

Unapproved Minutes

# IEEE P802.3ck 100 Gb/s, 200 Gb/s and 400 Gb/s Electrical Interfaces Task Force

Telephonic series for November 2021 Meeting:

November 17, November 23, November 24

Online Meeting

Prepared by Beth Kochuparambil, Adeel Ran and Kent Lusted

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# IEEE P802.3ck 100 Gb/s Electrical Lane Task Force – November 17, 2021

*Prepared by Kent Lusted and Beth Kochuparambil*

## Proposed Agenda:

- Approval of the Agenda
- Approval of Sept. 22nd minutes:
  - [https://www.ieee802.org/3/ck/public/adhoc/sept22\\_21/minutes\\_092221\\_3ck\\_adhoc.pdf](https://www.ieee802.org/3/ck/public/adhoc/sept22_21/minutes_092221_3ck_adhoc.pdf)
- IEEE Patent Policy reminder
- IEEE Copyright reminder
- IEEE Participation Requirements reminder
- Task Force Status & Next Steps
- Chief Editor's Report
- Comment Resolution
  - Comment order is unknown at this time, but know that the Common Mode topic is planned for this week.
- Liaison Letters

Presentations posted at: [https://www.ieee802.org/3/ck/public/21\\_11/index.html](https://www.ieee802.org/3/ck/public/21_11/index.html)

Meeting began at ~7:15 a.m. Pacific by Beth Kochuparambil, IEEE 802.3ck Task Force Chair.  
(Note: all times are Pacific time zone unless otherwise indicated)

Chair apologized for the delayed start due to virtual meeting tool issues.

Meeting began with the agenda presentation

[https://www.ieee802.org/3/ck/public/21\\_11/agenda\\_3ck\\_01\\_1121.pdf](https://www.ieee802.org/3/ck/public/21_11/agenda_3ck_01_1121.pdf)

Chair noted that every attendee at any IEEE 802 virtual plenary meeting must register and pay a fee to participate. If the individual is in arrears:

[1] The individual is not permitted to register for any future IEEE 802 Plenary or IEEE 802 Subgroup Interim (if registration is required).

[2] As a result of [1], the individual is not permitted to attend any portion of a technical meeting that is part of an IEEE 802 plenary session. They are also not permitted to attend any

portion of a technical meeting that is part of an IEEE 802 Subgroup Interim if that IEEE 802 Subgroup Interim required registration.

Chair reminded participants that Task Force attendance would be taken from the webex logs. Chair noted that the attendance for the IEEE 802.3 Working Group would be taken from the IEEE Meeting Attendance Tool.

The chair reminded participants to indicate full names and employer/affiliation correctly for the meeting minutes. Reminded participants to mute lines when not speaking and reviewed the steps to unmute.

Chair asked if there was objection to approving the shown agenda. No one responded. The agenda was approved.

The minutes for the September/October 2021 meeting series were posted to the website. (see: [https://www.ieee802.org/3/ck/public/21\\_09/minutes\\_3ck\\_0921a.pdf](https://www.ieee802.org/3/ck/public/21_09/minutes_3ck_0921a.pdf) ) Chair noted that an updated version '0921a' provided the attendee list, which was inadvertently omitted in the original version. Chair asked if there were modifications or corrections to the posted minutes. No one responded. Chair asked if there was objection to approving the posted minutes. No one responded. Minutes were approved by unanimous consent.

Chair reviewed the slide with the Participation requirements.

Chair asked if anyone participating had not read the copyright slide set – no one responded. Chair showed the IEEE-SA copyright slides.

Chair asked if anyone participating had not read the patent slide set – no one responded. Chair showed the patent policy slides and did the call for Potentially Essential Patents – no one responded.

Chair reviewed the ground rules. Chair called for members of the press. No one responded.

Chair reviewed the Task Force status and reviewed the path forward: request conditional approval for SA ballot at the IEEE 802.3 Working Group meeting on 18 November and request conditional approval at the IEEE 802 EC teleconference on 7 December. Chair reviewed the possible causes for a recirculation with Draft 2.4. Reviewed the Draft 2.3 Telephonic interim meeting series details.

Chair reviewed the future schedule for the path towards SA ballot. (See slides 16, 17 in [https://www.ieee802.org/3/ck/public/21\\_11/agenda\\_3ck\\_01\\_1121.pdf](https://www.ieee802.org/3/ck/public/21_11/agenda_3ck_01_1121.pdf) )

Chair reviewed the list of expected topics for the SA ballot cycle. (see slide 19 of [https://www.ieee802.org/3/ck/public/21\\_11/agenda\\_3ck\\_01\\_1121.pdf](https://www.ieee802.org/3/ck/public/21_11/agenda_3ck_01_1121.pdf) )

There was a discussion on the schedule paths shown in the agenda deck. Chair asked for a show of hands in opposition to pursuing Path1 as shown on slide 16. Two participants indicated.

Chair asked for a show of hands in opposition of Path 2 as shown on slide 17. Chair noted that at least twenty participants indicated. Chair indicated that there was strong support to proceed with Path 1 and that she would be driving the comment resolution group towards that goal.

Vice-Chair reminded participants to sign up for SA ballot. Participants wanting to take part in the Standards Association Ballot of the IEEE P802.3ck 100 Gb/s, 200 Gb/s, and 400 Gb/s Electrical Interfaces draft please follow the instructions found below. Please note that the invitation to join the ballot group closes 26-November-2021, 23:59 AoE. (see: <https://www.ieee802.org/3/100GEL/email/msg00835.html>)

Vice-Chair reminded participants of the IEEE 802 Plenary session survey and provided the URL in the meeting tool chat window. The deadline was 23:59 AOE (UTC-12) on Wednesday 17 November 2021.

Vice-Chair reminded participants to sign into the IEEE Meeting Attendance Tool to record attendance for the IEEE 802.3 Working Group. Task Force attendance would be taken from the webex logs.

### **Chief Editors Report -- Matt Brown**

See: [https://www.ieee802.org/3/ck/public/21\\_11/editorsrep\\_3ck\\_01\\_1121.pdf](https://www.ieee802.org/3/ck/public/21_11/editorsrep_3ck_01_1121.pdf)

- Matt Brown thanked all of the editors for their hard work to prepare initial responses to the comments.
- Matt thanked Kent Lusted for his assistance preparing the chief editor's report.

### **Common Resolution Agenda - Matt Brown**

See: [https://www.ieee802.org/3/ck/public/21\\_11/comagenda\\_3ck\\_01a\\_1121.pdf](https://www.ieee802.org/3/ck/public/21_11/comagenda_3ck_01a_1121.pdf)

- Matt thanked Kent for his assistance preparing the comment resolution agenda.
- It was noted that the comment resolution agenda was subject to change.
- It was noted that the date “December 30” should be “December 1” on slide 4. An updated version ‘01a’ of the agenda was provided.
- Reviewed the path that IEEE P802.3bs Draft 2.2 took towards SA ballot.

Comment resolution began.

Rich Mellitz withdrew comments 3, 4, 5, and 6.

### **Presentation #1:**

“Exploration of SCMR Limits in 802.3ck D2.3”, Mau-Lin Wu

See: [https://www.ieee802.org/3/ck/public/21\\_11/wu\\_3ck\\_01\\_1121.pdf](https://www.ieee802.org/3/ck/public/21_11/wu_3ck_01_1121.pdf)

- Discussed some solutions for the correlated common-mode signal noise.
- Discussed the derivation of Pmax and the value used in the analysis.

Break at ~9:00 a.m. Resumed at ~9:05 a.m.

Vice-Chair reminded participants to sign into the IEEE Meeting Attendance Tool to record attendance for the IEEE 802.3 Working Group. Task Force attendance would be taken from the webex logs.

Vice-Chair reminded participants that every attendee at any IEEE 802 virtual plenary meeting must register and pay a fee to participate. If the individual is in arrears:

[1] The individual is not permitted to register for any future IEEE 802 Plenary or IEEE 802 Subgroup Interim (if registration is required).

[2] As a result of [1], the individual is not permitted to attend any portion of a technical meeting that is part of an IEEE 802 plenary session. They are also not permitted to attend any portion of a technical meeting that is part of an IEEE 802 Subgroup Interim if that IEEE 802 Subgroup Interim required registration.

Piers Dawe withdrew comment #14.

Chair reviewed the proposed liaison response to OIF. (see:

[https://www.ieee802.org/3/ck/public/21\\_11/IEEE\\_802d3\\_to\\_OIF\\_CEI\\_1121\\_draft1.pdf](https://www.ieee802.org/3/ck/public/21_11/IEEE_802d3_to_OIF_CEI_1121_draft1.pdf) ) No changes were made. Reviewed the proposed liaison to COBO. (see:

[https://www.ieee802.org/3/ck/public/21\\_11/IEEE\\_802d3\\_to\\_COBO\\_1121\\_draft1.pdf](https://www.ieee802.org/3/ck/public/21_11/IEEE_802d3_to_COBO_1121_draft1.pdf) ) No changes were made. Reviewed the proposed liaison to T11.2. (see: [https://www.ieee802.org/3/ck/public/21\\_11/IEEE\\_802d3\\_to\\_T11-2\\_1121\\_draft1.pdf](https://www.ieee802.org/3/ck/public/21_11/IEEE_802d3_to_T11-2_1121_draft1.pdf) ) No changes were made.

**Motion #1:**

Move that the IEEE P802.3ck Task Force approve the following liaisons with editorial license granted to the WG Chair (or his appointed agent) as liaison communications from the IEEE 802.3 WG to OIF, T11-2, and COBO.

- IEEE\_802d3\_to\_OIF\_CEI\_1121\_draft1.pdf
- IEEE\_802d3\_to\_T11-2\_1121\_draft1.pdf
- IEEE\_802d3\_to\_COBO\_1121\_draft1.pdf

M: Adee Ran

S: Howard Heck

Technical (>75%)

Passed by unanimous consent

**Motion #2:**

Move to request conditional approval to progress the IEEE P802.3 (IEEE 802.3ck) draft to SA ballot once the Working Group ballot process has been successfully completed.

M: Adee Ran

S: Liav Ben-Artzi

Technical (>75%)

Passed by unanimous consent.

During motion #2, Chair asked if anyone wanted to be recorded as abstain on motion #2. Piers Dawe indicated that he wanted to be recorded as abstain. Chair announced the motion passed by unanimous consent.

Chair reminded participants of the IEEE 802.3 Working Group closing plenary meeting on Thursday, 17 November. (see: <https://www.ieee802.org/3/calendar.html>) The P802.3ck Task Force has liaison letters and the request for conditional approval to the SA ballot on the agenda.

Chair noted that there would be a series of calendar invite changes as a result of the meeting platform issues. Details would be announced over the Task Force email reflector.

Chair noted that she would be unavailable during the week of November 22, 2021. Kent Lusted, Task Force Vice-Chair, would chair the meetings.

Meeting break at ~10:05 a.m.

# IEEE P802.3ck 100 Gb/s Electrical Lane Task Force – November 23, 2021

*Prepared by Kent Lusted and Adee Ran*

## Proposed Agenda:

- Approval of the Agenda
- IEEE Participation Requirements reminder
- IEEE Copyright
- IEEE Patent Policy
- Task Force Status & Next Steps
- D2.3 Comment Agenda
- Comment Resolution
- Closing Business

Presentations posted at: [https://www.ieee802.org/3/ck/public/21\\_11/index.html](https://www.ieee802.org/3/ck/public/21_11/index.html)

Meeting began at ~7:00 a.m. Pacific by Kent Lusted, IEEE 802.3ck Task Force Vice-Chair. (Note: all times are Pacific time zone unless otherwise indicated)

Vice-Chair welcomed attendees. Vice-Chair noted that he would be running the meeting due to the Chair's absence.

Meeting began with the agenda presentation:

[https://www.ieee802.org/3/ck/public/21\\_11/agenda\\_3ck\\_02\\_1121.pdf](https://www.ieee802.org/3/ck/public/21_11/agenda_3ck_02_1121.pdf)

Vice-Chair reminded participants that Task Force attendance would be taken from the webex logs.

The vice-chair reminded participants to indicate full names and employer/affiliation correctly for the meeting minutes. Reminded participants to mute lines when not speaking and reviewed the steps to unmute.

Presented the proposed agenda and noted that the agenda would cover the meetings on 23 and 24 November. Vice-Chair asked if there was objection to the shown agenda. No one responded.

Vice-Chair reviewed the slide with the Participation requirements.



Vice-Chair asked if anyone participating had not read the copyright slide set – no one responded. Chair showed the IEEE-SA copyright slides.

Vice-Chair asked if anyone participating had not read the patent slide set – no one responded. Chair showed the patent policy slides and did the call for Potentially Essential Patents – no one responded.

Vice-Chair called for members of the press. No one responded.

Vice-Chair reviewed the Task Force status and reviewed the path forward: request conditional approval for SA ballot at the IEEE 802.3 Working Group meeting on 18 November and request conditional approval at the IEEE 802 EC teleconference on 7 December. Chair reviewed the causes for a recirculation with Draft 2.4. Reviewed the Draft 2.3 Telephonic interim meeting series details.

Vice-Chair reviewed the future schedule for the path towards SA ballot. (See slides 16, 17 in [https://www.ieee802.org/3/ck/public/21\\_11/agenda\\_3ck\\_01\\_1121.pdf](https://www.ieee802.org/3/ck/public/21_11/agenda_3ck_01_1121.pdf) )

Vice-Chair reminded participants to sign up for SA ballot. Participants wanting to take part in the Standards Association Ballot of the IEEE P802.3ck 100 Gb/s, 200 Gb/s, and 400 Gb/s Electrical Interfaces draft please follow the instructions found below. Please note that the invitation to join the ballot group closes 26-November-2021, 23:59 AoE. (see: <https://www.ieee802.org/3/100GEL/email/msg00835.html>)

Vice-Chair received a late presentation from Piers Dawe related to comment #32. He noted that the deadline for presentations was 12 November 2021, AOE. He asked if there was objection to hearing the presentation during the resolution of comment #32. There was no opposition. Vice-Chair noted that he would post the file to the TF website.

### **Common Resolution Agenda - Matt Brown**

See: [https://www.ieee802.org/3/ck/public/21\\_11/comagenda\\_3ck\\_02\\_1121.pdf](https://www.ieee802.org/3/ck/public/21_11/comagenda_3ck_02_1121.pdf)

- It was noted that the comment resolution agenda was subject to change.

Comment resolution resumed.

Chair reminded participants of decorum requirements.

Vice-Chair noted that the late presentation from Piers Dawe related to comment #32 was posted to the TF website. (see [https://www.ieee802.org/3/ck/public/21\\_11/index.html](https://www.ieee802.org/3/ck/public/21_11/index.html) )

Break at ~8:25 a.m. Resumed at ~8:35 a.m.

Chair reminded participants of decorum and noted that participants with repeated decorum violations would be asked to leave the meeting.

Vice-Chair reminded participants to sign up for the SA ballot. Participants wanting to take part in the Standards Association Ballot of the IEEE P802.3ck 100 Gb/s, 200 Gb/s, and 400 Gb/s Electrical Interfaces draft please follow the instructions found below. Please note that the invitation to join the ballot group closes 26-November-2021, 23:59 AoE. (see: <https://www.ieee802.org/3/100GEL/email/msg00835.html>)

Vice-Chair noted that comment resolution would resume on 24 November at 7:00 a.m. Pacific. (see <https://www.ieee802.org/3/calendar.html>)

Vice-Chair reminded participants of the strong support to follow “Path 1” towards SA ballot. (See slides 17 in [https://www.ieee802.org/3/ck/public/21\\_11/agenda\\_3ck\\_01\\_1121.pdf#page=17](https://www.ieee802.org/3/ck/public/21_11/agenda_3ck_01_1121.pdf#page=17) ) He encouraged participants to review the proposed responses to the remaining comments in addition to the late presentation prior to the meeting on 24 November.

Meeting break at ~9:55 a.m.

# IEEE P802.3ck 100 Gb/s Electrical Lane Task Force – November 24, 2021

*Prepared by Kent Lusted and Adele Ran*

Continue approved agenda from 23 November.

Presentations posted at: [https://www.ieee802.org/3/ck/public/21\\_11/index.html](https://www.ieee802.org/3/ck/public/21_11/index.html)

Meeting began at ~7:05 a.m. Pacific by Kent Lusted, IEEE 802.3ck Task Force Vice-Chair. (Note: all times are Pacific time zone unless otherwise indicated)

Vice-Chair welcomed attendees. Vice-Chair noted that he would be running the meeting due to the Chair's absence.

Meeting began with the agenda presentation:

[https://www.ieee802.org/3/ck/public/21\\_11/agenda\\_3ck\\_02\\_1121.pdf](https://www.ieee802.org/3/ck/public/21_11/agenda_3ck_02_1121.pdf)

Vice-Chair reminded participants that Task Force attendance would be taken from the webex logs.

The vice-chair reminded participants to indicate full names and employer/affiliation correctly for the meeting minutes. Reminded participants to mute lines when not speaking and reviewed the steps to unmute.

Vice-Chair reviewed the slide with the Participation requirements. Vice-Chair asked if anyone participating had not read the copyright slide set – no one responded. Chair showed the IEEE-SA copyright slides. Vice-Chair showed the IEEE code of ethics and conduct slide. Vice-Chair asked if anyone participating had not read the patent slide set – no one responded. Chair showed the patent policy slides and did the call for Potentially Essential Patents – no one responded.

Vice-Chair called for members of the press. No one responded.

Vice-chair presented the Ground rules and Operations slide. Chair reminded participants of decorum requirements.

Vice-Chair reviewed the future schedule for the path towards SA ballot. (See slides 16, 17 in [https://www.ieee802.org/3/ck/public/21\\_11/agenda\\_3ck\\_02\\_1121.pdf](https://www.ieee802.org/3/ck/public/21_11/agenda_3ck_02_1121.pdf) )

Vice-Chair reminded participants to sign up for the SA balloting group. Participants wanting to take part in the Standards Association Ballot of the IEEE P802.3ck 100 Gb/s, 200 Gb/s, and 400

Gb/s Electrical Interfaces draft should follow the instructions found below. Please note that the invitation to join the ballot group closes 26-November-2021, 23:59 AoE. (see: <https://www.ieee802.org/3/100GEL/email/msg00835.html>)

There was a request to add the ballot group joining deadline to the agenda slides. Vice-chair announced that he would send a reminder on the reflector. (see: <https://www.ieee802.org/3/100GEL/email/msg00854.html>)

### **Common Resolution Agenda - Matt Brown**

See: [https://www.ieee802.org/3/ck/public/21\\_11/comagenda\\_3ck\\_02\\_1121.pdf](https://www.ieee802.org/3/ck/public/21_11/comagenda_3ck_02_1121.pdf)

- It was noted that the comment resolution agenda was subject to change.

Comment resolution began.

Vice-Chair noted that the late presentation from Piers Dawe was approved for presentation in the Tuesday meeting and that the file was already posted on the website.

### **Presentation #2:**

“Correcting the module stressed input loss calibration P802.3ck D2.3 (comment 32)”, Piers Dawe

See: [https://www.ieee802.org/3/ck/public/21\\_11/dawe\\_3ck\\_01a\\_1121.pdf](https://www.ieee802.org/3/ck/public/21_11/dawe_3ck_01a_1121.pdf)

- Discussed the loss curves on slide 8
- Clarifying questions and discussion about the suggested remedy provided on the last slide
- Updated version ‘01a’ with additional supporter

Vice-Chair noted that two comments remain to resolve and there was a good chance to finish comment resolution at the current meeting. He asked if there was objection if the meeting ran up to 15 minutes past the announced finish time. No one objected.

During the discussion of comment #32, there was consensus by the comment resolution group that the comment was out of scope.

Break at ~9:02 a.m. Resumed ~9:09 a.m.

There was significant discussion on comment #31; the commenter and the comment resolution group agreed that no change to the draft was necessary at the time. The commenter was satisfied.

Vice-Chair asked the comment resolution group to confirm that D2.3 comment resolution concluded with no changes to the draft. Several participants confirmed.

Vice-Chair asked Chief Editor to confirm that all comments had been considered. Chief Editor reviewed the closed comments and suggested to reopen comment #31 to add a clarification.

Vice-Chair asked if there was opposition to reopening comment #31 only for the purpose of adding the proposed clarification. No one objected. A change was made and the comment was closed.

Chief Editor confirmed all comments had been closed.

Comment resolution ended.

Vice-Chair asked the comment resolution group to confirm that D2.3 comment resolution concluded with no changes to the draft. No one responded. Vice-Chair summarized that comment resolution concluded with no changes to D2.3.

Vice-Chair thanked all of the participants for their diligent review of the comments and a successful comment resolution. Chair noted that the initial SA ballot would have wide open scope. Chair asked if participants had any questions or comments about the path to SA ballot. A participant noted that the SA ballot scope would only be wide open on the initial ballot.

### **Motion #3**

Move to generate D3.0 for SA ballot from D2.3

M: Adele Ran

S: Mike Dudek

Technical ( $\geq 75\%$ )

Results: Y: 21 N: 2 A: 2

Motion passed 10:44 a.m.

During motion #3, Vice-Chair attempted to take the vote by unanimous consent at ~10:15 a.m.. There was opposition from at least one IEEE 802.3 voter. Vice-Chair switched to the DirectVote

Live tool and reviewed its use; however, Adam Healey, the IEEE 802.3 Working Group Vice-Chair, noted that the individual responses were needed for the minutes. Vice-Chair investigated the DirectVote Live tool and was unable to obtain the required detail from the tool. At ~10:25 a.m., Vice-Chair informed the participants of the meeting delay and proceeded with a roll call vote.

Motion #3 roll call vote results:

| Name               | Vote |
|--------------------|------|
| Brown, Matthew     | y    |
| Calvin, John       | y    |
| Chang, Frank       | y    |
| Chen, Chan         | y    |
| Dawe, Piers        | n    |
| Dudek, Mike        | y    |
| Ghiasi, Ali        | y    |
| Gore, Brandon      | y    |
| Healey, Adam       | y    |
| Heck, Howard       | y    |
| Hidaka, Yasuo      | n    |
| Kim, Kihong/Joshua | y    |
| Kimber, Mark       | y    |
| Muller, Shimon     | a    |
| Nicholl, Gary      | y    |
| Palkert, Tom       | y    |
| Peng, Semmy        | a    |
| Rabinovich, Rick   | y    |

|                 |   |
|-----------------|---|
| Ran, Adee       | y |
| Sakai, Toshiaki | y |
| Sommers, Scott  | y |
| Sun, Junqing    | y |
| Wu, Mau-Lin     | y |
| Young, James    | y |
| Zivny, Pavel    | y |

Vice-Chair discussed the next steps forward for the Task Force.

Vice-Chair noted that the agenda was complete, observed that there was no further business and adjourned the meeting.

Meeting adjourned at ~10:50 a.m.

## Attendees

| Name                      | Affiliation             | Employed by             | 11/17 | 11/23 | 11/24 |
|---------------------------|-------------------------|-------------------------|-------|-------|-------|
| Adam Healey               | Broadcom                | Broadcom                | x     | x     | x     |
| Adee Ran                  | Cisco                   | Cisco                   | x     | x     | x     |
| Alan Kinningham           | I-PEX                   | I-PEX                   | x     |       |       |
| Alejandro Castrillon      | Marvell                 | Marvell                 | x     |       |       |
| Alex Haser                | Molex                   | Molex                   | x     |       |       |
| Ali Ghiasi                | Ghiasi Quantum/Inphi    | Ghiasi Quantum/Inphi    | x     | x     |       |
| Arthur Marris             | Cadence                 | Cadence                 | x     |       | x     |
| Ashley Moran              | IEEE SA                 | IEEE SA                 |       | x     |       |
| Ayal Shoval               | Synopsys                | Synopsys                | x     | x     | x     |
| Ayla Chang                | Huawei                  | Huawei                  | x     |       |       |
| Beth Kochuparambil        | Cisco                   | Cisco                   | x     |       |       |
| Bill Powell               | Independent             | Independent             | x     |       |       |
| Bill Simms                | NVIDIA                  | NVIDIA                  | x     | x     | x     |
| Bo Zhang                  | Marvell                 | Marvell                 | x     |       |       |
| Brandon Gore              | Samtec                  | Samtec                  | x     | x     | x     |
| Bruce Champion            | TE Connectivity         | TE Connectivity         | x     | x     |       |
| Champion (Chien Ping) Kao | Cornelis Networks       | Cornelis Networks       | x     | x     | x     |
| Chan Chih (David) Chen    | Applied Optoelectronics | Applied Optoelectronics | x     | x     | x     |
| Charles Su                | Huawei                  | Huawei                  | x     |       |       |



|                    |                  |                  |   |   |   |
|--------------------|------------------|------------------|---|---|---|
| Chris DiMinico     | PHY-SI           | PHY-SI           | x | x | x |
| Curtis Donahue     | Rohde & Schwarz  | Rohde & Schwarz  | x |   |   |
| Dave Estes         | Spirent          | Spirent          | x |   |   |
| David Malicoat     | Senko            | Independent      | x |   |   |
| David Ofelt        | Juniper          | Juniper          | x |   |   |
| Dawei Fan          | Huawei           | Huawei           | x |   |   |
| Ed Frlan           | Semtech          | Semtech          | x | x |   |
| Ed Ulrichs         | Intel            | Intel            | x |   | x |
| Edward Nakamoto    | Spirent          | Spirent          | x |   |   |
| Enis Akbaba        | Analog Devices   | Analog Devices   | x | x |   |
| Eugene Opsasnick   | Broadcom         | Broadcom         | x | x |   |
| Frank Chang        | Source Photonics | Source Photonics | x | x | x |
| Gary Nicholl       | Cisco            | Cisco            | x | x | x |
| Geoff Zhang        | Xilinx           | Xilinx           | x |   |   |
| Greg LeCheminant   | Keysight         | Keysight         | x |   |   |
| Hao Ren            | Huawei           | Huawei           | x |   |   |
| Hessam Mohajeri    | Cadence          | Cadence          |   | x |   |
| Hormoz Djahanshahi | Microchip        | Microchip        |   |   | x |
| Hossein Sedarat    | Ethernovia       | Ethernovia       | x |   |   |
| Howard Heck        | Intel            | Intel            | x | x | x |
| Jacky Chang        | HPE              | HPE              | x |   |   |
| James Weaver       | Arista           | Arista           | x |   |   |
| James Young        | Commscope        | Commscope        |   | x | x |
| Jane Lim           | Cisco            | Cisco            | x |   |   |

|                     |                                     |                 |   |   |   |
|---------------------|-------------------------------------|-----------------|---|---|---|
| Jeff Slavick        | Broadcom                            | Broadcom        | x | x |   |
| Jeffery Maki        | Juniper                             | Juniper         | x | x | x |
| Jinhua Chen         | Luxshare ICT                        | Luxshare ICT    | x |   |   |
| Jodi Haasz          | IEEE SA                             | IEEE SA         | x |   |   |
| John Calvin         | Keysight                            | Keysight        | x | x | x |
| John D'Ambrosia     | Futurewei (US Subsidiary of Huawei) | Futurewei       | x |   |   |
| John Deandrea       | Finisar                             | II-VI           | x |   | x |
| John Ewen           | Marvell                             | Marvell         | x |   |   |
| John Yurtin         | Aptiv                               | Aptiv           |   |   | x |
| Jonathan Ingham     | Broadcom                            | Broadcom        | x |   |   |
| Joshua Kim          | Hirose                              | Hirose          | x | x | x |
| Kae Dube            | UNH-IOL                             | UNH-IOL         | x |   |   |
| Kan Tan             | Tektronix                           | Tektronix       | x |   |   |
| Kapil Shrikhande    | Marvell                             | Marvell         | x |   |   |
| Karl Bois           | TE Connectivity                     | TE Connectivity | x |   |   |
| Kent Lusted         | Intel                               | Intel           | x | x | x |
| Kumaran Krishnasamy | Broadcom                            | Broadcom        | x | x | x |
| Larry McMillan      | Western Digital                     | Western Digital | x |   |   |
| Liav Ben-Artzi      | Marvell                             | Marvell         | x | x | x |
| Mark Bordogna       | Intel                               | Intel           | x |   |   |
| Mark Gustlin        | Cisco                               | Cisco           | x |   |   |
| Mark Kimber         | Semtech                             | Semtech         | x |   |   |
| Mark Nowell         | Cisco                               | Cisco           | x |   |   |

|                    |                      |                      |   |   |   |
|--------------------|----------------------|----------------------|---|---|---|
| Matt Brown         | Huawei               | Huawei               | x | x | x |
| Mau-Lin Wu         | Mediatek             | Mediatek             | x |   |   |
| Mick felton        | Genesis              | Genesis              | x | x |   |
| Mike Dudek         | Marvell              | Marvell              | x | x | x |
| Mike Li            | Intel                | Intel                | x |   |   |
| Nathan Tracy       | TE Connectivity      | TE Connectivity      | x | x | x |
| Patrick Casher     | Foxconn Interconnect | Foxconn Interconnect | x |   |   |
| Paul Brooks        | Viavi                | Viavi                | x |   |   |
| Pavel Zivny        | Tektronix            | Tektronix            | x | x | x |
| Phil Sun           | Credo                | Credo                | x | x | x |
| Piers Dawe         | NVIDIA               | NVIDIA               | x | x | x |
| Pirooz Tooyserkani | Cisco                | Cisco                | x |   | x |
| Rajmohan Hegde     | Broadcom             | Broadcom             | x |   |   |
| Rich Mellitz       | Samtec               | Samtec               | x |   |   |
| Rick Rabinovich    | Keysight             | Keysight             | x | x | x |
| Ruibo Han          | China Mobile         | China Mobile         | x |   |   |
| Ryan Bepalko       | Alphawave IP         | Alphawave IP         |   | x | x |
| Sam Kocsis         | Amphenol             | Amphenol             | x |   |   |
| Scott Sommers      | Molex                | Molex                | x | x | x |
| Scott Walley       | Max Linear           | Max Linear           | x |   | x |
| Semmy Peng         | Huawei               | Huawei               | x |   | x |
| Shawn Nicholl      | Xilinx               | Xilinx               | x |   |   |
| Shayan Shahramian  | Alphawave            | Alphawave            | x | x | x |
| Shimon Muller      | Axalume              | Axalume              | x |   | x |

|                |                      |                      |   |   |   |
|----------------|----------------------|----------------------|---|---|---|
| Steffen Hagene | TE Connectivity      | TE Connectivity      | x |   |   |
| Stephen Didde  | Keysight             | Keysight             | x |   | x |
| Steve Sekel    | Wilder Tech          | Wilder Tech          | x | x | x |
| Ted Sprague    | Infinera             | Infinera             | x |   |   |
| Terry Little   | Foxconn Interconnect | Foxconn Interconnect | x | x | x |
| Tingting Zhang | Huawei               | Huawei               | x |   |   |
| Tobey PR Li    | Mediatek             | Mediatek             | x |   |   |
| Tom Huber      | Nokia                | Nokia                | x |   |   |
| Tom Palkert    | Macom/Samtec         | Macom/Samtec         | x | x | x |
| Tom Souvignier | Broadcom             | Broadcom             | x |   |   |
| Toshiaki Sakai | Socionext            | Socionext            | x |   |   |
| Upen Kareti    | Cisco                | Cisco                | x |   |   |
| Varun Garg     | Keysight             | Keysight             |   | x | x |
| Viet Tran      | Keysight             | Keysight             | x |   |   |
| Vipul Bhatt    | II-VI                | II-VI                | x |   |   |
| Xiang He       | Huawei               | Huawei               | x |   |   |
| Xiangrong Gao  | Huawei               | Huawei               | x |   |   |
| Yasuo Hidaka   | Credo                | Credo                | x | x | x |
| Yi Sun         | OFS Optics           | OFS Optics           | x |   | x |
| Yong Kim       | Axonne               | Axonne               | x |   |   |
| Yu (Helen) Xu  | Huawei               | Huawei               | x |   |   |