

Minutes

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

Telephonic series for April 2022 Meetings:
April 12, April 13, April 19, and April 20 2022
Online Meeting

Prepared by Kent Lusted and Beth Kochuparambil

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IEEE P802.3ck 100 Gb/s Electrical Lane Task Force – April 12, 2022

Prepared by Kent Lusted and Beth Kochuparambil

Proposed Agenda:

- Approval of the Agenda
- Approval of March 30 ad hoc minutes
- IEEE Participation Requirements reminder
- IEEE Copyright reminder
- IEEE Patent Policy reminder
- Task Force Status
- Comment Agenda
- Comment Resolution
 - ISI_RES – Comments 18, 20, 23, 28, 4, 19, 21, 22, 32
 - TX V_CMPP/SCMR - Comments 29, 35, 42, 53, 1
 - TX RLM – Comment 30
 - TX SNDR – Comment 31
 - EH/VEC test method – Comment 55
 - HO/MI EH – Comment 17
 - Host ILdd, TX R_peak – Comments 41, 43
 - Remaining Clause/Annex 163A, 162, 162* comments (see slide 7 of the comment agenda deck)

Presentations posted at: https://www.ieee802.org/3/ck/public/22_04/index.html

Meeting began at ~6:30 a.m. Pacific by Beth Kochuparambil, IEEE 802.3ck Task Force Chair.
(Note: all times are Pacific time zone unless otherwise indicated)

Meeting began with the agenda presentation:

https://www.ieee802.org/3/ck/public/22_04/agenda_3ck_01_0422.pdf

Chair noted that the agenda would cover 12 and 13 April.

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

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 presented a modified agenda and reviewed the differences. Chair asked if there was objection to approving the modified agenda. No one responded. The agenda was approved.

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 reminded participants to build consensus offline in order to progress comment resolution.

Chair noted that late presentations should have multiple supporters or collaborators for the purpose of showing offline consensus that developed since comment submission.

Chair noted that the editorial team prepared a set of proposed responses to comments deemed non-controversial in “bucket1” (see: https://www.ieee802.org/3/ck/comments/draft3p1/8023ck_D3p1_comments_proposed_bucket1.pdf). Chair received requests to pull 1 comment from bucket1 (#r1-60) prior to the bucket1 deadline. Chair received a request to modify the suggested response to comment #r1-5 in bucket1 and the leadership decided to pull the comment from the bucket for addressing on the floor.

Motion #1:

Move to:

- Adopt the proposed responses in 8023ck_D3p1_comments_proposed_bucket1.pdf except comments r1-5, r1-60.

M: Matt Brown

S: Phil Sun

Technical ($\geq 75\%$)

Passed by unanimous consent.

Common Resolution Agenda - Matt Brown

See: https://www.ieee802.org/3/ck/public/22_04/comagenda_3ck_01b_0422.pdf

- It was noted that the comment resolution agenda was updated from the previous posted version and subject to change going forward.

Comment resolution began.

Consensus Discussion Slides - Adee Ran

See: https://www.ieee802.org/3/ck/public/22_04/ran_3ck_01a_0422.pdf

- It was noted that the presentation was updated on slide 8 to include straw poll results from April 6 Ad Hoc minutes.
- Chief editor noted the approach for resolving this group of comments.
- After hearing from previous presenters on this topic, Chief Editor opened the floor for discussion of using the SNR_ISI (with appropriate exceptions) methodology. No objection was voiced.
- There was consensus to use the framework on slide 10 for implementation.
- Discussions on value selection followed.

Straw Poll #1:

In Clause 163, for the value of N_b as used in Equation (120D-8), I support (choose one)

A. 6 (consistent with D3.1)

B. 12 (consistent with Table 162-19)

Results: A: 15, B: 11

Straw Poll #2:

In Clause 162, for the value of N_b as used in Equation (120D-8), I support (choose one)

A. 6 (consistent with D3.1)

B. 12 (consistent with Table 162-19)

Results: A: 15, B: 10

Straw Poll #3:

In Annex 120F, for the value of N_b as used in Equation (120D-8), I support (choose one)

A. 6 (consistent with D3.1)

B. 12 (consistent with Table 162-19)

Results: A: 20, B: 6

Straw Poll #4:

I support SNR_ISI specified with transmit equalizer setting: (chicago rules)

- A. One setting optimized to maximize SNR_ISI
- B. All 5 defined presets
- C. All valid settings
- D. Need more information

Results: A: 20, B: 9, C: 4, D: 3

Straw Poll #5:

I support SNR_ISI specified with transmit equalizer setting: (choose one)

- A. One setting optimized to maximize SNR_ISI
- B. All 5 defined presets
- C. All valid settings
- D. Need more information

Results: A: 15, B: 5, C: 3, D: 1

During straw poll #4 & #5, it was noted that the settings were to be within the required TX range of equalizer settings. Although these were directional straw polls, Chief Editor noted that there seems to be consensus to progress with option A. No one objected to moving forward with option A.

Moving to the spec limit values, Chief Editor noted the previous decisions, asked if there was objection to accepting the spec limit of 28 for Clause 163 and annex 120F. To discuss the spec limit for 162, Adam Healey requested to review his slides, seen at the 4/6 ad hoc.

Presentation #1:

“Residual intersymbol interference”, Adam Healey

See: https://www.ieee802.org/3/ck/public/22_04/healey_3ck_01_0422.pdf

- Reviewed only slide 9
- Discussed color coding of the chart and implications on the full channel

Straw Poll #6:

For the value of SNR_ISI (min) in Clause 162, I support (chicago rules)

- A. 25 dB
- B. 26 dB
- C. 26.7 dB

Results: A: 4, B: 14, C: 13

Straw Poll #7:

For the value of SNR_{ISI} (min) in Clause 162, I support (choose one)

- A. 25 dB
- B. 26 dB
- C. 26.7 dB

Results: A: 2, B: 7, C: 12

Although straw polls #6 & #7 were directional straw polls, Chief Editor noted that there seems to be consensus to progress with option C. No one objected to move forward as such. Matt requested that the editorial team revise the proposed responses offline and seek closure of the related comments in meeting #2. Chair supported the approach. No one objected.

Break at ~8:45 a.m. Resumed at ~9:00 a.m.

Consensus Discussion Slides - Howard Heck

See: https://www.ieee802.org/3/ck/public/22_04/heck_3ck_01_0422.pdf

- It was noted that slide 9 was for a comment that has since been withdrawn

Straw Poll #8:

For 162.9.3 and 163.9.2, I support the following value for the V_{CMPP-LF} (max) value: (chicago rules)

- A. 30
- B. 45
- C. 60

Results: A: 17, B: 11, C: 5
(See comment #r1-29)

Straw Poll #9:

For 162.9.3 and 163.9.2, I support the following value for the V_{CMPP-LF} (max) value: (choose one)

- A. 30
- B. 45
- C. 60

Results: A: 15, B: 5, C: 2
(See comment #r1-29)

Straw Poll #10:

For 120F.3.1 and 120G.3.1, I support the following value for the V_CMPP-LF (max) value: (chicago rules)

A. 32

B. 46

C. 60

Results: A: 17, B: 11, C: 4

(See comment #r1-29)

Straw Poll #11:

For 120F.3.1 and 120G.3.1, I support the following value for the V_CMPP-LF (max) value: (choose one)

A. 32

B. 46

C. 60

Results: A: 16, B: 6, C: 1

(See comment #r1-29)

Straw Poll #12:

I support SCMR specified with transmit equalizer setting as follows (chicago rules)

A. No equalization

B. All 5 defined presets

C. All valid settings

Results: A: 16, B: 5, C: 2, D: 6

(See comment #r1-1)

Straw Poll #13:

I support SCMR specified with transmit equalizer setting as follows (choose one)

A. No equalization

B. All 5 defined presets

C. All valid settings

Results: A: 13, B: 3, C: 2, D: 5

(See comment #r1-1)

Meeting break at ~10:30 a.m.

IEEE P802.3ck 100 Gb/s Electrical Lane Task Force – April 13, 2022

Prepared by Kent Lusted and Beth Kochuparambil

Continue approved agenda from 12 April.

Presentations posted at: https://www.ieee802.org/3/ck/public/22_04/index.html

Meeting began at ~6:35 a.m. Pacific by Beth Kochuparambil, IEEE 802.3ck Task Force Chair.
(Note: all times are Pacific time zone unless otherwise indicated)

Meeting began with the agenda presentation
https://www.ieee802.org/3/ck/public/22_04/agenda_3ck_01_0422.pdf

The minutes for the 6 April 2022 meeting were posted to the website. (see: https://www.ieee802.org/3/ck/public/adhoc/apr06_22/minutes_040622_3ck_adhoc.pdf) Chair asked if there were modifications or corrections to the posted minutes. No one responded. Minutes were approved.

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

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 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 comment resolution slide on slide 20 of the agenda presentation. Chair reminded participants that the 21 April or 27 April meeting may go past the announced end time.

Common Resolution Agenda - Matt Brown

See: https://www.ieee802.org/3/ck/public/22_04/comagenda_3ck_01b_0422.pdf

- It was noted that the comment resolution agenda was subject to change.
- Chief Editor noted that the proposed responses to the ISI_RES topic would be updated as a result of the discussion on 12 April.

Comment resolution began.

Consensus Discussion Slides - Howard Heck

See: https://www.ieee802.org/3/ck/public/22_04/heck_3ck_01_0422.pdf

Straw Poll #14

For Clause 162, I support replacing V_CMPP-HF with SCMR

- Yes
- No

Results: Y: 3 , N: 20

(see comment #35)

Straw Poll #15

For Annex 120G, I support replacing V_CMPP-HF with SCMR

- Yes
- No

Results: Y: 3 , N: 19

(see comment #35)

Chair noted that Straw Poll #14 and #15 were directional straw polls.

Related to comment #r1-35 and withdrawn comment #r1-4, there was a discussion on replacing SCMR with V_CMPP-HF. After discussion, the Chair decided a straw poll would be useful to assess direction on the topic.

Straw Poll #16

For Clause 163 and Annex 120F, I support exploring SCMR with V_CMPP-HF

- Yes
- No

Results: Y: 12, N: 12

Chair noted that the purpose of straw poll #16 was directional and participants should vote yes if they support exploring solutions for a future draft.

Reviewed updated responses for ISI_RES related comments using the consensus noted above, tabled from the previous day.

Break at ~8:25 a.m. Resumed ~8:40 a.m.

Straw Poll #17:

For module stressed input and host output, I support an EH value of: (chicago rules)

A. 8 mV (no change)

B. 9 mV

C. 10 mV (revert to D3.0)

Results: A: 6, B: 10, C: 21

(See comment #r1-17)

Straw Poll #18:

For module stressed input and host output, I support an EH value of: (choose one)

A. 8 mV (no change)

B. 9 mV

C. 10 mV (revert to D3.0)

Results: A: 5, B: 3, C: 18

(See comment #r1-17)

Presentation #2:

“Loss from TP0 to TP2”, Piers Dawe

See: https://www.ieee802.org/3/ck/public/22_04/dawe_3ck_02b_0422.pdf

- Editors noted that ‘02a’ version was seen at the 4/6 ad hoc
- Chair noted the proposed update posted (02b) included new technical data as a result from the ad hoc discussion. She asked if there was objection to seeing the update. No one objected.

Straw Poll #19:

I support changing the TP0-to-TP2 and TP3-to-TP5 ILdd_hostMAX as proposed in slides 6 and 7 of daw_3ck_02b_0422.

- Yes
- No

Results: Y: 8 , N: 10
(see comment #r1-41)

Tabled comment 43 due to time constraints.

Chair noted that the next comment resolution meeting was scheduled for 19 April. (see: <https://www.ieee802.org/3/calendar.html>)

The 3ck leadership would meet to discuss the meeting approach for the next week and announce the agenda over the email reflector. Participants should expect to start with Logic and the remaining R_peak comments.

Chair noted that there was no bucket comment file as a result of the meeting.

Meeting break at ~10:35 a.m.

IEEE P802.3ck 100 Gb/s Electrical Lane Task Force – April 19, 2022

Prepared by Kent Lusted and Beth Kochuparambil

Proposed Agenda:

- Approval of the Agenda
- IEEE Participation Requirements reminder
- IEEE Copyright reminder
- IEEE Patent Policy reminder
- Task Force Status
- Comment Resolution
 - Logic
 - Cross clause
 - Clauses/Annex 162, 162*, 163A
 - Annex 120G
- Closing business
- Liaisons
- Future meetings

Presentations posted at: https://www.ieee802.org/3/ck/public/22_04/index.html

Meeting began at ~6:35 a.m. Pacific by Beth Kochuparambil, IEEE 802.3ck Task Force Chair.
(Note: all times are Pacific time zone unless otherwise indicated)

Meeting began with the agenda presentation

https://www.ieee802.org/3/ck/public/22_04/agenda_3ck_03_0422.pdf

Chair noted that the agenda would cover 19, 20 and 21 April.

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

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.

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 reminded participants to build consensus offline in order to progress comment resolution.

Chair noted that late presentations should have multiple supporters or collaborators for the purpose of showing offline consensus that developed since comment submission.

Common Resolution Agenda - Matt Brown

See: https://www.ieee802.org/3/ck/public/22_04/comagenda_3ck_03_0422.pdf

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

Comment resolution began.

Straw Poll #20:

I support reducing the specified host output R_{peak} (min) value.

- Yes
- No

Results: Y: 9 , N: 14

(see comment #r1-43)

Chair noted that straw poll #20 would be used to determine the direction and a subsequent straw poll may be used to select a value, if needed.

Beth Kochuparambil noted that she had to leave the meeting for a while due to a meeting conflict and she passed the Chair responsibility to Kent Lusted.

Break at ~8:37 a.m. Resumed at ~8:52 a.m.

There was a request to reopen comment #r1-43 only for the purpose of removing the scope related paragraph from the closed response as a result of a discussion on comment #r1-57. There was agreement that the scope related paragraph in comment #r1-43 was not correct. Chair asked if there was objection to reopening the comment for the stated purpose. No one responded. The change to comment #r1-43 was made and saved.

Kent Lusted announced that Beth Kochuparambil had returned to the meeting and he passed the Chair responsibility back to her.

Consensus Discussion Slides - Howard Heck

See: https://www.ieee802.org/3/ck/public/22_04/heck_3ck_02_0422.pdf

Presentation #3:

“Common-mode return loss limits”, Piers Dawe

See: https://www.ieee802.org/3/ck/public/22_04/dawe_3ck_01_0422.pdf

- Discussed the proposed changes.

Chair noted that the meeting may run a few minutes past the announced stop time of 10:30 a.m. Pacific in order to complete the straw poll. No one responded.

Straw Poll #21:

I support changing the CR TX RLcc as proposed in the suggested remedy in comment R1-48.

- Yes
- No

Results: Y: 8 , N: 5

(see comment #r1-48)

Chair noted that the next comment resolution meeting was scheduled for 20 April at 7:00 a.m. Pacific. (see: <https://www.ieee802.org/3/calendar.html>)

Chair noted that the Task Force may run past the announced stop time on 20 April to finish closing business, if comment resolution completes by 10:00 a.m. Pacific.

Chair encouraged participants to build consensus offline on comments #r1-48 and #r1-49.

Meeting break at ~10:35 a.m.

IEEE P802.3ck 100 Gb/s Electrical Lane Task Force – April 20, 2022

Prepared by Kent Lusted and Beth Kochuparambil

Continue approved agenda from 19 April.

Presentations posted at: https://www.ieee802.org/3/ck/public/22_04/index.html

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

Meeting began with the agenda presentation
https://www.ieee802.org/3/ck/public/22_04/agenda_3ck_03_0422.pdf

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

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 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 noted that the Task Force may run past the announced stop time to finish closing business, if comment resolution completes by 10:00 a.m. Pacific.

Common Resolution Agenda - Matt Brown

See: https://www.ieee802.org/3/ck/public/22_04/comagenda_3ck_03_0422.pdf

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

Comment resolution began.

During the discussion of comment #r1-49, a presentation with cable data was referenced and shown. (see:) There was a request to plot the cable data vs. the proposed limit change. Chris Diminico volunteered to make the plot.

Consensus Discussion Slides - Chris Diminico

See: https://www.ieee802.org/3/ck/public/22_04/diminico_3ck_01_0422.pdf

Straw Poll #22:

I support changing the CA RLcc as proposed in the suggested remedy in comment R1-49.

- Yes
- No

Results: Y: 10 , N: 9

(see comment #r1-49)

Chair noted that straw poll #22 was a decision straw poll.

Consensus Discussion Slides - Howard Heck

See: https://www.ieee802.org/3/ck/public/22_04/heck_3ck_02_0422.pdf

Consensus Discussion Slides - Matt Brown

See: https://www.ieee802.org/3/ck/public/22_04/brown_3ck_01a_0422.pdf

Piers Dawe withdrew comment #r1-54.

Comment resolution completed.

Chair noted that a liaison from the OIF was received with information on the progress on the OIF CEI-112G-VSR project. It was assigned to the IEEE P802.3ck Task Force for consideration. (see:

https://www.ieee802.org/3/minutes/may22/incoming/OIF_liaison_letter_IEEE_CEI-112G-VSR_08Apr22_Redacted.pdf and
https://www.ieee802.org/3/private/liaison_docs/OIF/OIF_liaison_IEEE_802.3_CEI-112G-VSR_cover_08Apr22_oif2017.346.20.pdf)

Chair asked for a volunteer to draft the proposed liaison responses. Kent Lusted and Tom Palkert volunteered to prepare liaisons for OIF and T11.2 for consideration by the Task Force.

Chair announced a Task Force ad hoc meeting on 4 May, 2022. It would be announced over the Task Force email reflector. Presentation requests would be due on 2 May, 2022.

Chair reviewed the schedule ahead.

Chief editor noted that closed comment r1-34 contained some extra text. He asked if there was objection to opening the comment to make that specific change. No one objected. The comment was opened, changes were made, and closed.

Chief editor noted that closed comment r1-44 contained an incomplete comment reference. He asked if there was objection to opening the comment to make that specific change. No one objected. The comment was opened, changes were made, and closed.

Motion #2:

Move that the IEEE P802.3ck Task Force generate Draft 3.2 for SA Recirculation from D3.1 and closed comments.

M: Adele Ran

S: Mike Dudek

Technical ($\geq 75\%$)

Results: Motion passed by unanimous consent

Chair noted that the meeting agenda was complete. There would be no meeting on 21 April.

Meeting adjourned at ~9:15 a.m.

Attendees

Name	Affiliation	Employed by	12-Apr	13-Apr	19-Apr	20-Apr
Adam Healey	Broadcom	Broadcom	x	x		
Adee Ran	Cisco	Cisco	x	x	x	x
Alan Kinningham	I-PEX	I-PEX			x	x
Alex Haser	Molex	Molex	x	x		
Alexander Rysin	NVIDIA	NVIDIA	x	x	x	x
Ali Ghiasi	Ghiasi Quantum/Inphi	Ghiasi Quantum/Inphi	x	x	x	x
Anand RK	Cadence	Cadence			x	
Arthur Marris	Cadence	Cadence		x		x
Beth Kochuparambil	Cisco	Cisco	x	x	x	x
Bill Simms	NVIDIA	NVIDIA	x	x	x	x
Bob Grow	RMG Consulting	RMG Consulting	x			
Brandon Gore	Samtec	Samtec			x	x
Champion (Chien Ping) Kao	Cornelis Networks	Cornelis Networks	x	x	x	x
Chan Chih (David) Chen	Applied Optoelectronics	Applied Optoelectronics	x	x	x	x
Chris DiMinico	PHY-SI	PHY-SI	x	x	x	x
Christian Orlando	IEEE-SA	IEEE-SA	x			
Curtis Donahue	Rohde & Schwarz	Rohde & Schwarz			x	x
David Malicoat	Senko	Independent	x		x	x
Denz Choe	BeCe	BeCe		x		
Enis Akbaba	Analog Devices	Analog Devices	x	x	x	

Eugene Opsasnick	Broadcom	Broadcom	x	x	x	
Frank Chang	Source Photonics	Source Photonics				x
Gary Nicholl	Cisco	Cisco	x			
Hadrien Louchet	Keysight	Keysight			x	
Hessam Mohajeri	Independent	Independent		x		
Howard Heck	Intel	Intel	x	x	x	x
Jeff Slavick	Broadcom	Broadcom	x	x	x	x
Jeffery Maki	Juniper	Juniper	x		x	
Jodi Haasz	IEEE SA	IEEE SA	x	x	x	x
John Calvin	Keysight	Keysight	x	x	x	x
John Ewen	Marvell	Marvell	x	x	x	x
John Yurtin	Aptiv	Aptiv			x	
Joshua Kim	Hirose	Hirose	x	x	x	x
Kent Lusted	Intel	Intel		x	x	x
Khushboo patel	Siemens	Siemens	x	x		
Kumaran Krishnasamy	Broadcom	Broadcom	x	x	x	
Lu-Vong Phan	ZT Systems	ZT Systems		x		
Manuel Luschas	Cadence	Cadence	x	x		
Mark Kimber	Semtech	Semtech	x	x		
Matt Brown	Huawei	Huawei	x	x	x	x
Mau-Lin Wu	Mediatek	Mediatek	x	x	x	x
Megha Shanbhag	TE Connectivity	TE Connectivity	x	x		
Mike Dudek	Marvell	Marvell	x	x	x	x
Mike Klempa	Amphenol	Amphenol		x	x	

Nathan Tracy	TE Connectivity	TE Connectivity	X	X	X	X
Patricia Roder	IEEE	IEEE			X	
Paul Brooks	Viavi	Viavi		X		
Phil Sun	Credo	Credo	X	X	X	X
Piers Dawe	NVIDIA	NVIDIA	X	X	X	X
Rich Mellitz	Samtec	Samtec	X	X	X	X
Rick Rabinovich	Keysight	Keysight	X	X	X	X
Roberto Rodes	II-VI	II-VI	X		X	
Ryan Bepalko	Alphawave IP	Alphawave IP		X		
Sam Kocsis	Amphenol	Amphenol	X	X	X	X
Scott Sommers	Molex	Molex	X	X	X	X
Shimon Muller	Axalume	Axalume	X			
Stephen Didde	Keysight	Keysight	X	X	X	
Steve Sekel	Wilder Tech	Wilder Tech				X
Tao Hu	Marvell	Marvell		X	X	X
Terry Little	Foxconn Interconnect	Foxconn Interconnect			X	X
Tobey PR Li	Mediatek	Mediatek	X	X	X	X
Tom Palkert	Macom/Samtec	Macom/Samtec	X		X	X
Toshiaki Sakai	Socionext	Socionext	X	X	X	X
Xiang He	Huawei	Huawei		X		
Yasuo Hidaka	Credo	Credo	X	X	X	X
Yi Sun	OFS Optics	OFS Optics		X	X	