Minutes
Multi-Gigabit Optical Automotive Ethernet (OMEGA)
Task Force Plenary
13-14-20-21 July 2021

Attendance list as recorded in Webex participant list

Last Name	First Name	Employer	Affiliations	July 13th	July 14th	July 20th	July 21th
Abbott	John	Corning	Corning	X	X	X	X
Akin	Sami	Volkswagen AG	Volkswagen AG	X	X	X	X
Amamiya	Yasushi	MegaChips	MegaChips				
Andrae	Stefan	SEI Antech-Europe GmbH	SEI Antech-Europe GmbH	X		X	X
Aono	Michikazu	Yazaki	Yazaki	X	X	X	X
Araki	Nobuyasu	Yazaki	Yazaki	X	X	X	X
Bergner	Bert	TE Connectivity	TE Connectivity				
Boyer	Rich	APTIV	APTIV				
Barbero	Fernando	KDPOF	KDPOF	X	X	X	X
Bordogna	Mark	Intel	Intel				
Borda	Jamila	BMW	BMW		X	X	X
Brooks	Paul	Viavi Solutions	Viavi Solutions	X			
Bruckman	Leon	Huawei	Huawei	X	X		
Castro	Jose	Panduit	Panduit	X			X
Chang	Jae-yong	Keysight	Keysight				
Choudhury	Mabud	OFS	OFS	X			X
Chuang	Keng Hua	HPE	HPE				
Cuesta	Emilio	TE Connectivity	TE Connectivity	X		X	
Dittmann	Markus	KDPOF	KDPOF	X		X	X
Donthu	Suresh	Corning	Corning	X			
Dube	Kae	UNH-IOL	UNH-IOL	X		X	X
Eek	Magnus	Volvo Cars	Volvo Cars				
Felgenhauer	Alexander	Yazaki	Yazaki				
Ferretti	Vincent	Corning	Corning	X	X		
Fortusini	David	Corning	Corning				
Fukuoka	Takashi	AutoNetworks Technologies Ltd.	AutoNetworks Technologies Ltd.; Sumitomo Electric Industries, Ltd.	X		X	X
Giovanne	Laura	Broadcom	Broadcom				
Glanzner	Martin	SEI Antech-Europe GmbH	SEI Antech-Europe GmbH	X			X
Gomez	Chisato	Nitto Denko Corporation	Nitto Denko Corporation	X	X	X	X
Goto	Hideki	Toyota Motor Corporation	Toyota Motor Corporation	X	X	X	X
Grow	Robert	Robert M. Grow Consulting	RMG Consulting, KDPOF	X	X	X	X
Hajduczenia	Marek	Charter Communications	Charter Communications			X	
Harshbarger	Douglas	Corning Incorporated	Corning Incorporated	X	X	X	X
Hartmann	Stephan	Siliconally GmbH	Siliconally GmbH	X			X
Hayashi	Takehiro	HAT Labs	HAT Labs	X	X	X	X
HIRASE	Hidenari	AGC	AGC	X	X	X	X
Horrmeyer	Bernd	Phoenix Contact	Phoenix Contact				X
Huang	David	Broadcom	Broadcom				
Huang	Shaowu	Marvell	Marvell				
Hyakudai	Toshihisa	Sony	Sony	X	X		X
Hyakutake	Yasuhiro	Adamant Namiki Precision Jewel	Adamant Namiki Precision Jewel	X	X	X	X
Isono	Hideki	FOC	FOC	X	X	X	X
Jiménez	Andy	WESCO	WESCO	X	X	X	X
Kadry	Haysam	Ford Motor Company	Ford Motor Company	X			X
KAGAMI	Manabu	NI Tech	NI Tech	X	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	X	X
Kim	Joshua	Hirose USA	Hirose USA				
King	Roger	TRUMPF Photonic Components	TRUMPF Photonic Components	X	X	X	
Kinningham	Alan	I-PEX	I-PEX	X			
Kobayashi	Shigeru	AIO Core	AIO Core	X	X	X	X
Koeppendoerfer	Erwin	Leoni	Leoni	X	X	X	X
Kondo	Taiji	MegaChips	MegaChips	X	X	X	X
Law	David	HPE	HPE	X	X		X
Lewis	David	Lumentum	Lumentum	X	X	X	
Liu	Karen	Lightwave	Lightwave				
Lee	Bernard	Senko	Senko				
Lee	Sylvanus	Leviton	Leviton				
Lingle	Robert	OFS	OFS				
Malicoat	David	Malicoat Networking Solutions	Senko Advanced Components	X	X	X	X
Martino	Kjersti	Inneos	Inneos	X	X	X	X
Marques	Flavio	Furukawa electric	Furukawa Electric				
Masuda	Takeo	OITDA/PETRA	OITDA/PETRA	X	X	X	X
Matheus	Kirsten	BMW	BMW	X	X		
McMillan	Larry	Western Digital	Western Digital				
Mueller	Harald	Endress + Hauser	Endress + Hauser				
Mueller	Thomas	Rosenberger	Rosenberger		X		
Murty	Ramana	Broadcom	Broadcom	X	X	X	
Nakagawa	Hideki	AGC	AGC	X	X	X	X
New	Anthony	Prysmian Group	Prysmian Group				
Nicholl	Gary	Cisco	Cisco				
Nikolich	Paul	802 Chairman	802 Chairman				
Niihara	Yoshihiro	Fujikura	Fujikura	X	X	X	X
Ogura	Ichiro	Petra	Petra	X	X	X	X
Omori	Kumi	NEC	NEC				
Ortiz	David	KDPOF	KDPOF				
Pandey	Sujan	Huawei	Huawei		X		
Pankert	Joseph	TRUMPF Photonic Components	TRUMPF Photonic Components	X	X		
Pardo	Carlos	KDPOF	KDPOF	X	X	X	X
Parsons	Earl	Commscope	Commscope				X
Peng	Semmy	Huawei	Huawei	X	X	X	X
Pérez-Aranda	Rubén	KDPOF	KDPOF	X	X	X	X
Peteranderl	Ralf	Rosenberger	Rosenberger	X			
Pham	Phong	EastPoint	EastPoint				
Piehler	David	Dell	Dell				
Pimpinella	Rick	Panduit	Panduit	X	X	X	
Pinzón	Plinio	KDPOF	KDPOF				
Pitwon	Richard	Resolute Photonics	Resolute Photonics	X		X	X
Preis	Roland	MD Elektronik	MD Elektronik	X	X	X	X
Reinhard	Michael	SEI Antech-Europe GmbH	SEI Antech-Europe GmbH	X	X	X	X
Retting	Thomas	Beckhoff Automation	Becjhoff Automation	X			
Sambasivan	Sam	AT&T	AT&T		X	X	X
Savi	Olindo	Hubbell Incorporated	Hubbell Incorporated				
Sawano	Hiroshi	OITDA		X	X	X	X
Sayre	Edward	Samtec	Samtec				
Shukla	Priyank	Synopsys	Synopsys				
Shigematsu	Masayuki	Sumitomo Electric	Sumitomo Electric				
Shiino	Masato	Furukawa Electric	Furukawa Electric	X	X	X	X
Shukla	Priyank	Synopsys	Synopsys				
Silvano de Sousa	Jonathan	GG-Group	GG-Group			X	
Su	Charles	Huawei	Huawei	X		X	
Sun	Wensheng	Marvell	Marvell	X	X	X	X
Sun	Yi	OFS	OFS				

Suzuki	Yasuo	KDPOF Japan	KDPOF	X	X	X	X
Swanson	Steve	Corning Inc.	Corning Inc.	X	X	X	X
Takahashi	Ryutaro	Senko	Senko			X	
Takahashi	Satoshi	POF Promotion	POF Promotion	X	X	X	X
Takahashi	Tadashi	Nitto Denko Corporation	Nitto Denko Corporation	X	X	X	X
Takayama	Kazuya	Nitto Denko Corporation	Nitto Denko Corporation	X	X	X	X
Tan	I-Hsing	Broadcom	Broadcom				
Theuerkom	Thomas	Corning	Corning				
Theodoras	James	HG Genuine	HG Genuine				
Torres	Luisma	KDPOF	KDPOF	X	X	X	X
Tsujita	Yuichi	Nitto Denko Corporation	Nitto Denko Corporation	X	X	X	X
Tsuzaki	Nozomi	Independent	Independent	X	X	X	X
Ueno	Yuto	Sumitomo	Sumitomo	X	X	X	X
Vanderlaan	Paul	UL LLC	UL LLC	X			
Walsh	Thomas	KDPOF	KDPOF				
WATANABE	Yuji	AGC	AGC	X	X	X	X
Wendt	Mattias	Signify	Signify				
Wienckowski	Natalie	General Motors	General Motors	X	X	X	X
Wiesner	Michael	Trumpf	Trumpf				
Xu	Xing	Huawei	Huawei	X	X	X	X
Yamada	Osamu	Yazaki	Yazaki				
Yang	Yumeng	Huawei	Huawei			X	
Yasui	Hideshi	AGC	AGC	X	X	X	
Yonemura	Masatoshi	NITech	NITech			X	
Yonezawa	Kenji	AGC	AGC	X	X	X	X
Young	James	Commscope	Commscope	X			
Yurtin	John	APTIV	APTIV				
Zhiwei	Yang	ZTE	ZTE				
Zhong	Qiwen	Huawei	Huawei			X	
Zhu	Liang	Marvell	Marvell			X	

Tuesday, 13th July 2021, 12:00 (noon) UTC

The meeting was called to order at approximately 12:01 UTC Tuesday 29th June 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/jul_2021/Agenda_3cz_01_0721.pdf).

Mr. Grow presented the agenda for the meeting. The agenda was approved by unanimous consent. The 29 June interim minutes were 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 presented the liaison status with IEC TC 86. The TF should make a recommendation to replace our outgoing liaison representative. Mr. Swanson moved the following motion:

"The IEEE P802.3cz TF recommends that Vince E. Ferretti be confirmed as the outgoing liaison representative for the Category B liaison between IEEE 802.3 and IEC TC 86."

Mr. Abbott seconded the motion.

The motion was approved by unanimous consent.

Mr. Torres asked to continue with the D1.1 comment resolution following the order in *Chief Editor's Report* (https://www.ieee802.org/3/cz/public/8_jun_2021/CEReport_3cz_080621.pdf). Buckets 6,

and 7, with a total of 24 comments, were discussed and resolved. Having exhausted all the pending D1.1 comments, Mr. Torres thanked all commenters their work to improve the draft.

Mr. Pérez-de-Aranda asked to present *Holistic approach for VCSEL wavelength selection* (https://www.ieee802.org/3/cz/public/jul_2021/perezaranda_3cz_01_0721_wavelength.pdf). This presentation shows different criteria in addition to the wear-out and random failures reliability for VCSEL wavelength selection. The additional criteria are VCSEL multi-vendor availability, PHY complexity, OM3 fiber bandwidth, photodiode material and responsivity, and assembly options using flip-chip technique. Several questions were made and Mr. Pérez-de-Aranda provided answers.

Mr. Abbott asked to present *Estimated minEMB for OM3 at 1300nm* (https://www.ieee802.org/3/cz/public/jul_2021/abbott_3cz_01_0721_EMB1300_OM3.pdf). This presentation shows a benchmark estimate of EMB at 1300nm for Silicon Photonics sources as a starting point for consensus-building for fiber manufacturers and Silicon Photonics transceiver providers. The identified worst case minEMB for 1300nm is approximately 400MHz.km, that is less than the OFL BW. Several questions were made and Mr. Abbott provided answers.

Mr. Grow wrapped up the teleconference with the last slides of *Agenda and General Information* (https://www.ieee802.org/3/cz/public/jul_2021/Agenda_3cz_01_0721.pdf). Mr. Grow reminded the TF participants that the plenary meeting will continue July 14 at 12:00 UTC.

The meeting was recessed at approximately 13:54 UTC.

Wednesday, 14th July 2021, 12:00 (noon) UTC

The meeting was resumed at approximately 12:01 UTC Wednesday 14th July 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/jul_2021/Agenda_3cz_01_0721.pdf).

Mr. Grow reviewed the previously aproved agenda for the meeting.

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. Pérez-de-Aranda asked to present *Bit Error Ratio (BER) test mode proposal* (https://www.ieee802.org/3/cz/public/jul_2021/perezaranda_3cz_02_0721_ber_testmode.pdf). This presentation shows a baseline proposal to measure the bit error ratio (BER) of the link, including the PCS, PMA and PMD sublayers of two nGBASE-AU PHYs and a fiber optic cable connected to them. The proposal includes PHY TX and RX state diagrams and Clause 45 modifications to include the newly proposed registers. Several questions were made and Mr. Pérez-de-Aranda provided answers.

Mr. Pérez-de-Aranda asked to present *Loopback modes proposal* (https://www.ieee802.org/3/cz/public/jul_2021/perezaranda_3cz_03_0721_loopback_modes.pdf). This presentation shows a baseline proposal to complete the specification of the loopback modes in 802.3cz D1.1. Baseline text is provided to define each of the loopback modes already named (but not already specified) in D1.1. Several questions were made and Mr. Pérez-de-Aranda provided answers.

Having exhausted the scheduled presentations in the agenda, Mr. Grow wrapped up the teleconference with the last slides of *Agenda and General Information* (https://www.ieee802.org/3/cz/public/jul_2021/Agenda_3cz_01_0721.pdf). Mr. Grow asked the participants to provide presentations for the next week teleconferences (20 and 21 July) well in advance.

The meeting was recessed at approximately 12:56 UTC.

Tuesday, 20th July 2021, 12:00 (noon) UTC

The meeting was resumed at approximately 12:02 UTC Tuesday 20th July 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/jul_2021/Agenda_3cz_01_0721.pdf).

Mr. Grow presented the previously approved agenda for the meeting. The presentation list was amended and 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. Swanson moved the following motion:

"Recommend the appointment of Vince Ferretti as the IEEE 802.3 Liaison officer to IEC TC 86"

The motion was seconded by Mr. Pardo.

The motion passed by unanimous consent.

Mr. Swanson then moved the following motion:

"Recommend IEEE 802.3 send liaison letter https://www.ieee802.org/3/cz/public/jul_2021/grow_3cz_01_0721_TC86 liaison.pdf conditional on EC confirmation of Vince Ferretti as the IEEE 802.3 Liaison officer to IEC TC 86."

The motion was seconded by Mr. Pardo.

The motion passed by unanimous consent.

Mr. Pérez-de-Aranda asked to present *BASE-U EEE proposal* (https://www.ieee802.org/3/cz/public/jul_2021/perezaranda_3cz_04_2107_eee.pdf). This presentation shows a baseline proposal for Energy-Efficient Ethernet (EEE) specification in BASE-U. This baseline is based on the fast wake mode of operation specified in Clause 78.1. The presentation provides baseline text to be included in the draft in case that it is approved by the TF. Examples of entering and exiting Low Power Idle (LPI) state are provided and data about robust encoding of Physical Header in case of LPI and no RS-FEC decoding are also shown. Several questions were made and Mr. Pérez-de-Aranda provided answers.

Mr. Pérez-de-Aranda asked to present *Modal noise penalty and link budget proposal for 25, 10, 5 and 2.5 Gb/s* (https://www.ieee802.org/3/cz/public/jul_2021/perezaranda_3cz_05_2107_mn_link_budget.pdf). This presentation shows a modal noise model for Butt Coupling (BC) and Expanded Beam Optics (EBO) connectors. An updated link budget results obtained by simulation will be presented together with a baseline proposal that considers implementation margins.

Mr. Murty asked to present *A single PMD to cover 840-990 nm with OM3 fiber* (https://www.ieee802.org/3/cz/public/jul_2021/murty_3cz_01_072021.pdf). This presentation proposed a PMD with a range from 840 to 950 nm in wavelength and a wideband receiver. Many questions about availability of this technology and its relative cost were raised, and Mr. Murty provided answers.

Having exhausted the scheduled time, Mr. Grow wrapped up the teleconference.

The meeting was recessed at approximately 14:05 UTC.

Wednesday, 21th July 2021, 12:00 (noon) UTC

The meeting was resumed at approximately 12:02 UTC Wednesday 21th July 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/jul_2021/Agenda_3cz_01_0721.pdf).

Mr. Grow presented the previously approved agenda for the meeting.

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. Pitwon asked to present *BASE-U EEE proposal* (https://www.ieee802.org/3/cz/public/jul_2021/ogura_3cz_01a_0721_Status_Silicon%20photonics%20link%20budget_v02.pdf). This presentation shows the status of the works towards a link budget of a system based on Silicon Photonics (SiP). Experiments with SiP transceiver and OM3 fiber were reported. Mr. Pitwon pointed out that more data about GIPOF fiber is needed. Several questions were made and Mr. Pitwon provided answers.

Mr. Pérez-de-Aranda asked to present *Current situation on wavelength selection* (https://www.ieee802.org/3/cz/public/jul_2021/perezaranda_3cz_06_0721_wavelength_situation.pdf). This presentation was in response to the wideband (840-990 nm) PMD proposal made by Mr. Murty, Tuesday 20th. Mr. Pérez-de-Aranda stated that the wideband PMD proposal is based on a currently unavailable photodiode technology in the market (SWDM PDs). This prevents testing it in independent laboratories, as has been done and reported in this TF with VCSEL technologies. Maturity level, relative cost vs added value to the final customer of SWDM PD were also challenged in this presentation. Mr. Pérez-de-Aranda proposed to add items to the ToDo list in order to obtain the same level of technical, relative cost and market availability information about SWDM PD as is already available for VCSEL +OM3 + Single wavelength PD. Many questions were made and Mr. Pérez-de-Aranda provided answers.

Mr. Torres asked to present *Chief Editor report* (https://www.ieee802.org/3/cz/public/jul_2021/CEReport_3cz_0721.pdf). This presentation showed the current status of the drafting efforts. Mr. Torres mentioned a couple updates to response resulting from email discussion (changes within the editorial licence typically granted to editors). With the D1.1 comment resolution now complete, Mr. Torres moved the following motion:

"Move to add closed comments received on P802.3cz/D1.1 as published in https://www.ieee802.org/3/cz/comments/Comments_3cz_D1p1_With_Resolution.pdf with editorial license in P802.3cz/D1.2."

Ms. Wienckowski seconded the motion.

The motion was approved by unanimous consent.

Mr. Torres stated that, having no additional technical content approved by the TF, it makes no sense to generate the next draft at this time. Mr. Torres pointed out that the TF has at this point baselines for most of the remaining technical content to reach a technical complete draft, but that content need first to be approved for inclusion in the draft.

Mr. Torres proposed some ideas to move forward and to not delay the project. Several questions were made and Mr. Torres provided answers.

Mr. Swanson asked Mr. Grow and Mr. Law about the situation of the 802.3 WG Vancouver meeting in November. Mr. Law informed that early September (7 Sept) is the deadline to decide if the meeting will be a teleconference or an in-person meeting. The availability of mixed mode (in-person presence and teleconference) is still being discussed, and will depend on the percentage of people that is expected to attend in person. Mr. Law clarified that the September interim meeting will be 100% virtual.

Having reach the end of the agenda and also the scheduled time, Mr. Grow wrapped up the teleconference. Mr. Grow announced that the next meeting will be 3 August and that will be an Ad Hoc meeting unless someone asks to convert it into an interim meeting with enough time advance.

Having reached the end of the agenda, the meeting was adjourned at approximately 14:08 UTC.