Unconfirmed Meeting Minutes: IEEE 802.3 Ethernet for Automotive Imaging Sensors (ISAAC) Study Group

January 22 & 23, 2024
802.3 ISAAC Study Group Interim (HYBRID)

Prepared by Bob Voss

IEEE 802.3 Ethernet for Automotive Imaging Sensors (ISAAC) Study Group meeting convened at 1:03 PM (EST (Eastern Standard Time, UTC-5), Monday, January 22, 2024, by Jon Lewis, IEEE 802.3 Ethernet for Automotive Imaging Sensors (ISAAC) Study Group Chair.

Attendance is listed in Appendix A

ADMINISTRATIVE MATTERS

Presentation: agenda_ISAAC_01_012224.pdf
Presenter: Jon Lewis, Chair.

The Chair reviewed the agenda. Mr. Lewis turned to presentation agenda_ISAAC_01_012224.pdf.

Approval of Agenda:
The chair asked if there were objections, additions, or corrections to the agenda displayed. There were none. The chair announced that the agenda was considered approved.

Approval of Minutes: Unanimous consent

The Chair then resumed the review of presentation agenda_ISAAC_01_012224.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 – none responded.

Mr. Lewis then continued review of the presentation, Big Ticket items for this meeting, to develop PAR, 5 Criteria, and Objectives for ISAAC.

Mr. Lewis reviewed the goals for the meeting, access to the reflector and website, and ground rules.

The chair reviewed that in study groups, in general, anyone on the call may vote, and that, should we need it, he would review the voting rules in more detail at that time.

Mr. Lewis moved on reviewing the links to the rules.

IEEE Patent Policy, Mr. Lewis asked if anyone in the meeting needed review of the pre-PAR patent policy in detail. None responded, therefore, he showed and briefly reviewed the patent policy slides for patent policy for study groups from agenda_ISAAC_01_012224.pdf. (01:12 PM EST)

Mr. Lewis asked if anyone wished a full reading of the copyright slides. None responded. He therefore showed and briefly reviewed the IEEE SA copyright slides from agenda_ISAAC_01_012224.pdf

Mr. Lewis then read and reviewed the IEEE ethics and code of conduct slides from agenda_ISAAC_01_012224.pdf.

He then read and showed the slides on "Participant behavior" from agenda_ISAAC_01_012224.pdf
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Mr. Lewis showed and read the "individual process" slide ("Participants … shall act independently…"). Mr. Lewis asked if anyone objected to the individual process and if so to leave the meeting. There were no participants that left the meeting.

Mr. Lewis advised the group of the IEEE SA (anti) dominance policy, showed, and read the slide "…activities shall allow the fair & equitable consideration" slide. There were no questions.

Attendance, Mr. Lewis advised the group of the IEEE meeting attendance tool and procedures.

Mr. Lewis reviewed the standards development process for IEEE and where this study group is in the process.

Mr. Lewis noted that there would be an "01a" version of the agenda deck, with the change that the footer of the slides would be corrected

LIAISONS
The Chair noted there were no liaisons for the group at this meeting.

Mr. Lewis reviewed the procedure and time constraints for presentations for this meeting. He allotted and announced 45 minutes for each presentation.

Order of presentations: (1:21PM EST)
Mr. Lewis showed the order of presentations and invited Kamal Dalmia to begin his presentation.
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PRESENTATIONS

The Chair then moved to the presentations for the meeting. (1:22 PM EST)

Title: EEE for ISAAC
URL: https://ieee802.org/3/ISAAC/public/012224/Dalmia_ISAAC_01_01092024%20Energy%20Efficient.pdf

Presenter: Kamal Dalmia, Aviva Links

Title: On the Pros and Cons of adding 1Gbps Downstream data rate
URL: https://ieee802.org/3/ISAAC/public/012224/jonsson_3ISAAC_01_010524.pdf

Presenter: Ragnar Jonnson, Marvel

Afternoon break – 3:00 to 3:20PM EST

Title: Questions and responses to help move forward with PAR and objectives (02)
URL: https://ieee802.org/3/ISAAC/public/012224/matheus_ISAAC_Q2_01_012224.pdf)

Presenter: Kirsten Matheus, BMW

The presenter posed a number of straw polls the group.

Straw Poll 1
I would support an objective asking for “support of an optional energy saving mechanism” that exploits situations in which less data is sent than the capacity of the PHY allows for.

Y = 64% (41)
N = 22% (14)
A = 14% (9)
N = 64

Straw Poll 2
I would support objectives for a 1Gbps/100 Mbps PHY (over a 15m 4 inline connector link segment).

“Define an electrical PHY to support up to 1 Gbps data rate point-to-point operation in one direction and up to 100 Mbps point-to-point operation in the other direction over the defined balanced-pair link segment”.

"Define an electrical PHY to support up to 1 Gbps data rate point-to-point operation in one direction and up to 100 Mbps point-to-point operation in the other direction over the defined unbalanced coaxial link segment".

Y = 52% (33)
N = 30% (19)
A = 19% (12)

N = 64

Straw Poll 3

• Of the following options concerning the PAR, I would support the following (see page 11, select as many as you like):

a) Limit the PAR to 10 Gbps.
b) Limit the PAR to 15 Gbps.
c) Limit the PAR to 25 Gbps.
d) Make the PAR open ("higher in one direction, lower in the other").
e) Abstain

a) = 44% (29)
b) = 47% (32)
c) = 33% (23)
d) = 18% (12)
e) = 14% (9)

N = 67

Title: On the Feasibility of 25Gbps
URL: https://ieee802.org/3/ISAAC/public/012224/jonsson_3ISAAC_01_012224.pdf

Presenter: Ragnar Jonsson, Marvell

Title: On adding 25 Gbps to ISAAC text
URL: https://ieee802.org/3/ISAAC/public/012224/jonsson_3ISAAC_02_012224.pdf

Presenter: Ragnar Jonsson, Marvell

Title: PAR Scope and Physical Layer Rates between 10 Gbps and 25 Gbps
URL: https://ieee802.org/3/ISAAC/public/012224/zimmerman_3ISAAC_01_012224.pdf
Presenter: George Zimmerman, CME Consulting

Meeting Recess

Having exhausted the available time, Mr. Lewis recessed the meeting at 6:03 PM EST until 8:00 AM EST on 23Jan2024.

Meeting Returns from Recess 8:01AM EST on 23Jan2024

Mr. Lewis called the group back to order at 8:01AM EST, resuming the queue established last evening in response to Mr. Zimmerman's presentation. Discussion about the use of reconciliation sublayer.

Mr. Thompson shared a slide containing potential objectives on an optional power efficient mechanism, optional auto-negotiation, and performance characteristics of an automotive link segment. Mr. Thompson requests a straw poll on the optional power efficient mechanism objective he proposed. There was group discussion of the proposed objective prior to the straw poll.

Straw Poll 4
I would support the following objective:

- Support an optional power efficiency mechanism for ethernet that is optimized for this project.

Y = 43
N = 13
A = 6

N = 62

Motion #1
Move to approve the following objective:

- Support an optional power efficiency mechanism for ethernet that is optimized for this project.

M = Peter Jones
S = Kamal Dalmia

Y = 32
N = 21
A = 9

Technical (> 75%)
Motion Fails

N = 62, see Appendix C for roll call details.

Kirsten Matheus reported that she had sent a slide to the reflector with Potential Objectives. Mr. Lewis displayed the slide for the group.

Motion #2
Move to approve the following objectives:

- Define an electrical PHY to support up to 1 Gbps data rate point-to-point operation in one direction and up to 100 Mbps point-to-point operation in the other direction over the defined balanced-pair link segment.
- Define an electrical PHY to support up to 1 Gbps data rate point operation in one direction and up to 100 Mbps point-to-point operation in the other direction over the defined unbalanced coaxial link segment.

M = Kirsten Matheus
S = Kamal Dalmia

Technical (> 75%)

Y = 32
N = 23
A = 8

N = 63, see Appendix C for roll call details.

Motion Fails

Mr. Lewis moved on the the next issue, “PAR scope, and displayed a slide titled PAR item 5.2B – Project scope” Mr. Lewis asked if anyone in the group would like to offer input. Mr. Zimmerman offered a motion, Motion #3.

Motion #3
Move that the study group adopt the following for the PAR Scope;

- Specify additions to and appropriate modifications of IEEE Std 802.3 to add:
- Physical Layer specifications and management parameters for electrical media and operating conditions optimized for automotive end-node cameras for operation for the transfer of Ethernet frames at a rate of 15 Gbps in one direction and with a lower date rate in the other direction.

M = George Zimmerman
S = Ramin Shirani
Technical (> 75%)

Morning Break 10:15AM to 10:30AM

Voting for Motion #3 after the group came back from break.

Y = 34
N = 24
A = 6

N = 64, see Appendix C for roll call details.

Motion Fails.

Motion #4 – overtaken by Motion #5

Motion #4 (as amended by Motion #5)
Move that the study group adopt the following for the PAR scope:

- Physical Layer specifications and management parameters for electrical media and operating conditions optimized for automotive end-node camera links for operation for the transfer of Ethernet frames at a rate of 10 Gbps in one direction and with a lower date rate in the other direction.

And

- A protocol or sublayer for interfacing a physical layer device with different data rate capabilities in the transmit and receive directions to the existing 802.3 MAC with media independent interfaces at existing 802.3 rates.

M = Ragnar Jonsson
S = George Zimmerman
Technical (> 75%)

Y = 51
N = 4
A = 7

N = 62, see Appendix C for roll call details.

Motion passes.

Motion #5
Move that the study group amend the text for Motion #4 to:

- Physical layer specifications and management parameters for electrical media and operating conditions optimized for automotive end-node camera links for operation up to 10 Gbps in one direction and with a lower data rate in the other direction.

And

- A protocol or sublayer for interfacing a physical layer device with different data rate capabilities in the transmit and receive directions to the existing 802.3 MAC with media independent interfaces at existing 802.3 rates.

M = Ahmad Chini
S = George Zimmerman
Technical (> 75%)

Y = 50
N = 4
A = 6

N = 60, see Appendix C for roll call details.

Motion passes.

Motion #6
Move that the study group delete the following text from the PAR scope adopted by the study group in Motion #4 (as amended):

- And
- A protocol or sublayer for interfacing a physical layer device with different data rate capabilities in the transmit and receive directions to the existing 802.3 MAC with media independent interfaces at existing 802.3 rates.

M = Peter Jones
S = George Zimmerman
Technical (>75%)

Y = 51
N = 1
A = 8

N = 60, see Appendix C for roll call details.

Motion passes.

Mr. Lewis reviewed and edited the information in PAR_ISAAC_01_012324.pptx with the study group's input.

Motion #7
Move to adopt the PAR form information in PAR_ISAAC_01_0123224.pdf.

M = Kamal Dalmia
S = Ragnar Jonsson
Technical (>75%)

Y = 49
N = 0
A = 5

N = 54, see Appendix C for roll call details.

Motion passes.

Mr. Lewis moved on the the CSD (Criteria for Standards Development), displayed the document and led the group in editing.

Motion #8
Move to adopt the CSD responses from 802d3_ISAAC_CSD_012324.pdf

M = Peter Jones
S = Rich Boyer
Technical (>75%)

Y = 42
N = 0
A = 2
N = 44, see Appendix C for roll call details.

Motion passes.

Future Meetings

March 11-14, 2024: Denver, CO USA
May 13 – 16, 2024: Annapolis, MD USA
July 15 -18, 2024: Montreal, Quebec, Canada
Sept 16-19, 2024: TBD
Nov 11 – 14, 2024: Vancouver, BC, Canada

Registration is required for March, May, and July!
https:\\www.ieee802.org/3/interims/index.html

Having exhausted the agenda, Mr. Lewis adjourned the meeting at 12:49PM EST.

Appendix A: Attendees at the IEEE 802.3 Ethernet for Automotive Imaging Sensors (ISAAC) Study Group Meeting, January 22 & 23, 2024

First Name	Last Name	Affiliation	Day1 Zoom	Day 1 IMAT	Day 2 Zoom	Day 2 IMAT
Ramanjit	Ahuja	Onsemi	X	X	X	X
Tim	Baggett	Microchip	X	X	X	X
Amir	Bar-Niv	Marvell	X	X	X	X
saied	Benyamin	Ethernovia	X	X	X	X
Jamila	Borda	BMW	X	X	X	X
rich	boyer	Aptiv	X	X	X	X
Michal	Brychta	Analog Devices	X	X	X	X
Clark	Carty	Cisco	X	X	X	X
Craig	Chabot	UNH IOL	X	X	X	X
Ahmad	Chini	broadcom	X	X	X	X
David	Cliber	TE Connectivity	X		X	
Kamal	Dalmia	Aviva Links	X	X	X	X
Andras	de Koos	Microchip	X		X	
Daniel	Estrakh	Valens	X	X	X	X
Vince	Ferretti	Corning	X		X	X
German	Feyh	Broadcom	X	X	X	X
Paul	Fuller	Marvell	X			
Claude	Gauthier	NXP	X	X	X	X
Markus	Gerl	MD Elektronik	X	X	X	X
James	Gilb	GA-ASI			X	
Sachin	Goel	Aviva Links	X	X	X	X
Steve	Gorshe	Microchip	X	X	X	X
JIm	Graba	Broadcom	X	X	X	X
Steffen	Graber	Pepperl+Fuchs	X	X		
Jodi	Haasz	IEEE SA	X	X	X	X
Marek	Hajduczenia	Charter	X	X	X	X
Ruibo	Han	CMCC			X	
Mary Sue	Haydt	Microchip	X	X	X	X
Thomas	Hogenmueller	Bosch	X	X	X	X
Masayuki	Hoshino	Continental	X	X	X	X
Gergely	Huszak	Kone			X	
Yasuhiro	Hyakutake	Orbray Co. Ltd.	X	X	X	X
Hideki	Isono	Fujitsu Optical Components			X	
Peter	Jones	Cisco	X	X	X	X
Ragnar	Jonsson	Marvell	X	X	X	X
Haysam	Kadry	Molex	X	X	X	X

First Name	Last Name	Affiliation	Day1 Zoom	Day 1 IMAT	Day 2 Zoom	Day 2 IMAT
Samay	Kapoor	Aviva Links	X		X	
Yugo	Kaseda	Nitto Inc	X		X	X
Tomohiro	Kikuta	Orbray Co. Ltd	X	X	X	X
William	Klingensmith	US Federal Govt			X	
Tom	Kopet	onsemi	X	X	X	X
Hans	Lackner	QoSCom			X	X
Angie	Lambert	Corning	X		X	
David	Law	HPE			X	X
Jon	Lewis	Dell Technologies	X	X	X	X
William	Lo	Axonne	X	X	X	X
Wei	Lou	Broadcom	X	X	X	X
Chris	Mash	Ethernovia	X	X	X	X
Kirsten	Matheus	BMW	X	X	X	X
Brett	McClellan	Marvell	X	X	X	X
Thomas	Mueller	Rosenberger	X			
Brian	Murray	Analog Devices			X	X
Christian	Neulinger	MD Elektronik	X	X	X	
Tiaq	Ng	Aviva Links	X	X	X	X
Guy	Nicholson	onsemi	X	X	X	X
Paul	Nikolich	self			X	X
Debu	Pal	onsemi	X	X	X	X
Sujan	Pandey	Huawei	X		X	X
Carlos	Pardo	KDPOF	X	X	X	X
Luis	Pineda	LP Tech Advisors LLC	X	X	X	X
Neven	Pischl	Broadcom	X	X	X	X
Jason	Potterf	Cisco	X		X	
Alireza	Razavi	Marvell	X		X	
Haim	Ringel	GM	X	X	X	
Stephan	Schreiner	Rosenberger	X	X	X	X
Hossein	Sedarat	Ethernovia	X	X	X	X
Rohit	Sharma	Molex	X	X	X	X
Ramin	Shirani	Ethernovia	X	X	X	X
Jason	Sisk	UNH IOL	X	X	X	
Kevin	So	Microchip	X	X	X	X
Tom	Souvignier	Broadcom	X	X	X	X
Janik	Steyer-Ege	Bosch	X	X	X	X
jingcong	Sun	motorcomm	X	X	X	X
Mehmet	Tazebay	Broadcom	X	X	X	X
Geoff	Thompson	GraCaSI S.A. Independent	X	X	X	X

First Name	Last Name	Affiliation	Day1 Zoom	Day 1 IMAT	Day 2 Zoom	Day 2 IMAT
Luisma	Torres	KDPOF	X	X	X	X
Mike	Tu	Broadcom	X	X	X	X
Max	Turner	Ethernovia	X	X	X	X
Gumersindo	Veloso Cauce	BMW AG	X	X	X	X
Bob	Voss	Panduit	X	X	X	X
Frank S.-S.	Wang	Realtek	X	X	X	X
Yuji	Watanabe	AGC	X	X	X	X
James	Withey	Fluke			X	X
Peter	Wu	Marvell	X		X	X
Conrad	Zerna	Avivalinks	X	X	X	X
Tingting	Zhang	Huawei			X	X
Yan	Zhuang	Huawei			X	X
George	Zimmerman	CME Consulting/ADI APLGp CSCO MRVL OnSemi Sony SenTekSe	X	X	X	X
TOTAL			**76**	**64**	**85**	**71**

Appendix B: Straw Polls at the IEEE 802.3 Ethernet for Automotive Imaging Sensors (ISAAC) Study Group Meeting, January 22 & 23, 2024

Name	Employer	Affiliation	Straw Poll #1	Straw Poll #2	Straw Poll #3	Straw Poll #4
Ahuja, Ramanjit		ON Semiconductor	Yes	Yes	B	Y
Baggett, Tim	Microchip Technology, Inc.	Microchip Technology, Inc.	Yes	No	A; B	Y
Bar-Niv, Amir	Aquantia Corp	Marvell	No	No	B; C	N
Benyamin, Saied	Ethernovia	Ethernovia, Inc.	No	No	B; C	N
Borda, jamila josip	BMW Group	BMW Group	Yes	Yes	A	Y
Boyer, Rich	Aptiv - Signal and Power Solutions	Aptiv	Yes	Yes	A	Y
Brychta, Michal	Analog Devices Inc.	Analog Devices Inc.	Abstain	Abstain	E	Abstain
Carty, Clark	Cisco Systems, Inc.	Cisco Systems, Inc.	Yes	Yes		
Chabot, Craig	University of New Hampshire InterOperability Laboratory (UNH-IOL)	UNH-IOL	Abstain	Abstain	E	
Chini, Ahmad	Broadcom Corporation	Broadcom Corporation	Yes	Yes	A; B	Y
Cliber, Claude		TE Connectivity	Abstain	Abstain	E	Y
Dalmia, Kamal	Aviva Links Inc	Aviva Links	Yes	Yes	A	Y
de Koos, Andras		Microchip Technology, Inc.	Yes	No	A; B	Y
Estrakh, Daniel	Valens Semiconductor	Valens Semiconductor	Yes	No	C	Y
Ferretti, Vincent	Corning Incorporated	Corning Incorporated			B; C; D	Y
Feyh, German	Broadcom Corporation	Broadcom Corporation	Yes	Yes	A	Y

Name	Employer	Affiliation	Straw Poll #1	Straw Poll #2	Straw Poll #3	Straw Poll #4
Gauthier, Claude	NXP Semiconductors	NXP Semiconductors	Yes	Yes	A	Y
Gerl, Markus	MD Elektronik	MD Elektronik	Abstain	Yes	D	Y
Gilb, James	General Atomics Aeronautical Systems, Inc.	GA-ASI, USD, Gilb Consulting				Abstain
Goel, Sachin	Aviva Links Inc	Aviva Links Inc.	Yes	Yes	A	Y
Gorshe, Steven Scott	Microchip Technology, Inc.	Microchip Technology, Inc.	Yes	Yes	A; B	Y
Graba, James	Broadcom Corporation	Broadcom Corporation	Yes	Yes	A	Y
Graber, Steffen	Pepperl+Fuchs SE	Pepperl+Fuchs SE	Yes	Abstain	C	
Haydt, Mary Sue	Microchip Technology, Inc.	Microchip Technology, Inc.	Yes	Yes	A; B	Y
Hogenmueller, Thomas	Robert Bosch GmbH	Robert Bosch GmbH	Yes	No	B; C; D	Y
Hoshino, Masayuki		Continental Automotive	Yes	Yes	A; B	Abstain
HYAKUTAKE, YASUHIRO	Orbray Co., Ltd.	Orbray Co., Ltd.	Yes	Yes	E	Abstain
Jones, Peter	Cisco Systems, Inc.	Cisco Systems, Inc.	No	No	B; C	Y
Jonsson, Ragnar	Marvell Semiconductor, Inc.	Marvell Semiconductor, Inc.	No	No	B; C; D	N
Kadry, Haysam	Molex Incorporated	Ford Motor Company	Yes	Abstain	E	
Kapoor, Samay		Aviva Links	Yes	Yes	A	Y
Kaseda, Yugo		Nitto, Inc.			B; C	

Name	Employer	Affiliation	Straw Poll #1	Straw Poll #2	Straw Poll #3	Straw Poll #4
Kikuta, Tomohiro	Orbray Co., Ltd.	Adamant Namiki Precision Jewel Co., Ltd.	Abstain	Yes	E	Abstain
Kopet, Tom	ON Semiconductor	ON Semiconductor	Yes	Yes	A; B; D	Y
Lackner, Hans	QoSCom GmbH	QoSCom GmbH				Y
Lambert, Angie		Corning	Abstain			
Lo, William	Marvell Semiconductor, Inc.	Axonne Inc	No	No	B; C; D	N
Lou, Wei		Broadcom Corporation	Yes	Yes	A	Y
mash, chris	Nupero Ltd	Ethernovia	No	No	B; C	N
Matheus, Kirsten	BMW Group	BMW Group	Yes	Yes	A	Y
Mcclellan, Brett	Marvell Semiconductor, Inc.	Marvell Semiconductor, Inc.	Abstain	No	B	N
Neulinger, Christian	MD Elektronik	MD Elektronik	Yes	Yes	C; D	Y
Ng, Hiok Tiaq	Aviva Links Inc.	Aviva Links	Yes	Yes	A	Y
Nicholson, Guy		onsemi	Yes	Yes	A; B	Y
Nikolich, Paul	Paul Nikolich	Self Employed				N
Pal, Debajyoti		onsemi				Y
Pandey, Sujan	Huawei Technologies (Netherlands) B.V.	Huawei Technologies Netherlands B.V.	No	Yes	C	
Pardo, Carlos	Knowledge Development for POF SL	Knowledge Development for POF SL	Yes	Abstain	A	
Pineda, Luis		LP Tech Advisors, LLC	No	No	B; C	N
Pischl, Neven	Broadcom Corporation	Broadcom Corporation	Abstain	Abstain	E	Y

Name	Employer	Affiliation	Straw Poll #1	Straw Poll #2	Straw Poll #3	Straw Poll #4
Potterf, Jason	Cisco Systems, Inc.	Cisco Systems, Inc.			C	
Razavi, Alireza		Broadcom Corporation	No	No	B	
Ringel, Haim	General Motors Company	General Motors Company	Yes	Abstain	C; D	Y
Sedarat, Hossein	Ethernovia	Ethernovia	No	No	B; C	N
Sharma, Rohit		Molex Incorporated	Yes	Abstain	E	Abstain
shirani, ramin	Ethernovia	Ethernovia	No	No	B; C	N
sisk, jason	University of New Hampshire InterOperability Laboratory (UNH-IOL)	University of New Hampshire InterOperability Laboratory (UNH-IOL)	Abstain	Abstain	A	
So, Kevin		Microchip Technology, Inc.	Yes	Yes	A; B	Y
Souvignier, Tom	Broadcom Corporation	Broadcom Corporation	Yes	Yes	A	Y
Steyer-Ege, Janik	Robert Bosch GmbH	Robert Bosch GmbH	Yes	No	B; C; D	Y
Sun, jingcong		Motorcomm Electronic Technology Co.	Abstain	Abstain	A	Y
TAZEBAY, MEHMET	Broadcom Corporation	Broadcom Corporation	Yes	Yes	A	Y
Thompson, Geoffrey	GraCaSI S.A.	INDEPENDENT			B	Y
Torres, Luisma	Knowledge Development for Plastic Optical Fiber	Knowledge Development for POF SL	Yes	Yes	B; C; D	Y
Tu, Mike	Broadcom Corporation	Broadcom Corporation	Yes	Yes	A	

Name	Employer	Affiliation	Straw Poll #1	Straw Poll #2	Straw Poll #3	Straw Poll #4
Turner, Max	Ethernovia	Ethernovia	No	No	B; C	N
Veloso Cauce, Gumersindo	BMW Group	BMW Group	Yes	Yes	A; B	Y
Voss, Robert	Panduit Corp.	Panduit Corp.	Yes	Abstain	E	Y
Wang, Shun-Sheng	Realtek Semiconductor Corp.	Realtek Semiconductor Corp.	Yes	Yes	B; D	Y
Watanabe, Yuji	AGC Inc.	AGC	Yes	Yes	A	Y
Wu, Peter	Marvell Semiconductor, Inc.	Marvell Semiconductor, Inc.	No	No	B; C	N
Zerna, Conrad	Fraunhofer IIS	Avivalinks Inc.	Yes	Yes	A	Y
Zhuang, Yan	Huawei Technologies Co., Ltd	Huawei Technologies Co., Ltd				Y
Zimmerman, George	CME Consulting, Inc.	CME Consulting/ADI, APL Group, Cisco Systems, CommScope, Marvell, SenTekse LLC	No	No	B; C; D	N

Appendix C: Motions at the IEEE 802.3 Ethernet for Automotive Imaging Sensors (ISAAC) Study Group Meeting, January 22 & 23, 2024

Name	Affilitation	Motion #1	Motion #2	Motion #3	Motion #4	Motion #4* as amended	Motion #5	Motion #6	Motion #7	Motion #8
Ahmad Chini	Broadcom	Yes	Yes	No	Overtaken by Motion #5	Yes	Yes	Yes	Yes	Abstain
Alireza	Marvell		No	Yes		Abstain	Abstain	Yes	Yes	Yes
Amir Bar-Niv	Aquantia	No	No	Yes		Yes	Yes	Yes	Yes	Yes
Andras de Koos	Microchip	Yes	Abstain	Yes		Yes	Yes	Yes	Yes	Yes
Bob Voss	Panduit	No	No	Yes		Yes	Yes	Yes	Yes	Yes
Brett McClellan	Marvell	No	No	Yes		Yes	Yes	Yes	Yes	Yes
Brian Murray	Analog Devices, Inc.			Yes				Yes	Yes	Yes
Carlos Pardo	KD POF	Yes	Abstain							
Chris Mash	Nupero	No	No	Yes		Yes	Yes	Yes	Yes	Yes
Christian Neulinger	MD Elektronik	Abstain	No	Yes		Yes	Yes	Yes	Yes	
Clark Carty	Cisco		No	Yes		Yes	Yes	Yes	Yes	Yes
Claude Gauthier	NXP Semiconductors	Yes	Yes	No		Yes	Yes	Yes		
Conrad Zerna	Aviva Links	Yes	Yes	No		Yes	Yes	Abstain	Abstain	
Daniel Estrakh	Valens	Yes	No	Yes		No	No	Yes	Abstain	Yes
David Cliber	TE Connectivity	Abstain	Abstain	Abstain		Yes	Abstain	Yes	Yes	Yes
David Law	HPE					Yes		Yes	Yes	
Debu Pal	Onsemi	Yes	Yes	Yes		Yes	No	Yes		
Frank S.-S. Wang	Realtek	Yes	Yes	No		Yes	Yes	Yes	Yes	Yes
Geoff Thompson	GraCaSi S.A.	Abstain		Yes						
George Zimmerman	CME Consulting	No	No	No		Yes	Yes	Yes	yes	Yes
German Feyh	Broadcom	Yes	Yes	Yes		Yes	Yes	Yes	Abstain	Yes

Name	Affilitation	Motion #1	Motion #2	Motion #3	Motion #4	Motion #4* as amended	Motion #5	Motion #6	Motion #7	Motion #8
Gergely Huszak	Kone						Yes			
Gumersindo Veloso	BMW	Yes	Yes	No		Yes	Yes	Yes	Yes	
Guy Nicholson	Onsemi	Yes	Yes	No						
Haim Ringel	General Motors	No	No	No		No	Yes	Yes	Abstain	
Hans Lackner	QoSCom		No							
Haysam M. Kadry	Molex	Abstain	Yes	Abstain		Abstain	Abstain	Yes	Yes	Yes
Hossein Sedarat	Ethernovia	No	No	Yes		Yes	Yes	Yes	Yes	Yes
James Gilb	GA-ASI	Yes								
Jamila J. Borda	BMW	Yes	Yes	No		Yes	Yes	Abstain	Yes	Yes
Janik Steyer-Ege	Bosch	No	No	Yes		Yes	Yes	Yes	Yes	Yes
Jason Sisk	UNH-IOL					Abstain	Abstain		Abstain	
JIm Graba	Broadcom	Yes	Yes	No		Yes	Yes	Yes		
Jingcong Sun	Motorcomm		Abstain	No		Yes	Yes	Yes	Yes	Yes
Kamal Dalmia	Aviva Links	Yes	Yes	No		Yes	Abstain	Yes	Yes	Yes
Kevin So	MCHP	Yes	Yes	Yes		Yes	Yes	Abstain	Yes	
Kirsten Matheus	BMW	Yes	Yes	No		Yes	Yes		Yes	Yes
Luis Pineda	LP Tech Masters, LLC	No	No	Yes		Yes	Yes	Yes	Yes	
Luisma Torres	KD POF	Yes	Yes	Yes		Yes	Yes	Abstain	Yes	Yes
Markus Gerl	MD Elektronik	Abstain		Yes		Yes	Yes	Yes	Yes	
Mary Sue Haydt	Microchip	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Masayuki Hoshino	Continental	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Max Turner	Ethernovia	No	No	Yes		Yes	Yes	Yes	Yes	Yes
Mehmet Tazebay	Broadcom	Yes	Yes	No		Yes	Yes	Yes	Yes	Yes

Name	Affilitation	Motion #1	Motion #2	Motion #3	Motion #4	Motion #4* as amended	Motion #5	Motion #6	Motion #7	Motion #8
Michal Brychta	Analog Devices, Inc.	Abstain	Abstain	No		Abstain		Abstain		
Mike Tu	Broadcom					Yes	Yes	Yes		
Neven Pischl	Broadcom	Yes	Abstain	Abstain		Yes	Yes	Abstain	Yes	Abstain
Paul Nikolich	self	No	Abstain	Yes		Yes	Yes	Abstain	Yes	Yes
Peter Jones	Cisco	No	Yes	Yes		No	Yes	Yes	Yes	Yes
Peter Wu	Marvell	No	No	Yes		Yes	Yes	Yes		Yes
Ragnar Jonsson	Marvell	No	No	Yes		Yes	Yes	Yes	Yes	Yes
Ramanjit Ahuja	Onsemi	Yes	Yes	No		Yes	No	Yes	Yes	Yes
Ramin Shirani	Ethernovia	No	No	Yes		Yes	Yes	Yes	Yes	Yes
rich boyer	Aptiv	Yes	Yes	No		Yes	Yes	Yes	Yes	Yes
Rohit Sharma	Molex	Abstain	Yes	Abstain		Abstain		Yes	Yes	Yes
Sachin Goel	Aviva Links	Yes	Yes	No		Abstain	Yes	Yes	Yes	Yes
Saied Benyamin	Ethernovia	No	No	Yes		Yes	Yes	Yes		
Samay Kapoor	Aviva Links	Yes	Yes	No		Yes	Yes	Yes	Yes	Yes
Steve Gorshe	Microchip	Yes	Abstain	Yes		Yes	Yes	Yes	Yes	Yes
Sujan Pandey	Huawei	No	No	Yes		Yes	Abstain			
Thomas H	Bosch	No	No	Yes		Yes	Yes	Yes		
Tiaq Ng	Aviva Links	Yes	Yes	No		Abstain	Yes	Yes	Yes	Yes
Tim Baggett	Microchip	No	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Tom Kopet	Onsemi	Yes	Yes	No		No	No	Yes	Yes	Yes
Tom Souvignier	Broadcom	Yes	Yes	No		Yes	Yes	Yes	Yes	
Tomohiro Kikuta	Orbray Co., Ltd.	Abstain	Yes	Yes					Yes	
Vince Ferretti	Corning USA	No	No	Abstain						
Wei Lou	Broadcom	Yes	Yes	No		Yes	YEs	Yes	Yes	Yes
William Lo	Axonne	No	No	Yes		Yes	Yes	Yes		
Yan Zhuang	Huawei	Yes								

Name	Affilitation	Motion #1	Motion #2	Motion #3	Motion #4	Motion #4* as amended	Motion #5	Motion #6	Motion #7	Motion #8
Yasuhiro Hyakutake	Orbray Co., Ltd.	Abstain	Yes	No		Yes	Yes	No	Yes	Yes
Yuji.Watanabe	AGC		Yes	Abstain		Yes	Yes	Abstain	Yes	Yes