

Unconfirmed Meeting Minutes: IEEE P802.3dm Asymmetrical Electrical Automotive Ethernet Task Force

July 17-18, 2024
Plenary Meeting
(revised attendance 8/19/2024)

Prepared by George Zimmerman

IEEE P802.3 Task Force meeting convened at 1:15 PM EDT, Wednesday, July 17, 2024, by Jon Lewis, IEEE P802.3dm Task Force Chair.

Attendance is listed in Appendix A

Presentation:

https://www.ieee802.org/3/dm/public/0724/agenda_3dm_01c_20240717.pdf

Presenter: Jon Lewis, Chair.

Mr. Lewis turned to presentation [agenda_3dm_01c_20240717.pdf](https://www.ieee802.org/3/dm/public/0724/agenda_3dm_01c_20240717.pdf) and reviewed the agenda for the meeting.

The chair reminded the group that attendance credit would be taken from IMAT, and that as announced by the 802.3 Working Group Chair, IMAT registration would be for individual slots (AM1, AM2, PM1, and PM2) through the day's meeting.

Approval of Agenda: The chair asked whether there were additions or corrections to the agenda, and there were none. He announced that the agenda was approved.

Approval of Previous Meeting Minutes: The chair announced that the minutes from the final Task Force meeting on May 16 at the 802.3 interim had been posted, (https://www.ieee802.org/3/dm/public/0524/Unconfirmed_minutes_3dm_051624.pdf) and asked whether there were any additions or corrections to them. There were none. He announced that the minutes were approved.

Consent to hear late presentations: The chair announced there were two presentations received after the deadline, and under the announced procedures they may be heard after other presentations and after the motions and straw polls. He asked if there was any objection to hearing those presentations after the motions and straw polls. There was no objection.

The Chair then resumed the review of presentation [agenda_3dm_01c_20240717.pdf](https://www.ieee802.org/3/dm/public/0724/agenda_3dm_01c_20240717.pdf):

- Mr. Lewis noted that there should be no recording or photography without permission.
- Mr. Lewis asked if anyone was attending from the press including those who would run a public blog on this meeting – there were no indications from the group,

Mr. Lewis then continued review of the presentation, reviewing decorum, information for the reflector, private area, and ground rules.

The Chair announced that as this meeting was an electronic Task Force meeting, under 802.3 rules, only working group voters may vote.

Mr. Lewis continued review of the IEEE SA structure, where to find the rules, and asked whether anyone in the room or online had not seen the various policy slides this week. There were no responses. He therefore announced that he would show the slides and summarize.

Attendance, the Chair advised the group that attendance would be taken from IMAT, and that zoom attendance would be used to reconcile the attendance, but IMAT was the official record. He then reminded attendees that they should show their employer & affiliation, and how to set these to make them correct.

IEEE SA Patent Policy, Mr. Lewis reviewed slides 0 through 4 of the IEEE SA Patent Policy (slides 13-17 of the agenda deck) and read aloud slides 1 through 4 of patent policy for Task Forces from [agenda_3dm_01c_20240717.pdf](#) and made the call for patents on the slide labeled “Ways to Inform IEEE” (1:29 pm).

There was no response to the call for patents at 1:30pm.

Other IEEE Policies

Mr. Lewis read aloud the slides on the IEEE SA copyright, Participant behavior (ethics), IEEE individual participation, and fair and equitable consideration policies as shown in the agenda deck. (1:30PM). There were no questions.

Mr. Lewis reviewed the standards development process for IEEE and where this Task Force is in the process.

LIAISONS

The Chair moved to liaisons and noted that IEEE 802.3 had received a liaison document from the Automotive SERDES Alliance (ASA). Posted at https://ieee802.org/3/minutes/jul24/incoming/2024-06-10_ASA_to_IEEE_Redacted.pdf. The liaison communicated that ASA had liaised their ASA Motion Link v2.0 specification, which was in the 802.3 working group private area.

The Chair then displayed a draft response for consideration by the Task Force to forward to the working group. ([0724_802d3_to_ASA_draft_Redacted.pdf](#)) Questions were asked regarding use of the liaised draft in presentations or the standard. The Chair clarified that the IEEE SA copyright policy required a release for copying portions of the draft.

Other Procedures

The chair announced that the group would consider a timeline during closing business discussions.

The chair then also announced guidelines for the meeting and use of meeting times, setting a time limit of 25 minutes for presentation and Q&A. He added that a presenter with more than one presentation could request dividing the time unequally between multiple presentations as long as the total time fit within 25 minutes per presentation.

The Chair completed a review of the presentation, showing the order of presentations.

PRESENTATIONS

The Chair then moved to the presentations for the meeting.

(1:47PM)

Title: Automotive cameras and size

URL: https://www.ieee802.org/3/dm/public/0724/broedel_matheus_dm_01_size_07152024.pdf

Presenter: Kirsten Matheus (BMW), co-author: Dominik Brödel (Robert Bosch GmbH),

Discussion: The presenter presented material discussing the size and pcb constraints of automotive camera modules, and the impact of reducing the size of the serializer and integrating the serializer with the imager.

Questions were asked and answered.

(2:02PM)

Title: Latency considerations from an automotive camera system perspective (02a)

URL: https://www.ieee802.org/3/dm/public/0724/matheus_dm_02a_latency_07152024.pdf

Presenter: Kirsten Matheus (BMW)

Discussion: The presenter presented an analysis of various potential automotive Ethernet systems, including TDD and FDD asymmetric data rate transmission and Full-duplex symmetric data rate transmission with EEE.

Questions were asked and answered.

Following the discussion the presentation was updated as:

https://www.ieee802.org/3/dm/public/0724/matheus_dm_02b_latency_07152024.pdf

(2:39PM)

(2:40PM)

Title: Buffering in an automotive camera communication system

URL: https://www.ieee802.org/3/dm/public/0724/matheus_dalmia_dm_03_buffering_07152024.pdf

Presenter: Kirsten Matheus (BMW), co-author: Kamal Dalmia (Aviva Links) ,

Discussion: The presenter presented an overview on buffers used for data in a camera system using multiple phy types.

Questions were asked and answered.

Following the discussion, the presentation was updated as:

https://www.ieee802.org/3/dm/public/0724/matheus_dalmia_dm_03b_buffering_07152024.pdf

At 3:01PM the chair announced a 15 minute break

The meeting reconvened at 3:16PM.

Title: Requirements on 802.3dm for automotive cameras

URL: https://www.ieee802.org/3/dm/public/0724/veloso_dm_01_07152024_v2.pdf

Presenter: Gumersindo Veloso Cauce (BMW)

Discussion: The presenter discussed a number of considerations that he believed an automotive OEM would apply and consider in adopting an 802.3dm solution. Questions were asked and answered.

(3:44PM)

Title: IL & RL limits for STP and Coax cable harnesses

URL: https://www.ieee802.org/3/dm/public/0724/Zerna_802.3dm_01_240717_IL_RL_Limits.pdf

Presenter: Conrad Zerna (Aviva Links), co-authors: Bert Bergner (TE), David Cliber (TE), Jonathan Silvano de Sousa (G&G)

Discussion: The presenter discussed insertion loss and return loss limits on STP and coax cable harnesses, including other electrical parameters. Questions were asked and answered.

Following the presentation, the presentation was updated as:

https://www.ieee802.org/3/dm/public/0724/Zerna_802.3dm_01b_240717_IL_RL_Limits.pdf

(4:13 PM)

Title: PHY buffer and control in time-domain half-duplex links (v2)

URL: https://www.ieee802.org/3/dm/public/0724/turner_dm_v02_TDDbuffer_2024-07-16.pdf

Presenter: Max Turner (Ethernovia)

Discussion: The presenter discussed buffering and control from the perspective of upper-layer impacts such as are viewed by 802.1 protocols. Questions were asked and answered.

(4:36 PM)

Title: Assessing Transceiver Complexity and Power for Automotive Imaging Sensors

URL: https://www.ieee802.org/3/dm/public/0724/Chini_Tazebay_3dm_01a_0724.pdf

Presenter: Ahmad Chini (Broadcom), co-author: Mehmet Tazebay (Broadcom)

Discussion: The presenter presented his views on relative complexity of various phy design approaches.. Questions were asked and answered.

(5:04 PM)

Title: On Insertion and Return Loss

URL: https://www.ieee802.org/3/dm/public/0724/jonsson_houck_3dm_01_07_15_24.pdf

Presenter: Ragnar Jonsson (Marvell), TJ Houck (Marvell)

Discussion: The presenter presented analysis and potential proposals for insertion loss and return loss limits. Questions were asked and answered.

(5:24 PM)

Title: On MDI Return Loss and Power Delivery

URL: https://www.ieee802.org/3/dm/public/0724/jonsson_houck_3dm_02_07_15_24.pdf

Presenter: Ragnar Jonsson (Marvell), TJ Houck (Marvell)

Discussion: The presenter presented.... Questions were asked and answered.

(5:40)

The chair advised that we had reached the end of the presentations for the day, and asked the group to forward any possible motions & straw polls to him in the evening. He also asked participants to consider what ad hocs might be useful in progressing the work.

The 802.3dm meeting recessed for the evening at 5:42 PM EDT 7/17/2024.

Thursday 7/18/2024 Session:

The 802.3dm meeting reconvened at 8:01am 7/18/2024

The Chair opened the meeting reminding the group of the agenda and the rules, including the upcoming meeting from [agenda 3dm 01c 20240717.pdf](#)

Review and approval of proposed outgoing liaison

The chair reviewed the proposed outgoing draft liaison to ASA, and asked whether there were any additions or corrections. There were none. The following motion was then made:

Motion #1 :

Move that the IEEE P802.3dm Task Forces approve:

[0724 802d3 to ASA draft Redacted.pdf](#) with editorial license granted to the Chair (or his appointed agent) as a liaison communication from the IEEE 802.3 Working Group to ASA.

M: Natalie Wienckowski

S : Kirsten Matheus

Approved by unanimous consent (8:07 AM)

The chair had previously announced that the presentations would begin at 8:15AM, in the meantime he reviewed the process for the day, advised attendees regarding disclosure of affiliation and signing into IMAT.

(8:15AM)

Title: Noise Environment Characteristics

URL: https://www.ieee802.org/3/dm/public/0724/jonsson_3dm_01_07_15_24.pdf

Presenter: Ragnar Jonsson (Marvell)

Discussion: The presenter discussed various sources of noise in automotive links, and potential models for them, asking for input and collaboration in forming noise models for use in the project.
Questions were asked and answered.

(8:41AM)

Title: On Latency and Linkup Time

URL: https://www.ieee802.org/3/dm/public/0724/houck_fuller_3dm_01_0724.pdf

Presenter: TJ Houck (Marvell), co-authors: Paul Fuller (Marvell), Ragnar Jonsson (Marvell),

Discussion: The presenter discussed startup time and latency concerns in automotive applications.
Questions were asked and answered.

(9:08 AM)

Title: Power Considerations (01b)

URL: https://www.ieee802.org/3/dm/public/0724/kang_3dm_01b_2407.pdf

Presenter: Steve Kang (Microchip), co-author: Steve Gorshe (Microchip)

Discussion: The presenter discussed various considerations in 802.3ch EEE and ASA ML systems at 10 Gbps.
Questions were asked and answered.

(9:32 AM)

Title: Echo in Asymmetric FDD System

URL: https://www.ieee802.org/3/dm/public/0724/sedarat_3dm_202407.pdf

Presenter: Hossein Sedarat (Ethernovia)

Discussion: The presenter gave an overview of echo canceller requirements and implementation considerations in asymmetric FDD systems. Questions were asked and answered.

(9:58AM)

This concluded the 'on-time' presentations for the meeting. As announced, late presentations would be after motions & straw polls.

The chair announced that the meeting would recess for the morning break (9:59 AM). The meeting resumed at 10:20 AM EDT.

STRAW POLLS AND MOTIONS

The chair announced that he had not received any requests for motions or straw polls. He asked the group if there were any that were offered. There were no responses.

Formation of Ad Hocs

The chair discussed that to move the project forward he had discussed the potential for ad hocs to build consensus between interim and plenary meetings. He then led a discussion asking for the group's input on subjects for ad hocs and timing. There were several proposals made and he asked the group to use the time to submit any additional thoughts during the presentation time, and that he intended to conduct straw polls before he would charter ad hocs formally.

LATE PRESENTATIONS

Presentations resumed, beginning the late presentations, at **10:45 AM**

Title: Optimization for Camera modules

URL: https://www.ieee802.org/3/dm/public/0724/houck_3dm_01_0724.pdf

Presenter: TJ Houck (Marvell), co-author Ragnar Jonsson (Marvell)

Discussion: The presenter discussed a few considerations for integration of communications into camera modules, particularly related to timing components (crystals) and power components (PoC and decoupling). Questions were asked and answered.

(11:09AM)

Title: Return loss of automotive coaxial link segments

URL: https://www.ieee802.org/3/dm/public/0724/mueller_3dm_01a_07_01_24.pdf

Presenter: Thomas Mueller (Rosenberger)

Discussion: The presenter presented measurements and simulations of automotive link segment return loss. Questions were asked and answered.

(11:33AM) Presentations concluded.

AD HOCS

The chair announced that he was chartering as follows:

- Link segment & noise models
 - George Zimmerman & Natalie Wienckowski – Co-Chairs
- Use Case Ad Hoc
 - (includes error detection and reporting, latency)
 - Max Turner - Chair
- **As Needed based on project need:**
- General Ad Hoc or off-cycle interim meeting to progress the project outside of normal interim/plenary meeting cycle.
 - Single occurrence

The chair then announced a straw poll for the preferred day of the ad hocs:

Straw Poll #1:

Which day is preferred for P802.3dm ad hocs? (Time is 07h00-09h00 Pacific US time)

- Tuesday – 26
- Wednesday -49
- Thursday – 33
- Chicago rules (pick all that apply)

TIMELINE

The chair then discussed a potential timeline, and stressed impacts on the group for progress – encouraging the group to focus on specific baseline text.

FUTURE MEETINGS

Mr. Lewis reviewed future meetings from the agenda presentation and announced the next meeting between September 16-19 at the September 2024 802.3 interim meeting session (in-person with remote access) in Hamburg, Germany. Specific days that week had not been chosen yet.

The Chair indicated that the agenda had been exhausted.

The chair

Motion to Adjourn

M: Peter Jones

S: Brett McClellan

Approved without objection

Mr. Lewis adjourned the meeting at 11:53 AM EDT.

Appendix A: Attendees at the IEEE P802.3dm Asymmetrical Electrical Automotive Ethernet Task Force Meeting, July 17-18, 2024

| Name | Affiliation | Day 1 | Day 2 |
|-----------------------|--|--------------|--------------|
| Aronson, Joseph | Texas Instruments Inc. | X | X |
| Arunarathi, Venkat | Cortina Systems | X | |
| Baggett, Tim | Microchip Technology, Inc. | X | X |
| Barbour, Ian | IEEE STAFF | X | |
| Benyamin, Saied | Ethernovia | X | X |
| Berger, Catherine | IEEE STAFF | X | |
| Borda, jamila josip | in-tech GmbH | X | X |
| Boyer, Rich | Aptiv Signal and Power Solutions | X | X |
| Brychta, Michal | Analog Devices Inc. | X | X |
| Chang, Jae-yong | Keysight Technologies Inc | X | X |
| Chini, Ahmad | Broadcom Corporation | X | X |
| Cliber, David | TE Connectivity | X | X |
| Cordaro, Jay | Analog Devices Inc. | X | X |
| Dalmia, Kamal | Aviva Links Inc | | X |
| Diminico, Christopher | Panduit Corp. | X | |
| Donahue, Curtis | Rohde & Schwarz | X | X |
| Estrakh, Daniel | Valens Semiconductor | X | X |
| Ferretti, Vincent | Corning Incorporated | X | |
| Feyh, German | Broadcom Corporation | X | X |
| Fuller, Paul | Marvell | X | X |
| Gauthier, Claude | NXP Semiconductors | | X |
| Gerl, Markus | MD Elektronik | X | X |
| Gilb, James | General Atomics Aeronautical Systems, Inc. | X | |
| Goel, Sachin | Aviva Links Inc | X | X |
| Gopal, Amrit | Ford Motor Company | X | X |
| Gorshe, Steven Scott | Microchip Technology, Inc. | X | X |
| Goto, Hideki | Toyota Motor Corporation | X | X |
| Graba, James | Broadcom Corporation | X | X |
| Graber, Steffen | Pepperl+Fuchs SE | X | X |
| Gubow, Martin | Keysight Technologies | X | X |
| Haasz, Jodi | IEEE Standards Association (IEEE-SA) | | X |
| Hajduczenia, Marek | Charter Communications | | X |
| Harshbarger, Douglas | Corning Incorporated | X | X |
| Haydt, Mary Sue | Microchip Technology, Inc. | X | X |
| Hirose, Takeshi | AGC Inc. | X | X |
| Hopf, Daniel | Continental Automotive Technologies GmbH | X | X |
| Hoshino, Masayuki | Continental Automotive | X | X |
| Houck, TJ | Marvell | X | X |

| Name | Affiliation | Day 1 | Day 2 |
|---------------------------|--|--------------|--------------|
| Hu, Mark | Aptiv | X | X |
| Huszak, Gergely | KONE | X | X |
| HYAKUTAKE, YASUHIRO | Orbray Co., Ltd. | X | X |
| Jones, Chad | Cisco Systems, Inc. | X | |
| Jones, Peter | Cisco Systems, Inc. | X | X |
| Jonsson, Ragnar | Marvell | X | X |
| Kagami, Manabu | Nagoya Institute of Technology (NITech) | X | X |
| Kapoor, Samay | Aviva Links Inc. | X | X |
| Kawatsu, Yasuaki | APRESIA Systems | X | X |
| Kikuta, Tomohiro | Orbray Co., Ltd. | X | X |
| Kleinwaechter, Mathias | in-tech GmbH | X | X |
| Lackner, Hans | QoSCom GmbH | X | |
| Lasry, Ariel | Qualcomm Technologies, Inc | X | X |
| Law, David | Hewlett Packard Enterprise | X | |
| Lennartsson, Kent | Kvaser AB | X | X |
| Lewis, Jon | Dell Technologies | X | X |
| Liu, Qingzhong | Fast Photonics | | X |
| Lo, William | Axonne Inc. | X | X |
| Lou, Wei | Broadcom Corporation | X | X |
| Maguire, Valerie | Copperopolis, affiliated with CME Consulting and Cisco | X | X |
| Mark, Simon | Würth Elektronik Group | X | X |
| Martino, Kjersti | Inneos | X | X |
| mash, chris | Ethernovia Inc | X | X |
| Matheus, Kirsten | BMW Group | X | X |
| McClellan, Brett | Marvell Semiconductor, Inc. | X | X |
| Mueller, Thomas | Rosenberger | X | X |
| Murray, Brian | Analog Devices | X | X |
| Ng, Hiok Tiaq | Aviva Links Inc. | X | X |
| NIHARA, YOSHIHIRO | Fujikura Ltd. | X | X |
| Pal, Debajyoti | ON Semiconductor | X | X |
| Paul, Michael | Analog Devices | X | |
| Peters, Kevin | Inneos | X | X |
| Pineda, Luis | LP Tech Advisors, LLC | X | X |
| Pischl, Neven | Broadcom Corporation | X | X |
| Razavi, Alireza | Marvell | X | X |
| Reinhard, Michael | SEI Automotive Europe GmbH | X | X |
| Ringel, Haim | General Motors Company | X | X |
| Sayre, Edward | North East System Associates | X | X |
| Schreiner, Stephan | Rosenberger | X | X |

| Name | Affiliation | Day 1 | Day 2 |
|--------------------------|---|-------|-------|
| Sharma, Rohit | Molex Incorporated | X | X |
| Shiino, Masato | FURUKAWA ELECTRIC | X | X |
| shirani, ramin | Ethernovia | X | X |
| sisk, jason | University of New Hampshire InterOperability Laboratory (UNH-IOL) | X | X |
| Stencel, Leonard | TDK Corporation of America | X | X |
| Stewart, Heath | Analog Devices Inc. | X | X |
| Strohmeier, Heiko | Robert Bosch GmbH | X | X |
| Sun, jingcong | Motorcomm Electronic Technology Co | X | X |
| TAN, SISI | Huawei Technologies Co., Ltd | | X |
| Tan, Yuxuan | Motorcomm | X | X |
| TAZEBAY, MEHMET | Broadcom Corporation | X | X |
| Thompson, Geoffrey | INDEPENDENT | X | X |
| Torres, Luisma | Knowledge Development for Plastic Optical Fiber | X | X |
| Tran, Ky-Anh | Aeonsemi Inc | X | X |
| Tu, Mike | Broadcom Corporation | X | X |
| Turner, Max | Ethernovia | X | X |
| Vanderlaan, Paul | UL Solutions | X | X |
| Veloso Cauce, Gumersindo | BMW AG; BMW Group | X | X |
| Voss, Robert | Panduit Corp. | X | X |
| Wang, Shun-Sheng | Realtek Semiconductor Corp. | X | X |
| Watanabe, Yuji | AGC | X | X |
| Whisnant, Michelle | UNH-IOL | X | X |
| Wienckowski, Natalie | IVN Solutions LLC; Ethernovia | X | X |
| Withey, James | Fluke Corporation | X | X |
| Wu, Peter | Marvell Semiconductor, Inc. | X | X |
| Zerna, Conrad | Aviva Links Inc | X | X |
| Zhang, Tingting | Huawei Technologies Co., Ltd | X | X |
| Zhuang, Yan | Huawei Technologies Co., Ltd | X | |
| Zimmerman, George | CME Consulting/ADI, APL Group, Cisco, Marvell, OnSemi, SenTekSe LLC, Sony | X | X |

ZOOM PARTICIPATION ONLY – NO IMAT RECORD

| Name | Affiliation | Day 1 | Day 2 | Attendance/Registration |
|---------------------|------------------------------|-------|-------|------------------------------|
| Dalmia, Kamal | Aviva Links Inc | X | | (IMAT on Day 2) |
| Huang, Yunteng | Aeonsemi | X | X | (no reg record) |
| Kang, Steve | Microchip | X | X | (no reg record) |
| Sedarat, Hossein | Ethernovia | X | X | In-Person |
| Hogenmüller, Thomas | Bosch | X | X | (Virtual registration) |
| Zhuang, Yan | Huawei Technologies Co., Ltd | | X | (Virtual reg, IMAT on Day 1) |