Approved Minutes

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet Task Force

Interim Meeting

September 14-15, 2016

Fort Worth, TX, USA

Prepared by Kent Lusted

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IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet Task Force – September 14, 2016:

Prepared by Kent Lusted

IEEE P802.3cd 50 Gb/s, 100 Gb/s, and 200 Gb/s Ethernet Task Force meeting convened at ~1:00 p.m., September 14, 2016, by Mark Nowell, IEEE P802.3cd Task Force Chair.

Mr. Nowell welcomed attendees.

Chair reviewed agenda in http://www.ieee802.org/3/cd/public/Sept16/agenda_3cd_01_0916.pdf

Introductions were made.

Motion #1:
Move to approve the agenda:

- Moved by: Thananya Baldwin
- Second by: Paul Kolesar
- Passed by voice without opposition

Minutes were posted shortly after the meeting. Chair asked if there were any comments on the posted minutes. Kent noted that he did not receive requests for changes or modifications. No one responded.

Motion #2:
Move to approve the July 2016 minutes:

- Moved by: Tom Palkert
- Second by: Thananya Baldwin
- Passed by voice without opposition

Chair reminded participants to observe meeting decorum. Called for members of the press. No one responded. Photography and recording are not permitted.

Chair reviewed the reflector and web information. Chair reviewed the ground rules for the meeting.

Chair reviewed the attendance procedures. Chair reminded participants to sign into the IEEE Attendance Tool and to sign the book.

Chair reviewed the IEEE structure.

Chair reviewed the Bylaws and Rules slides in
http://www.ieee802.org/3/cd/public/Sept16/agenda_3cd_01_0916.pdf

IEEE Patent Policy: Chair reviewed the Patent related slides on the 4 slides contained in the agenda. Chair calls for potentially essential patents. No one responded. Chair read the Guidelines for IEEE WG meetings. No one responded.

Chair advised the WG attendees that:

- The IEEE's patent policy is described in Clause 6 of the *IEEE-SA Standards Board Bylaws*;
- Early identification of patent claims which may be essential for the use of standards under development is strongly encouraged;
- There may be Essential Patent Claims of which the IEEE is not aware. Additionally, the IEEE, the WG, nor the WG chair can ensure the accuracy or completeness of any assurance or whether any such assurance is, in fact, of a Patent Claim that is essential for the use of the standard under development.

No one responded.

Chair reviewed the IEEE 802.3 Standards Process.

No liaison or informal communications were received.

Chair reviewed the P802.3cd Ethernet Task Force approved project documentation.

Chair reviewed the adopted objectives. Chair noted that the 100 Gb/s PHY for operation over SMF with lengths up to at least 2 km was adopted by the Task Force but not the Working Group at the July 2016 Plenary.

Chair reviewed the timeline in the agenda. See:
http://www.ieee802.org/3/cd/P802d3cd_timeline.pdf

Chair asked all proponents of the baseline proposals to continue to build consensus in order to meet the adopted timeline.

Chair noted that there is an issue with the project documentation based on the potential baselines (contributed presentations) for the 2 km 100 Gb/s SMF objective. The PAR and CSD responses may need modification, if these baselines are adopted. Chair noted that the Task Force will review this week a set of presentations that propose a potential resolution to this issue.

Goals for the meeting:

- Review technical contributions
- Build, assess consensus on proposals
- Consider making some decisions:
    - Baselines
    - New Objectives
    - New CSD document
- Establish work items for November Meeting
- Editorial team planning to generate D1.0 with approved baselines

Chair noted that there was an updated presentation from Kent Lusted regarding the nomenclature. Chair asked if there was objection to hearing this presentation. No one responded on this topic. There was a concern raised about another late presentation from Mr. Kimber. Chair noted that he indicated that he would be lenient on the submission deadline due to the US holiday weekend immediately preceding the due date and a number of contributors took advantage of this leniency, not just Mr Kimber. No more concerns were raised.

Future Meetings:

- November 2016 Plenary
  - Week of Nov 7th, 2016 – San Antonio, TX, USA
- January 2017 Interim
  - Week of Jan 9th, 2017 – Huntington Beach, CA, USA
- March 2017 Plenary
  - Week of March 12th, 2017 – Vancouver, BC, Canada

Anyone interested in hosting a meeting should contact the Chair or Steve Carlson.

IEEE P802.3cd Task Force Ad-hoc report:
See http://www.ieee802.org/3/cd/public/Sept16/lusted_3cd_01_0916.pdf

- Kent Lusted noted that the joint ad hoc meetings will likely resume on September 28, 2016. Details will be announced over the reflector.

Presentation #1:
"Editorial Consideration", Matt Brown
See: http://www.ieee802.org/3/cd/public/Sept16/brown_3cd_01_0916.pdf

- Author noted that Adam Healey agreed to provide an overview of the commenting tool in an ad hoc meeting.
- Chair asked if there was anyone unfamiliar with the commenting tool process. No one responded.

Presentation #2:
"DR1 Use Cases & End User Perspective", Tom Issenhuth
See: http://www.ieee802.org/3/cd/public/Sept16/issenhuth_3cd_01a_0916.pdf

- Updated presentation '01a' with additional supporters
- Discussed that the use cases presented are not centric to Microsoft because this is a multi-vendor presentation.
- Discussed the channel topology for the tier to tier case on slide 6. It was noted that the location of the physical location of the breakout of fiber can impact the channel and should be considered during the optical discussions.

Chair asked participants to focus on clarifying questions and that there will be time later to discuss and debate the various proposals.

Chair noted that the Task Force webpage was updated with the late contribution from Kent Lusted on nomenclature additions.

Presentation #3:
"Broad Market Potential & Economic Feasibility: 100G Single λ PAM4 500m", Justin Abbott
See: http://www.ieee802.org/3/cd/public/Sept16/abbott_3cd_01a_0916.pdf

- Updated presentation '01a'
- Clarifying questions were asked and answered.

Presentation #4:
"Real 100G single Lambda optical link experiment and data", Francesco Caggioni
See: http://www.ieee802.org/3/cd/public/Sept16/caggioni_3cd_01_0916.pdf

- Discussed the test setup used for the experiment on slide 5.
- There was a request to include the TX eye diagram in a future contribution.
- Discussed assumptions made in the equipment selection for the experiment and the effects of small-scale integration.
- Discussed the pattern used for the experiment. It is a non-gray coded PRBS31Q.

Break at ~3:00 p.m. Resumed at ~3:20 p.m.

Presentation #5:
"Component Vendor Perspective on PMDs for 100G/lambda", Mark Kimber
See: http://www.ieee802.org/3/cd/public/Sept16/kimber_3cd_01a_0916.pdf

- Updated presentation '01a' with editorial changes.
- Questions were asked about the simulation parameters.
- Discussed the desired BER floor for the link performance.

Presentation #6:
"Technical Feasibility Study of 106 Gb/s PAM4 Optical Link", Hai-Feng Liu
See: http://www.ieee802.org/3/cd/public/Sept16/liu_3cd_01_0916.pdf

- There was a request for TDECQ measurements. It was noted that the data is expected to be available in a future meeting.
- Discussed the feasibility of post-processing with DSP.

Presentation #7:
"Technical Feasibility Update on single wavelength 100Gbps PAM4 modulation", Matt Traverso
See: http://www.ieee802.org/3/cd/public/Sept16/traverso_3cd_02a_0916.pdf

- Author noted an error on the conclusion slide (page 10) that will be fixed in version '02a'
- It was noted that the MPI penalty needs further study.

Presentation #8:
"Path forward for 100G SMF objectives in 802.3cd", Gary Nicholl
See: http://www.ieee802.org/3/cd/public/Sept16/nicholl_3cd_01b_0916.pdf

- Discussed that the proposal is for 100G-DR not 100G-FR. The proposed changes do not address all of the potential markets.
- Additional clarifying questions were asked and answered.

Chair noted that the published agenda indicates a start time of 9:00 a.m. on Thursday. Chair asked for a show of hands opposing an 8:00 a.m. start on Thursday. A few people indicated. Chair asked for a show of hands in favor of an 8:00 a.m. start on Thursday. Many people indicated. Chair ruled that a majority supported the 8:00 a.m. start. Chair announced an 8:00 a.m. start on Thursday and will send the notice over the email reflector.

Presentation #9:
"Proposed Updated Responses: Criteria for Standards Development (CSD)", Matt Brown
See: http://www.ieee802.org/3/cd/public/Sept16/brown_3cd_02a_0916.pdf

- Author noted that the '02' version of the presentation was given in the September 7 ad hoc.
- There was a request to confirm that the presentation matches the version at the end of the September 7 ad hoc meeting. Barring changes made on the Task Force floor today, the presented version is identical as the ad hoc version.
- Author announced that he will review each slide in series and ask for feedback.
- There was a discussion on the phrase "as appropriate" on page 5. It was agreed to change the text.
- Editorial changes were made to slide 7
- Updated file with Task Force changes is '02a'

Straw Poll #1: 5:01 p.m.
I am ready to adopt:
  – Updated objectives for 100Gb/s PHYs as outlined in nicholl_3cd_01b_0916.pdf
  – Updated CSD response for 802.3cd as outlined in brown_3cd_02a_0916.pdf
Y: 66, N: 2, Abstain: 23

Presentation #10:
"Towards a baseline proposal for a 100 Gb/s SMF PHY 500 m using single wavelength PAM4 modulation 100GBASE-DR", Matt Traverso
See: http://www.ieee802.org/3/cd/public/Sept16/traverso_3cd_01a_0916.pdf

- Updated presentation '01a' with additional supporters
- Discussed the desire to adopt the baseline to progress forward on the initial draft.

- Chair asked the author and interested participants to prepare a presentation to facilitate adoption in a motion at this Task Force meeting.
- Discussed the number of discrete reflectances.

Break for the day at ~5:15 p.m.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet Task Force – September 15, 2016:

Prepared by Kent Lusted

Meeting convened at ~8:10 a.m., September 15, 2016, by Mark Nowell, IEEE P802.3cd Task Force Chair.

Chair reviewed the plans for the day. Chair displayed the agenda presentation:
http://www.ieee802.org/3/cd/public/Sept16/agenda_3cd_01_0916.pdf

Chair reminded participants to sign into the IEEE Meeting Attendance Tool and to sign the attendance book.

Presentation #11
"Multimode fiber media types for 802.3cd", Rick Pimpinella
See: http://www.ieee802.org/3/cd/public/Sept16/pimpinella_3cd_01a_0916.pdf

- Updated presentation '01a' with backup material that was shown in the session.
- Discussed the effect of modal dispersion.
- Discussed the usage model for the MMF breakout case

Chair thanked Ixia for hosting the interim and the social event.

Presentation #12
"100GBASE-SR2 baseline proposal update", Jonathan King
See: http://www.ieee802.org/3/cd/public/Sept16/king_3cd_01a_0916.pdf

- Updated version '01a' with additional supporters.
- Discussed the use case for 100 Gb/s MMF breakout of 200GBASE-SR4

Presentation #13
"Updated baseline proposal for the 100 Gb/s MMF objective using two-wavelength PAM4 transmission", Jonathan Ingham
See: http://www.ieee802.org/3/cd/public/Sept16/ingham_3cd_01_0916.pdf

- Clarifying questions were asked and answered

Motion #3: 9:32 a.m.
Move to adopt the updated
  - Objectives for 100Gb/s PHYs as outlined in Slide 10 of nicholl_3cd_01b_0916.pdf
  - CSD response for 802.3cd as outlined in brown_3cd_02a_0916.pdf
- M: Gary Nicholl
- S: Matt Brown
- Technical (>=75%),
- Y: 79 N: 0 A: 19

- Results: Passes 9:42 a.m.

Chair noted that if this motion passes, then the objectives will be presented at the Working Group meeting tonight. Discussed the path to getting EC approval of the CSDs.

Straw Poll #2:
For the 100 Gb/s 100 m MMF objective, I would support:
  - A: The parallel-fiber MMF proposal outlined in king_3cd_01a_0916
  - B: The WDM MMF proposal outlined in ingham_3cd_01_0916
- A: 41 , B: 13

It was requested to remove the "C: Need more information" as an option to the straw poll. Chair agreed. Chair noted that there will be subsequent straw polls to measure the consensus on the path forward related to this objective. Chair noted that participants who want more information should refrain from voting on Straw Poll #2; the goal of this straw poll is to find which proposal has the most support.

Chair noted that approximately 100 people were in the room.

Straw Poll #3:
In order to resolve the 100 Gb/s 100m MMF objective would be open to considering
  - A : removing the objective for 100 Gb/s MMF
  - B: adding an objective to enable both solutions
  - C: seeing a single solution for the current objective
- A: , B: , C:

Straw Poll was shown but not attempted due to a motion from the floor.

Motion #4: 10:08 a.m.
Move to adopt king_3cd_01a_0916 as the baseline for the 100 Gb/s MMF objective
- M: Jonathan King
- S: John D'Ambrosia
- Technical (>=75%),
- Y: N: A
- Results:

Motion #5: 10:15 a.m.
Move to table motion #4
- M: Paul Kolesar
- S: Adee Ran
- Procedural >50%
- Y: 24 N: 28 A: 27
- Results: motion fails 10:22 a.m.

Return to Motion #4: 10:23 a.m.
Move to adopt king_3cd_01a_0916 as the baseline for the 100 Gb/s MMF objective

- M: Jonathan King
- S: John D'Ambrosia
- Technical (>=75%),
- Y: 58 N: 9 A: 23
- Results: passes 10:27 a.m.

There was a question on the difference between version '01' of the Jonathan King contribution on the website and the version '01a' presented. Chair noted that version '01a' only had additional supporters.

Break at ~10:30 a.m. Resume at ~10:55 a.m.

Presentation #14
"Baseline COM parameters for 50G Backplane and Copper Cable specifications", Upen Reddy Kareti
See: http://www.ieee802.org/3/cd/public/Sept16/kareti_3cd_01_0916.pdf

- Updated version '01a' with an additional number in magenta
- Discussed the differences in the COM parameters between the presentation and the parameters specified in P802.3by
- Discussed the quality of the channels used as inputs in the COM simulations.

Presentation #15
"Baseline Proposal for 50, 100, and 200 Gb/s Backplane and Copper Cable", Mike Li
See: http://www.ieee802.org/3/cd/public/Sept16/li_3cd_01a_0916.pdf

- updated with '01a' with editorial changes
- Discussed that the differential return loss specification is informative in Cl 93.

Chair outlined the plans for the rest of the day: hear more baseline proposals and discuss nomenclature.

Break at ~12:00 p.m. Resume at ~1:10 p.m.

Presentation #16
"Baseline Proposal for 50, 100, and 200 Gb/s Backplane and Copper Cable", Mike Li
See: http://www.ieee802.org/3/cd/public/Sept16/li_3cd_01b_0916.pdf

- Chair noted that this presentation is an updated version '01b' with the changes to version '01a' discussed before lunch.

Motion #6:
Move to adopt li_3cd_01b_0916.pdf and kareti_3cd_01a_0916.pdf as the baseline proposal for 50 Gb/s, 100 Gb/s and 200 Gb/s copper cable and backplane PMDs

- M: Mike Li

- S: Upen Reddy Kareti
- Technical (>=75%),
- Y: 70 N: 0 A: 6
- Results: passes 119pm

Presentation #17
"More detailed baseline proposal for a 100 Gb/s SMF PHY 500 m using single wavelength PAM4 modulation 100GBASE-DR", Matt Traverso
See: http://www.ieee802.org/3/cd/public/Sept16/traverso_3cd_03a_0916.pdf

- Updated presentation '03a' with additional baseline details for the initial draft of the specification, as a result of consensus building.
- Clarifying questions were asked and answered.

Motion #7: 1:31 p.m.
Move to adopt traverso_3cd_03a_0916.pdf as the baseline proposal for the 100 Gb/s 500m SMF objective

- M: Matt Traverso
- S: Brian Welch
- Technical (>=75%),
- Y: 62 N: 0 A: 15
- Results: passes 1:34 p.m.

Presentation #18
"PCS Clause Need to Document Separated and Integrated PCS", Ali Ghiasi
See: http://www.ieee802.org/3/cd/public/Sept16/ghiasi_3cd_01_%200916.pdf

- Clarifying questions were asked and answered.
- Discussed the PICs for internal interfaces that may not be implemented.

Presentation #19
"Baseline proposal for 'Alignment Marker mapping to FEC lanes' for 50GbE and NG 100GbE", Gary Nicholl
See: http://www.ieee802.org/3/cd/public/Sept16/nicholl_3cd_02_0916.pdf

- Presentation addresses a TBD in the baseline proposal.
- Clarifying questions were asked and answered

Motion #8: 2:05 p.m.
Move to adopt nicholl_3cd_02_0916.pdf as an update to the 50 Gb/s and 100 Gb/s RS/MII, PCS, FEC, and PMA baseline

- M: Gary Nicholl
- S: Ali Ghiasi
- Technical (>=75%),
- Y: 68 N: 2 A: 11

- Results: passes 2:07 p.m.

Motion #9: 2:07 p.m.
Move to direct the editorial team to generate D1.0 for Task Force review with editorial license based upon the adopted baseline proposals.

- M: Matt Brown
- S: Gary Nicholl
- Technical (>=75%),
- Y: 91 N: 0 A: 0
- Results: passes 2:14 p.m.

Discussed the implication of generating Draft 1.0 and circulating it for Task Force in a single motion.

Presentation #20
"Nomenclature", Kent Lusted
See: http://www.ieee802.org/3/cd/public/Sept16/lusted_3cd_02a_0916.pdf

- Updated version '02a' with a correction.
- Discussed the various options.
- Author asked for feedback from the participants. Feedback was expressed.
- Chair and author summarized the feedback themes:
    - CAUI-4 could be confused for 100G
    - Make similar nomenclature for the RS-FEC(544) versions of the 50 Gb/s and 100 Gb/s AUI interfaces. Perhaps a designation such as "F" for "FEC"

Chair asked Kent Lusted to prepare a few options for consideration by the Task Force.

Break at ~3:00 p.m. Resume ~3:35 p.m.

Presentation #21:
"Nomenclature Feedback", Kent Lusted
See http://www.ieee802.org/3/cd/public/Sept16/lusted_3cd_03_0916.pdf

- Author noted that the presentation was a summary of the feedback provided on lusted_3cd_02a_0916 before the break.
- There was much discussion on option #1 and option #2.
- Option #3 was created at the request of Ali Ghiasi.

Straw Poll #4:
In lusted_3cd_03_0916, I prefer the following nomenclature

- Option1: CAUI-4, 100GAUI-4, 100GAUI-2, LAUI-2, 50GAUI-2, 50GAUI-1
- Option 2: CAUI-4, CAUI-4F, CAUI-2F, 50GAUI-2, 50GAUI-2F, 50GAUI-1F
- Option 3: CAUI-4, 100GAUI-4F, 100GAUI-2F, 50GAUI-2, 50GAUI-2F, 50GAUI-1F

- Pick one
- Option 1: 25 Option 2: 17 Option 3: 18

Straw Poll #5:
In lusted_3cd_03_0916, I prefer the following nomenclature
  - Option1: CAUI-4, 100GAUI-4, 100GAUI-2, LAUI-2, 50GAUI-2, 50GAUI-1
  - Option 2: CAUI-4, CAUI-4F, CAUI-2F, 50GAUI-2, 50GAUI-2F, 50GAUI-1F
  - Option 3: CAUI-4, 100GAUI-4F, 100GAUI-2F, 50GAUI-2, 50GAUI-2F, 50GAUI-1F
- Chicago rules
- Option 1: 41 Option 2: 27 Option 3: 37

Presentation #22:
"P802.3cd Proposed Draft Structure", Matt Brown
See: http://www.ieee802.org/3/cd/public/Sept16/brown_3cd_03a_0916.pdf

Chair asked if there was opposition to the editors using option #1 for Draft 1.0 of the specification. No one responded.

Chair asked if there was opposition to the optical PMD definitions shown in lusted_3cd_03_0916. Piers Dawe indicated dissatisfaction with the 100GBASE-DR definition. Chair noted that the nomenclature and definitions will be discussed in the forthcoming ad hoc conference calls.

Attendance Straw Polls:
- I will attend the IEEE P802.3cd meetings at the November plenary in San Antonio, TX, USA (week of November 7, 2016)
  - Y: 59, M: 10
- I will attend the IEEE P802.3cd meetings at the January interim in Orange County, CA, USA (week of January 9, 2017)
  - Y: 48 , M: 19

Matt Brown spoke to the schedule for the initial draft. Expect a 2 week review cycle. The schedule details will be discussed at an upcoming ad hoc. The draft review will be announced over the email reflector.

Motion #10:
Move to Adjourn:
- Moved by: Tom McDermott
- Second by: Mark Gustlin
- Passed by voice vote without opposition

Meeting ended at ~4:30 p.m.

Attendees

P802.3cd, September 2016			14-Sep-16	15-Sep-16
Last Name	**First Name**	**Affiliation**	**Wednesday**	**Thursday**
Abbott	Justin	Lumentum	x	
Ali	Tamer	MediaTek	x	x
Amezcua	Adrian	Prysmian Group	x	x
Andres	David	Marvell Semiconductor	x	x
Anslow	Pete	Ciena Corporation	x	x
Baden	Eric	Broadcom	x	x
Baldwin	Thananya	Ixia	x	
Bernstein	Gary	Leviton	x	
Bhatt	Vipul	Finisar	x	x
Bliss	Will	Broadcom	x	x
Booth	Brad	Microsoft	x	
Bouda	Martin	Fujitsu	x	x
Brooks	Paul	Viavi Solutions	x	x
Brown	Matt	APM	X	X
Butter	Adrian	Global Foundries	x	
Cady	Ed	Luxshare	x	x
Caggioni	Francesco	APM	x	
Chalupsky	David	Intel	x	x
Chang	Xin	Huawei	x	x
Chen	David	Applied Optoelectronics		x
Cole	Chris	Finisar	x	
D'Ambrosia	John	FutureWei, Subsidiary of Huawei	x	
Dawe	Piers	Mellanox	x	x
Dillard	John	MicroSemi	x	x
DiMinico	Christopher	MC Communications/Panduit	x	x
Dudek	Mike	Cavium, A QLogic Company	x	x

Dupuis	Mark	Web Industries	x	
Estes	Dave	Spirent Communications	x	x
Ewen	John	Global Foundries	x	x
Farjad	Ramin	Aquantia	x	x
Fife	James	eTopus Technology	x	x
Flatman	Alan	LAN Technologies	x	x
Furlong	Michael	Inphi	x	
Ghiasi	Ali	Ghiasi Quantum, Huawei	x	x
Gorshe	Steve	microsemi	x	x
Grow	Bob	RMG Consulting	x	
Guo	Bujin	Applied Optoelectronics	x	
Gupta	Atul	MACOM	x	x
Gustlin	Mark	Xilinx	x	x
Hayakawa	Akinori	Fujitsu Laboratories	x	x
Healey	Adam	Broadcom Limited	x	
Hegde	Raj	Broadcom	x	x
Hidaka	Yasuo	Fujitsu Laboratories of America	x	x
Huang	Xi	Huawei	x	x
Ingham	Jonathan	Foxconn Interconnect Technology	x	x
Isono	Hideki	Fujitsu Optical Components	x	x
Issenhuth	Tom	Microsoft	x	x
Jackson	Ken	Sumitomo	x	x
Johnson	Stephens	UNH-IOL	x	
Jones	Peter	Cisco		x
Kareti	Upen Reddy	Cisco	x	x
Kim	Yong	Broadcom	x	
Kimber	Mark	Semtech	x	x
Klempa	Mike	UNH-IOL	x	

Kolesar	Paul	CommScope	x	
LeCheminant	Greg	Keysight Technologies	x	x
Leizerovich	Hanan	Multiphy	x	
Lewis	Dave	Lumentum	x	x
Li	Mike	Intel	x	x
Lim	Jane	Cisco	x	x
Lingle, Jr.	Robert	OFS	x	x
Liu	Hai-Feng	Intel	x	x
Lusted	Kent	Intel	x	x
Maki	Jeffery	Juniper Networks	x	x
Malkiman	Yonatan	Mellanox	x	x
Marris	Arthur	Cadence	x	x
Matoglu	Erdem	Amphenol	x	x
McDermott	Tom	Fujitsu	x	x
McDonough	John	NEC America	x	x
McSorley	Greg	Amphenol	x	
Mellitz	Richard	Samtec	x	x
Mooney	Paul	Spirent Communications	x	x
Muir	Ron	JAE	x	
Murray	Dale	Lightcounting	x	x
Nadolny	Jim	Samtec	x	
Nakamoto	Edward	Spirent Communications	x	x
Nelson	John	Arista Networks	x	x
Nicholl	Gary	Cisco	x	
Norimatsu	Takayasu	Hitachi	x	x
Nowell	Mark	Cisco	x	x
Ofelt	David	Juniper Networks	x	
Palkert	Tom	Molex - MACOM	x	x
Parthasarathay	Vasudevan	Broadcom	x	x
Patra	Lenin	Marvell Semiconductor	x	x
Pepper	Gerald	Ixia	x	
Pham	Phong	US Conec	x	x

Piehler	David	Dell EMC	x	x
Pimpinella	Rick	Panduit Corp.	x	x
Poelstra	Henry	Teledyne Lecroy	x	x
Rabinovich	Rick	IXIA	x	x
Ran	Adee	Intel	x	x
Rechtman	Zvi	Mellanox	x	
Rotolo	Salvatore	ST Microelectronics	x	x
Sakai	Toshiaki	Socionext	x	x
Schube	Scott	Intel	x	x
Sedarat	Hossein	Aquantia	x	x
Shirani	Ramin	Aquantia	x	x
Shrikhande	Kapil	Innovium	x	x
Slavick	Jeff	Broadcom Limited	x	
Sommers	Scott	Molex	x	
Sone	Yoshiaki	NTT	x	x
Sparrowhawk	Bryan	Leviton		x
Sprague	Ted	Infinera	x	x
Srivastava	Atul	NTT Electronics	x	x
Stassar	Peter	Huawei	x	x
Stephen	Didde	Keysight Technologies		x
Stone	Rob	Broadcom	x	
Sun	Phil	Marvell Semiconductor	x	x
Swanson	Steve	Corning	x	x
Szczepanek	Andre	Inphi	x	
Tailor	Bharat	Semtech Corp	x	x
Takahara	Tomoo	Fujitsu Laboratories	x	x
Tamura	Kohichi	Oclaro	x	x
Tooyserkani	Pirooz	Cisco	x	x
Tracy	Nathan	TE Connectivity	x	x
Traverso	Matt	Cisco	x	x
Trowbridge	Steve	Nokia	x	x
Twombly	Jeff	Credo	x	

Uday	Poororla	GigPeak	x	
Ulrichs	Ed	Source Photonics	x	
Vanderlaan	Paul	Berk-Tek LLC	x	x
Wang	Xinyuan	Huawei	x	x
Webb	Christopher	Teledyne Lecroy	x	x
Welch	Brian	Luxtera	x	
White	Martin	Cavium	x	
Xu	Qing	Belden	x	x
Xu	Yu	Huawei	x	
Zambell	Andrew	Amphenol	x	
Zhang	Huanlin	Applied Optoelectronics	x	
Zhenwei	Cui	Huawei	x	
Zhuang	Yan	Huawei	x	
Zivny	Pavel	Tektronix		x