

Minutes
Multi-Gigabit Optical Automotive Ethernet (OMEGA)
Task Force Interim
25-26 May 2021

Attendance list as recorded in Webex participant list

Last Name	First Name	Employer	Affiliations	May 25th	May 26th
Abbot	John	Corning	Corning	X	X
Amamiya	Yasushi	MegaChips	MegaChips		
Andrae	Stefan	SEI Antech-Europe GmbH	SEI Antech-Europe GmbH	X	X
Aono	Michikazu	Yazaki	Yazaki		
Araki	Nobuyasu	Yazaki	Yazaki	X	X
Bergner	Bert	TE Connectivity	TE Connectivity		
Boyer	Rich	APTIV	APTIV		
Barbero	Fernando	KDPOF	KDPOF	X	X
Bordogna	Mark	Intel	Intel		X
Brooks	Paul	Viavi Solutions	Viavi Solutions		
Bruckman	Leon	Huawei	Huawei		
Chang	Jae-yong	Keysight	Keysight		
Choudhury	Mabud	OFS	OFS		X
Chuang	Keng Hua	HPE	HPE		
Cuesta	Emilio	TE Connectivity	TE Connectivity	X	X
Dittmann	Markus	KDPOF	KDPOF	X	X
Donthu	Suresh	Corning	Corning		
Eek	Magnus	Volvo Cars	Volvo Cars		
Felgenhauer	Alexander	Yazaki	Yazaki	X	
Ferretti	Vincent	Corning	Corning	X	
Fortusini	David	Corning	Corning		
Fukuoka	Takashi	AutoNetworks Technologies Ltd.	AutoNetworks Technologies Ltd.; Sumitomo Electric Industries, Ltd.		X
Glanzner	Martin	SEI Antech-Europe GmbH	SEI Antech-Europe GmbH	X	X
Gomez	Chisato	Nitto Denko Corporation	Nitto Denko Corporation	X	X
Goto	Hideki	Toyota Motor Corporation	Toyota Motor Corporation	X	X
Grow	Robert	Robert M. Grow Consulting	RMG Consulting, KDPOF		
Hajduczenia	Marek	Charter Communications	Charter Communications		
Harshbarger	Douglas	Corning Incorporated	Corning Incorporated	X	X
Hartmann	Stephan	Siliconally GmbH	Siliconally GmbH		
Hayashi	Takehiro	HAT Labs	HAT Labs		
HIRASE	Hidenari	AGC	AGC	X	X
Hormmeyer	Bernd	Phoenix Contact	Phoenix Contact		
Huang	David	Broadcom	Broadcom		
Huang	Shaowu	Marvell	Marvell		
Hyakutake	Yasuhiro	Adamant Namiki Precision Jewel	Adamant Namiki Precision Jewel	X	X
Isono	Hideki	FOC	FOC	X	X
Kadry	Haysam	Ford Motor Company	Ford Motor Company	X	X
KAGAMI	Manabu	NI Tech	NI Tech	X	X
Kazuhiko	Ishibe	Anritsu	Anritsu		
Kamino	John	OFS	OFS		
Kawahara	Keisuke	Furukawa Electric	Furukawa Electric		
KIKUTA	Tomohiro	Adamant Namiki Precision Jewel	Adamant Namiki Precision Jewel	X	X
Kim	Joshua	Hirose USA	Hirose USA		
King	Roger	TRUMPF Photonic Components	TRUMPF Photonic Components	X	X
Kobayashi	Shigeru	AIO Core	AIO Core	X	X

Koeppendoerfer	Erwin	Leoni	Leoni	X	
Kondo	Taiji	MegaChips	MegaChips	X	X
Law	David	HPE	HPE	X	X
Liu	Karen	Lightwave	Lightwave		
Lee	Bernard	Senko	Senko		
Lee	Sylvanus	Leviton	Leviton		
Lewis	David	Lumentum	Lumentum	X	X
Lingle	Robert	OFS	OFS		
Malicoat	David	Malicoat Networking Solutions	Senko Advanced Components		X
Martino	Kjersti	Inneos	Inneos	X	X
Marques	Flavio	Furukawa electric	Furukawa Electric		
Masuda	Takeo	OITDA/PETRA	OITDA/PETRA	X	X
McMillan	Larry	Western Digital	Western Digital		
Mueller	Harald	Endress + Hauser	Endress + Hauser		
Mueller	Thomas	Rosenberger	Rosenberger		X
Murthy	Ramana	Broadcom	Broadcom		X
Nakagawa	Hideki	AGC	AGC	X	X
Nicholl	Gary	Cisco	Cisco		
Nikolich	Paul	802 Chairman	802 Chairman		
Niihara	Yoshihiro	Fujikura	Fujikura		X
Ogura	Ichiro	Petra	Petra	X	X
Omori	Kumi	NEC	NEC		
Pandey	Sujan	Huawei	Huawei		
Pankert	Joseph	TRUMPF Photonic Components	TRUMPF Photonic Components	X	X
Pardo	Carlos	KDPOF	KDPOF	X	X
Parsons	Earl	Commscope	Commscope		X
Pérez-Aranda	Rubén	KDPOF	KDPOF	X	X
Pham	Phong	EastPoint	EastPoint		
Piehler	David	Dell	Dell		
Pimpinella	Rick	Panduit	Panduit	X	X
Pitwon	Richard	Resolute Photonics	Resolute Photonics	X	X
Preis	Roland	MD Elektronik	MD Elektronik	X	X
Reinhard	Michael	SEI Antech-Europe GmbH	SEI Antech-Europe GmbH	X	X
Sambasivan	Sam	AT&T	AT&T		X
Savi	Olindo	Hubbell Incorporated	Hubbell Incorporated		
Sawano	Hiroshi	OITDA	OITDA	X	X
Sayre	Edward	Samtec	Samtec		
Shukla	Priyank	Synopsys	Synopsys		
Shigematsu	Masayuki	Sumitomo Electric	Sumitomo Electric	X	X
Shiino	Masato	Furukawa Electric	Furukawa Electric	X	X
Shukla	Priyank	Synopsys	Synopsys		
Silvano de Sousa	Jonathan	GG-Group	GG-Group		
Sun	Wensheng	Marvell	Marvell	X	X
Sun	Yi	OFS	OFS		
Suzuki	Yasuo	KDPOF Japan	KDPOF		X
Swanson	Steve	Corning Inc.	Corning Inc.		
Takahashi	Ryutaro	Senko	Senko	X	X
Takahashi	Satoshi	POF Promotion	POF Promotion	X	X
Takahashi	Tadashi	Nitto Denko Corporation	Nitto Denko Corporation	X	X
Takayama	Kazuya	Nitto Denko Corporation	Nitto Denko Corporation	X	X
Theodoras	James	HG Genuine	HG Genuine		
Torres	Luisma	KDPOF	KDPOF	X	X
Tsujita	Yuichi	Nitto Denko Corporation	Nitto Denko Corporation		X
Tsuzaki	Nozomi	Independent	Independent		X
Ueno	Yuto	Sumitomo	Sumitomo	X	X
Voss	Bob	Panduit	Panduit		X
WATANABE	Yuji	AGC	AGC	X	X

Wendt	Mattias	Signify	Signify		
Wienckowski	Natalie	General Motors	General Motors	X	X
Xu	Xing	Huawei	Huawei	X	X
Xuesong	Mao	NiTech	NiTech		X
Yamada	Osamu	Yazaki	Yazaki		
Yasui	Hideshi	AGC	AGC	X	X
Yonezawa	Kenji	AGC	AGC	X	X
Young	James	Commscope	Commscope		X
Yurtin	John	APTIV	APTIV		X
Zhiwei	Yang	ZTE	ZTE		
Zhu	Liang	Marvell	Marvell		

Tuesday, 25th May 2021, 12:00 (noon) UTC

The meeting was called to order at approximately 12:02 UTC Tuesday 25th May 2021
Chaired by Robert Grow, IEEE P802.3cz Task Force Chair.

Mr. Grow presented *Agenda and General Information*

(https://www.ieee802.org/3/cz/public/may_2021/Agenda_3cz_01a_0521.pdf).

Mr. Grow presented the agenda for the meeting. The agenda was approved by unanimous consent.

Mr. Grow asked the audience if there was anybody from the press. No one responded to the call.

Mr. Grow issued the call for essential patent claims. No one responded to the call. He also presented the slides on the IEEE Copyright Policy and participation guidelines.

Mr. Grow provided the way to register attendance using the IMAT tool provided by IEEE.

Mr. Abbott asked to present *Laser Optimized Fiber for 10+ Gb/s Applications*

(https://www.ieee802.org/3/cz/public/may_2021/abbott_3cz_02_0521_Laser_Optimized_Fiber.pdf). This presentation shows the need to apply learnings from other IEEE projects and coordinate specifications of VCSELs and fiber in terms of effective bandwidth and launching conditions. Mr. Abbott asked for GIPOF samples to measure the bandwidth and for Silicon Photonics lasers to measure the Encircled Flux. Mr. Abbott proposed to estimate the worst case 1200nm guidance for generic OM2 fiber with 10 weights. Many questions were asked and Mr. Abbott and others provided answers.

Mr. Pérez-de-Aranda asked to present *How the fiber effective bandwidth impacts the receiver sensitivity*

(https://www.ieee802.org/3/cz/public/may_2021/perezaranda_3cz_02_0521_bweff_sens.pdf). The presentation showed how the receiver sensitivity changes when changing the effective bandwidth of the channel. Effective Modal Bandwidth and Chromatic Dispersion are both taken into account.

Mr. Pérez-de-Aranda asked to present *PAM4 50 Gb/s PCS/PMA. Answers to unasked questions*

(https://www.ieee802.org/3/cz/public/may_2021/perezaranda_3cz_05_0521_50G_pcs_pma_answers.pdf) This presentation provides more technical arguments supporting the 50 Gb/s PCS/PMA baseline proposal presented in the TF meeting held 11th May (*50GBASE-AU baseline proposal*, https://www.ieee802.org/3/cz/public/11_may_2021/perezaranda_3cz_03_110521_50Gbps_pcs_pma.pdf). Arguments regarding digital and mixed-signal complexity, performance, power consumption, bandwidth limitations, clock jitter, RIN, data interfaces, PLL, transimpedance amplifier, VCSEL linearity, synergies with 50GBASE-SR photonics, etc., were given for choosing PAM4 modulation instead of NRZ. A number of questions were asked and Mr. Pérez-de-Aranda provided answers.

With the scheduled end of the teleconference nearing and without objection, Mr. Grow returned to the last slides of *Agenda and General Information*

(https://www.ieee802.org/3/cz/public/may_2021/Agenda_3cz_01a_0521.pdf).

Mr. Grow reminded participants that there are some technical problems with the IEEE 802.3 calendar on some web browsers. Mr. Grow asked anyone experiencing problems, to contact him if they are unable to find teleconference information.

The meeting was recessed at approximately 13:52 UTC.

Wednesday, 26th May 2021, 12:00 (noon) UTC

The meeting was called to order at approximately 12:03 UTC Wednesday 26th May 2021
Chaired by Robert Grow, IEEE P802.3cz Task Force Chair.

Mr. Grow presented *Agenda and General Information*

(https://www.ieee802.org/3/cz/public/may_2021/Agenda_3cz_01a_0521.pdf).

Mr. Grow presented the agenda for the meeting. The agenda was approved by unanimous consent.

Mr. Grow asked the audience if there was anybody from the press. No one responded to the call.

Mr. Grow went through the general rules' presentation.

Mr. Grow issued the call for essential patent claims. No one responded to the call. He also presented the slides on the IEEE Copyright Policy and participation guidelines.

Mr. Watanabe asked to present *Question to 50Gbps PCS/PMA*.

(https://www.ieee802.org/3/cz/public/may_2021/watanabe_3cz_01_0521.pdf). The presentation included a question on having two modulation specifications in P802.3cz PCS/PMA (NRZ for 2.5, 5, 10, 25 Gb/s and proposed PAM4 for 50 Gb/s). Mr. Watanabe argued having two modulation types in a vehicle would be confusing in the market. Mr. Watanabe announced that, in case that the Straw Poll result does not support two modulation schemes, he would present a motion to remove the 50 Gb/s P802.3cz project objective. An intense debate started and several participants spoke in favor and against the proposal. Some participants argued that approving a PAM4-based PCS/PMD prevent a 50 Gb/s Silicon Photonics implementation based on NRZ. Other participants stated that the TF is specifying an amendment to the 802.3 standard, which includes a wide variety of modulations including NRZ and PAM 4. Regarding the motion, other participants argued that it is strange to remove an objective of the project being that a viable technical solution has already been presented for this objective. It was also noted, that P802.3cy has objectives for electrical 50 Gb/s and 100 Gb/s.

Mr. Watanabe presented *Straw poll and motion*

(https://www.ieee802.org/3/cz/public/may_2021/watanabe_3cz_02_0521.pdf). The text of the Straw Poll was slightly modified replacing "802.3AU" by "802.3cz". The Straw Poll #1 was presented for vote:

Straw Poll #1

Do you think it is acceptable to keep two modulation methods in 802.3cz?

- Yes
- No
- Need more information
- Abstain

The result was

Yes: 35

No: 7

Need more information: 8

Abstain: 7

Mr. Watanabe did not follow the straw poll with the motion announced in his presentation *Straw poll and motion*.

Mr. Pérez-de-Aranda asked to present *25G/10G/5G/25GBASE-AU LFSR example* as a resolution to D1.0 comment #82.

(https://www.ieee802.org/3/cz/public/may_2021/perezaranda_3cz_04_0521_lfsr.pdf). The

presentation addressed the resolution of comment #82 about how to deal in the draft with the values that the PCS binary scrambler should generate. The proposal included the addition of an informative annex with the start and the end of the 195850 bits composing the transmit block. A number of questions were asked and Mr. Pérez-de-Aranda provided answers.

Mr. Torres started the ToDo list review. A new task for an alternative 50 Gb/s PCS/PMA baseline was added, but no participant volunteer to be the owner.

The PMD subtasks were also reviewed. VCSEL + OM3 PMD subtasks are completed. The other proposed PMD subtasks are still without due date, but the "Relative cost comparison" subtask for VCSEL+GPOF PMD. Mr. Takayama and Mr. Ogura asked for more time to commit a date.

Mr. Abbot and Mr. Pimpinella offered their help to conduct EBW and attenuation tests with GIPOF fiber. Mr. Pérez-de-Aranda offered to provide link budget analysis with the obtained data after those tests. Mr. Takayama will talk offline with Mr. Abbott about this offer.

Mr. Grow wrapped up the teleconference with the last slides of *Agenda and General Information* (https://www.ieee802.org/3/cz/public/may_2021/Agenda_3cz_01a_0521.pdf).

Mr. Grow reminded that the deadline for commenting on the P802.3cz/D1.1 draft is 2 June. Weekly meetings from 8 June are scheduled to manage comment resolution and other presentations.

The meeting was recessed at approximately 13:56 UTC.