Unconfirmed Meeting Minutes: Meeting of the IEEE P802.3dg 100 Mb/s Long-Reach Single Pair Ethernet Task Force

Tuesday, July 11, 2023
Hybrid Plenary Meeting

Prepared by Bob Voss

IEEE 802.3dg 100 Mb/s Long-Reach Single Pair Ethernet Task Force meeting was called to order at **8:06 AM CEST**, Tuesday, July 11, 2023, by George Zimmerman, Chair of the IEEE 802.3dg Task Force. Bob Voss served as recording secretary for the meeting.

The meeting was held in hybrid format, electronically via WebEx, and in-person at Hotel Estrel – Berlin, DE. At the chair's request, in-person attendees introduced themselves and stated their affiliations. This meeting includes teleconference participants. The chair asked that teleconference participants whose affiliation is not shown in their Webex identity please post their affiliation in the chat window.

Attendance is listed in Appendix A. Attendance will be taken via WebEx, IMAT, and a circulated written list for local attendees.

Mr. Zimmerman displayed and proceeded to review the agenda at https://www.ieee802.org/3/dg/public/May_2022/agenda_3dg_01_230711.pdf. Mr. Zimmerman asked if there was any objection to approving the agenda. No objections were heard.

Mr. Zimmerman asked if anyone needed additional time to review the posted minutes. None heard. The chair asked for a motion to approve the posted minutes.

M = J. Withey
S = P. Jones

The Motion passed without objection.

Mr. Zimmerman reviewed the general decorum slide.

Members of the Press, At **8:14 AM CEST** the chair asked for any members of the press to identify themselves. None were heard.

Mr. Zimmerman reviewed the Task Force Decorum slide.

The chair reviewed the Goals for This Meeting.

Hear technical presentations
Resolve issues with link segment

At **8:16AM CEST**, Mr. Zimmerman reviewed the Plenary Meeting – Fees slide and encouraged any meeting attendees who have not paid the meeting fees to do so.

Any presentations referenced in these minutes are located on the Task Force Meeting Materials site.

At **8:17 AM CEST**, Mr. Zimmerman resumed review of the agenda deck, including the following items – goals for the meeting, use of reflector and web to build consensus, ground rules, a review of the participation policy, a review of the IEEE copyright policy, a review of the IEEE policy on dominance, and a review of the IEEE Standards process. There were no questions.

At 8:24 AM CEST, Attendance, Mr. Zimmerman advised the group that the attendance would be taken from Webex, IMAT, and the in-room sign-in sheet.

IEEE Patent Policy, Mr. Zimmerman showed the patent slides, 1 through 4, at **8:25 AM CEST**.

The call for patents was made at **8:28 AM CEST**. None responded.

At 8:36 AM CEST, the chair showed the slides on SA Copyright Policy.

At **8:37 AM CEST**, the chair reminded participants that they agree to comply with IEEE Code of Ethics, all applicable laws and with all IEEE policies. Individual process, fair & equitable consideration, slides shown. Individuals not agreeing to comply were asked to leave the meeting. No meeting participants left. The chair reviewed the slide regarding the fair and equitable consideration of all viewpoints.

At **8:41 AM CEST**, Mr. Zimmerman reported that no liaisons or communications have been received for consideration by the task force at this meeting.

Timeline Alert – as announced in the Opening Plenary meeting by Mr. Zimmerman, our published timeline has slipped and cannot be achieved.

Presentations and Discussion:

At **8:46 AM CEST,** the Chair moved on to Presentations.

At **8:50 AM CEST, 100BASE-T1L Coupling Attenuation –** *Steffen Graber, Pepperl+Fuchs*

https://www.ieee802.org/3/dg/public/May_2022/graber_3dg_01_07112023.pdf

- Presentation made by Mr. Graber
- Questions asked and answered.

At **9:21 AM CEST, Mitigation of Alien Crosstalk –** *Ron Tellas, Belden*

https://www.ieee802.org/3/dg/public/May_2022/tellas_3dg_01_07_11_2023.pdf

- Presentation made by Mr. Tellas
- Questions asked and answered.

Morning Break, Resume meeting at 20 minutes after the hour

Meeting resumed at 10:25 AM CEST

Mr. Zimmerman asked if either Mr. Tellas or Mr. Graber wished to make a proposal for adoption as a result of their presentations. Mr. Tellas said he was not ready to do so. Mr. Graber wishes to offer a straw poll.

Straw Poll – *offered by Mr. Graber*

I support adding the following TCL limit for a link segment using shielded cabling to the specification. (note – this does not apply to link segments using shielded cabling).

> **TCL = 30 dB for 0.1 MHz <= f <= 5 MHz**
> **TCL = 30 – 10* log10(f/5) for 5MHz <= f <= 60 MHz**
> **(f is in MHz)**
>
> **Y: 30**
> **N: 0**
> **Need more information: 11**
> **Needing more information and would oppose a motion: 1**

Straw Poll – *offered by Mr. Graber*

I support adding the following Coupling Attenuation limit to the specification for link segments using shielded cabling MICE E3 (and 10dB less for MICE E1/E2) environments:

> **CA = 60 dB for 0.1 MHz <= f <= 20 MHz**
> **CA = 60 – 20 * log10 (f /20) for 20 MHz <= f <= 60 MHz**
> **(f in MHz)**
>
> **Y: 16**
> **N: 1**
> **Need more information: 17**

Straw Poll – *offered by Mr. Withey*

I would support a limit of (PSANEXT / PSAACR-F) of:

PSANEXT = 50 + 5 x N 0.1 < f < 10 MHz
50 + 5 x N – 15 x log10 (f /10) 10 < f < 60MHz
PSAACR - F = 50 + 5 x N 0.1 < f < 10 MHz
36 + 5 x N – 20 x log10 (f /10) 2 < f < 60 MHz

With N = 0 for IL_20 < 16 dB, N = 0.5 x (IL_20 – 16) for 16 <= IL_20 <= 18dB
N = 1 for 18 <= IL_20 <= 21 dB, N = 1 + 0.5 x (IL_20 – 21) for 21 <= IL_20 <= 23dB
N = 2 for 23 <= IL_20 dB

Y (ready today): 23
Need more information: 12
N (not supporting the revised equation, including those who would oppose because they need more information): 1

Following further discussion, the individual who felt he would oppose this straw poll, agreed to withdraw his objection, pending the development of more information**.**

Action Items to Proceed on Link Segment Specification

"Need more information" category:

- Mr. Murray wants to see how the Withey straw poll parameters impact the next level PHY analysis presented today in https://www.ieee802.org/3/dg/public/May_2022/Murray_3dg_01a_07102023.pdf before reaching a decision.

Summarize thoughts on requirements for solid base line PHY discussion.

- Mr. Murray suggests three things to pursue.
  - Relate PAM3/PAM4/PAM 5 and proper coding method and make selection of what combination works best.
  - Bit Error Rate versus Reach
  - TDR simulation

At **11:20 AM CEST, (Next Level) PHY Considerations for 100BASE-T1L –** *Brian Murray, Michal Brychta, Philip Curran, Analog Devices*

https://www.ieee802.org/3/dg/public/May_2022/Murray_3dg_01a_07102023.pdf

- Presentation made by Mr. Murray
- Questions asked and answered.

Lunch Break, 1200 – 1330 CEST

At **1:20 PM CEST, Thoughts on the new MII –** *Dongchen Pan, Tingting Zhang, Yan Zhuang, Huawei*

https://www.ieee802.org/3/dg/public/May_2022/Tingting_3dg_11_07_2023.pdf

- Presentation made by Tingting.
- Questions asked and answered.

Straw Poll – *offered by Mr. Zimmerman*

> **I support adding an objective to define one or more new MII interfaces (detailed wording is TBD).**
>
> **Variants (with minimum pin count, logical MII, etc.)**
>
> **Y: 25**
> **N: 1**
> **A: 14**

Presentations concluded at 2:06 PM CEST.

At 2:07PM, the chair moved on to Motions.

Motion #3 (motion #1 in DVL)

Move to adopt the following TCL limit for link segments using shielded cabling (note – this does not apply to link segments using unshielded cabling):

> **TCL = 30 dB for 0.1 MHz <= f < 5 MHz**
> **TCL = 30 – 10 * log10(f / 5) for 5 MHz <= f <= 60 MHz**
> **(f is in MHz)**

Moved: S. Graber 2nd: C. DiMinico (Technical >= 75%)

Y: 22 N: 1 A: 9

Motion Passes

Motion #4 (motion #2 in DVL)

Move to change the PSANEXT and PSAACR-F specification to:

PSANEXT:	**50 + 5 x N**	**0.1 ≤ f < 10 MHz**
	50 + 5 x N - 15 x log10 (f/10)	**10 ≤ f ≤ 60 MHz**
PSAACRF:	**50 + 5 x N**	**0.1 ≤ f < 2 MHz**
	36 + 5 x N - 20 x log10 (f/10)	**2 ≤ f ≤ 60 MHz**
With N =	**0**	**for IL_20 < 16 dB**
	0.5 x (IL_20 – 16)	**for 16 <= IL_20 < 18 dB**
	1	**for 18 <= IL_20 < 21 dB**
	1 + 0.5 x (IL_20 – 21)	**for 21 <= IL_20 < 23 dB**
	2	**for 23 <= IL_20 (dB)**

(f is in MHz)

Moved: J. Withey 2nd: S. Graber (Technical >= 75%)

Y: 22 N: 1 A: 12

Motion Passes

Discussion of Timeline and Next Steps – led by chair

Slide; “Timeline Discussion – Need to Revise”

- Draft 1.0 (baseline selected) – no earlier than Sept 2023
- TF Review – No earlier than Sept 2023
- Draft 2.0 target, initial WG ballot, MAY 2024
- Draft 3.0, initiate SA ballot – November 2024
- Conditional approval for Revcom – Mar 2025
- SASB, standard complete – June 2025

The a proposed timeline was then revised as shown at slide 36 of agenda_3dg_01a_07112023.pdf, and the following motion was made:

Motion #5 (motion #3 in DVL)

Move to adopt the revised timeline in Slide 36 of agenda_3dg_01a_07112023.pdf

Moved: B. Voss Second: C. Jones (Technical >= 75%)

Y: 27 N: 0 A: 3

Motion passes.

Next Meeting

- The next task force ad hoc meeting slot available is 02Aug2023, 7am – 9am PDT
- September 2023 802.3 Interim, Campinas
    - Interim with remote access, https://ieee802.org/3/interims/index.html for details.
- Follow on topics: Progress on PHY proposals (PCS, PMA, FEC, or other noise strategy, etc.) Progress MII discussion, Build consensus to baselines

At 3:01 PM CEST, Motion #6 – Motion to adjourn the meeting.

Moved: G. Huszak
Second: G. Thompson

Motion passes by unanimous consent.

Appendix A: Attendees at IEEE P802.3dg 100 Mb/s Long Reach Single-Pair Ethernet Task Force July 31, 2023

Last Name	First Name	Affiliation	IMAT	Webex
Akin	Sami	Volkswagen Ag	X	X
Baggett	Tim	Microchip Technology, Inc.	X	
Beauregard	Francois	Belden	X	X
Beruto	Piergiorgio	onsemi	X	
Borda	jamila josip	BMW Group	X	X
Brandt	David	Rockwell Automation	X	
Brychta	Michal	Analog Devices Inc.	X	
Carty	Clark	Cisco Systems, Inc.	X	
Chang	Jae-yong	Keysight Technologies Inc	X	X
Dalmia	Kamal	AVIVA Links	X	
Diminico	Christopher	Panduit Corp.	X	X
Fellhauer	Felix	Robert Bosch GmbH	X	
Fritsche	Matthias	HARTING Electronics GmbH	X	
Graber	Steffen	Pepperl+Fuchs SE	X	X
Gubow	Martin	Keysight Technologies	X	X
Haydt	Mary Sue	Microchip Technology, Inc.	X	
HIRASE	HIDENARI	AGC.Inc	X	
Horrmeyer	Bernd	Phoenix Contact	X	X
Huszak	Gergely	KONE	X	

Ivanov	Galin	Microchip Technology, Inc.	X	
Jones	Chad	Cisco Systems, Inc.	X	
Jones	Peter	Cisco Systems, Inc.	X	X
Kabra	Lokesh	Synopsys		X
Kadry	Haysam	Molex Incorporated	X	X
Lackner	Hans	QoSCom GmbH	X	
Larsen	Wayne	CommScope	X	X
Lennartsson	Kent	Kvaser AB	X	X
Lewis	Jon	Dell Technologies	X	
Lou	David	Huawei		X
Mark	Simon	Wurth Electronik Group	X	
Mueller	Harald	Endress + Hauser	X	X
Murray	Brian	Analog Devices	X	X
NIIHARA	YOSHIHIRO	Fujikura Ltd.	X	X
Pardo	Carlos	KDPOF	X	X
Patra	lenin	Marvell Semiconductor, Inc.	X	
Paul	Michael	Analog Devices	X	X
Potterf	Jason	Cisco Systems, Inc.	X	X
Razavi	Alireza	Marvell	X	X
Ringel	Haim	General Motors Company	X	
Schreiner	Stephan	Rosenberger	X	X
Shukla	Priyank	Synopsys, Inc.	X	
sisk	jason	University of New Hampshire InterOperability Laboratory (UNH-IOL)	X	X
Stewart	Heath	Analog Devices Inc.	X	
Steyer-Ege	Janik	Robert Bosch GmbH	X	
Strohmeier	Heiko	Robert Bosch GmbH	X	
TAZEBAY	MEHMET	Broadcom Corporation	X	
Tellas	Ronald	Belden	X	X
Thompson	Geoffrey	INDEPENDENT	X	
Torres	Luis	Knowledge Development for Plastic Optical Fiber	X	
Vanderlaan	Paul	UL Solutions	X	X
Voss	Robert	Panduit Corp.	X	
Withey	James	Fluke Corporation	X	X
Wu	Peter	Marvell Semiconductor, Inc.	X	
Xu	Dayin	Rockwell Automation	X	X
Zhang	Sen	Huawei Technologies Co., Ltd	X	X
Zhang	Tingting	Huawei Technologies Co., Ltd	X	X
Zhong	Qiwen	Huawei		X
Zhuang	Yan	Huawei Technologies Co., Ltd	X	X
Zimmerman	George	CME Consulting/APL Group, Cisco, Marvell, OnSemi, SenTekSe LLC	X	X