu (Broadcom) Guest
-  Molex, Harsh Patel Guest
-  Nariya, Makoto (SSS) Guest
-  ● Natalie A. Wienckowski

- 👤 Nobuyasu Araki, Yazaki Guest
- 👤 Partha(Tektronix) Guest
- 👤 Peter Wu, Marvell Guest
- 👤 Ragnar Jonsson (Marvell) Guest
- 👤 Ramana Murty [Broadcom] Guest
- 👤 Roland Preis - MD-Elektronik GmbH Guest
- 👤 Ryan Petrarca (TDK) Guest
- 👤 Sanaz Mortazavi (VW) Guest
- 👤 Sandeep Sankararaman [Rosenberger] Guest
- 👤 Stefan Gianordoli, GG Group Guest
- 👤 Stephan Hartmann - Siliconally GmbH Guest
- 👤 Steve Carlson (HSD, Bosch, Ethernovia) Guest
- 👤 Sujan Pandey (Huawei) Guest
- 👤 Taiji Kondo, MegaChips Guest
- 👤 Takashi Fukuoka - Sumitomo Electric Guest
- 👤 Takayama, Kazuya (Nitto Denko Corp.) Guest
- 👤 Terry Little (FIT) Guest
- 👤 Thomas Müller [Rosenberger, Rosenberger] Guest
- 👤 Tom Souvignier (Broadcom) Guest
- 👤 Toshihiro Ichimaru(Sumitomo) Guest
- 👤 Trent Hayes Guest
- 👤 Tzahi Madgar Guest
- 👤 Wayne Hopkinson Guest

👤 Ryan Petrarca (TDK) Guest

👤 Sanaz Mortazavi (VW) Guest

👤 Sandeep Sankararaman [Rosenberger]

👤 Yoshihiro Niihara - Fujikura Ltd.