

Unapproved Minutes  
IEEE P802.3ba Task Force  
Sept 16 – 19, 2008  
Seoul, South Korea

Prepared by: Steve Trowbridge

Meeting convened at 8:39 am, Tuesday, Sept 16, 2008.

Agenda & General Information

By – John D'Ambrosia

See – agenda\_01\_0908.pdf

- Introductions – Everyone introduced themselves and stated their affiliation.
- Steve Trowbridge was appointed as recording secretary for this meeting.
- Chair asked if there were any reporters in the room. No one responded. Chair reminded everyone that photographs are not allowed without permission.
- Chair went through his introduction presentation
- Motion to approve the agenda
  - Motion moved to accept the agenda by Thananya Baldwin, 2<sup>nd</sup> by Alan Flatman.
  - Meeting agenda was approved by voice vote without objection.
- Motion to approve the July 2008 Plenary minutes
  - Motion moved to accept minutes by Pete Anslow, 2<sup>nd</sup> by Thananya Baldwin, with following changes:
    - Attendance record for John McDonough;
    - July Plenary Meeting Minutes were approved by voice vote without objection.
- The Chair thanked the host LG-Nortel for the effort to substitute at the last minute for the original host and location that had been planned prior to the earthquake in Chengdu.
- The Chair reported that the 5-criteria update approved by the Task Force and WG in March was approved by the EC in July.
- The Chair appointed Ryan Latchman, editor for the XLAUI / CAUI annex.
- The Chair made the following appointments / changes
  - Mark Gustlin - Chair, "Logic" Sub-Task Force from "Logic" Sub-Task Force Chief Editor
  - Chris DiMinico – Chair, "Cu" Sub-Task Force from "Cu" Sub-Task Force Chief Editor
  - Pete Anslow – Chair, "Optical" Sub-Task Force from "Optical" Sub-Task Force Chief Editor
  - Chair asked for affirmation of appointments from Task Force. Approval by voice vote without objection.
- Goals for this meeting
  - Progress towards generating D1.0
    - Review D0.9
    - Resolve  $40G \geq 10km$  SMF Objective
      - Proposals
      - Technical Presentations

- Choose Baseline Proposal / Text
- Ground Rules
- IEEE Structure, Bylaws & Rules
- IEEE Patent Policy
  - Chair read and presented the IEEE Patent Policy slide set
  - Chair advised the Task Force:
    - The IEEE's patent policy is consistent with the ANSI patent policy and 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 encouraged;
    - There may be Essential Patent Claims of which the IEEE is not aware. Additionally, neither 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.
  - The chair provided an opportunity for participants to identify patent claim(s)/patent application claim(s) and/or the holder of patent claim(s)/patent application claim(s) that the participant believes may be essential for the use of that standard. No one came forward.
- Inappropriate Topics for IEEE meetings read to the body by Chair.
- Presented Task Force Schedule and Timeline, and items to be addressed this week.
  - Chair discussed Draft 1.0, and the need to start locking things down.
    - The review of Draft 0.9 with its associated comments will be used to generate Draft 1.0, as well as if the TF makes a decision regarding the 40G 10km SMF objective and its associated text.
  - Review of Draft 0.9 – not time for debating changes.
- Presented list of presentations and some rules to keep us on-time
  - Request by the author to add new data to cole\_02\_0908.pdf relevant to discussion on the reflector. There were no objections to hearing the additional slide.
  - Chair received a late request for a presentation, "cole\_03\_0908.pdf". Due to time constraints, it was thought that there would not be enough time for another presentation, but the Chair is willing to fit it in, if there is time. The Chair asked if there were any objections to adding the presentation to Tuesday's schedule if time permits. There were no objections.
  - Chair asked that everyone be succinct in their presentations and comments. If necessary, the Chair will define the time limit for discussion.
  - Chair noted that a number of requests for presentation times were made for this meeting related to the XLAUI / CAUI clause, which the requestors agreed, given the scope of this meeting, could be held off until November when detailed discussions regarding specific values in the clause could be held. However, given the interest in the subject, the Chair has decided to form the nAUI Ad Hoc to be chaired by Ryan Latchman. The charter of the group will be to work on technical details / values related to the nAUI specification.
- In response to a request received via email from Pete Anslow, the ITU-SG15 Liaison, the Chair asked Pete Anslow to draft an informal communication to ITU-SG15, forwarding it Draft 0.9.
- Chair presented slides on The IEEE-SA Meeting Attendance Tool.
- Chair reminded everyone of their responsibilities to maintain their 802.3 voting rights.

- Chair reminded everyone to declare his or her affiliation.

#### Presentation #1

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Title – Chief Editor's Report  
By – Ilango Ganga, Intel  
See – ganga\_01\_0908.pdf

#### *Discussion*

- Some discussion occurred on the risks to the schedule if the 40GbE SMF decision is not made this week.

Break at 9:57 AM

Reconvened at 10:18 AM

#### Presentation #2

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Title – Statistical Eye Ad Hoc  
By – Piers Dawe, Avago  
See – dawe\_02\_0908.pdf

#### *Discussion*

- There was no discussion, but no objection to proposal from the Chair to change the charter of the ad hoc per items 2, 3, 4 of dawe\_02\_0908.pdf (how to apply to 802.3ba)

#### Presentation #3

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Title – 802.3ba XR Ad Hoc Status  
By – John Petrilla, Avago  
See – petrilla\_01\_0908.pdf

#### *Discussion*

- Poll for how many would be interested in attending a meeting of the extended reach ad hoc if a room can be found: about a dozen.

#### Presentation #4

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Title – 40GbE Market: Timing and Opportunity  
By – Alessandro Barbieri, Cisco Systems  
See – barbieri\_01\_0908.pdf

#### *Discussion*

- Clarifying questions were asked and answered.

Break for lunch at 11:51am.

Reconvene at 1:15pm

The Chair informed the task force that the room would not be available after 8:00pm, so we would not have the planned dinner breaks. Wednesday will begin at 8:30am until 8:00pm, Thursday will begin at 7:30am.

#### Presentation #5

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Title – Tutorial – Comments and Comment Entry Tool  
By – Wael Diab, Broadcom  
See – diab\_01\_0908.pdf

### *Discussion*

- Some discussion, mostly about appropriateness of rejecting comments with no proposed resolution. May be a case where a hole is identified.
- Tool may not work on non-windows platforms

### Presentation #6

Title – Improved specifications for 40GBASE-LR2 40 Gb/s PMD for 10 km duplex SMF  
By – Piers Dawe  
See – dawe\_01\_0908.pdf

### *Discussion*

- Clarifying questions were asked and answered.

### Presentation #7

Title – Demonstration of 40 Gb/s 1310nm EA-DFB Laser feasibility for 40GbE 10km SMF Application  
By – Kiyoo Hiramoto, Opnext  
See – hiramoto\_01\_0908.pdf

### *Discussion*

- Clarifying questions were asked and answered.

### Presentation #8

Title – RF Interconnection Technologies for 40G Serial  
By – Kazuyuki Mori, Fujitsu Labs  
See – mori\_02\_0908.pdf

### *Discussion*

- Clarifying questions were asked and answered.

### Presentation #9

Title – Merits of a 40GbE serial solution for the 40GbE 10km SMF PMD Objective  
By – Kazuyuki Mori, Fujitsu Labs  
See – mori\_01\_0908.pdf

### *Discussion*

- Martin Carroll (Verizon) inquired regarding the name of his colleague Glenn Wellbrock on the supporters page as he is aware that Glenn is now supporting CWDM. The chair asked that Glenn and the authors discuss offline, and that the contribution be updated if necessary.
- Lots of discussion involving challenges to many of the cost and power numbers in the presentation.
- Clarifying questions were asked and answered.

Break at 3:04pm

Reconvened at: 3:22pm

### Presentation #10

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Title – 40GbE 10km SMF PMD Specifications  
By – Chris Cole, Finisar  
See – cole\_01\_0908.pdf

#### *Discussion*

- The presenter indicated that there were some minor tweaks to the numbers from last time which he could discuss offline, but no major changes. There was no discussion.

### Presentation #11

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Title – 4x10G vs Serial 40G SerDes Maturity and Cost  
By – Ali Ghiasi, Broadcom  
See – ghiasi\_01\_0908.pdf

#### *Discussion*

- There was no discussion

### Presentation #12

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Title – 40G SMF Analysis –XLAUI CDR vs 40G Mux / Demux  
By – Ryan Latchman  
See – latchman\_01\_0908.pdf

#### *Discussion*

- Clarifying questions were asked and answered.

### Presentation #13

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Title – 40GE 10km SMF PMD Alternatives  
By – Chris Cole  
See – cole\_02\_0908.pdf

#### *Discussion*

- Clarifying questions were asked and answered.
- The presenter agreed to make a change to slide 3 the second generation serial size to indicate QSFP.

### Presentation #14

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Title – Advances in Silicon Photonics Muxs for CWDM and LAN WDM Applications  
By – Dave DeAndrea, Finisar (in place of Arlon Martin)  
See – martin\_01\_0908.pdf

#### *Discussion*

- Clarifying questions were asked and answered. A few were deferred to discuss offline after the author's arrival tonight.

### Presentation #15

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Title – Feasibility Study of 4x10G CWDM – Potential Evolution of Technology  
By – Eddie Tsumura, Excelight  
See – tsumura\_01\_0908.pdf

#### *Discussion*

- Clarifying questions were asked and answered.

## Presentation #16

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Title – One End user's Perspective on 40GE SMF  
By – Henk Steenman, AMS-IX  
See – steenman\_01\_0908.pdf

### *Discussion*

- There were some editorial updates to the presentation which will be uploaded
- Clarifying questions were asked and answered.

## Presentation #17

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Title – 40GbE SMF Recommendations  
By – Mark Nowell, Cisco  
See – Nowell\_01\_0908.pdf

### *Discussion*

- Clarifying questions were asked and answered.

## Presentation #18

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Title – 40GE 10km SMF PMD Gen1 Serial Cost Analysis  
By – Chris Cole, Finisar  
See – cole\_03\_0908.pdf

### *Discussion*

- There were some editorial updates to the presentation which will be uploaded
- Clarifying questions were asked and answered.

After some discussion the following Straw Polls were taken.

### **Straw Poll #1:** (Chicago Rules)

I would support a decision for a 40G SMF solution this week based on:

- a) 4x10G CWDM per cole\_01\_0908.pdf
- b) 2x20G CWDM per dawc\_01\_0908.pdf
- c) Serial per traverso\_02\_0708.pdf

|                  |               |
|------------------|---------------|
| All in the room: | 802.3 voters: |
| a) 70            | a) 35         |
| b) 12            | b) 10         |
| c) 31            | c) 20         |

### **Straw Poll #2:** (select 1 only)

I would support a decision for a 40G SMF solution this week based on:

- a) 4x10G CWDM per cole\_01\_0908.pdf
- b) 2x20G CWDM per dawc\_01\_0908.pdf
- c) Serial per traverso\_02\_0708.pdf
- d) Abstain

|                  |               |
|------------------|---------------|
| All in the room: | 802.3 voters: |
| a) 61            | a) 33         |
| b) 4             | b) 4          |
| c) 24            | c) 16         |
| d) 8             | d) 3          |

**Straw Poll #3:** I would support the removal of the 40GbE 10km objective if no agreement  
All in the room

Y: 20

N: 54

A: 19

**Straw Poll #4:** proposed by Jeff Maki

I would support a 40G Serial proposal based on 40G electrical lane

Y: 5

N: 23

A: 55

Break for the night at 18:50 on Tuesday 16 September

Reconvened at 8:39am on Wednesday 17 September

The chair displayed the patent slides. A call was made for patents, and no one came forward.

The chair summarized the schedule for the remainder of the week. The chair reminded participants about the web attendance tool and the sign-in sheets.

**Motion #1:** Move to adopt 2x20G CWDM as per "dawe\_01\_0908.pdf" as the baseline proposal for the 40GE 10km SMF PMD objective.

Technical  $\geq 75\%$

M: H. Frazier

S: S. Muller

All in room

802.3 voters

Y: 15

Y: 11

N: 51

N: 33

A: 24

A: 10

Motion fails

**Motion #2:** Move to adopt Serial as per "traverso\_02\_0708.pdf" as the baseline proposal for the 40GE 10km SMF PMD objective.

Technical  $\geq 75\%$

M: H. Frazier

S: S. Muller

All in room

802.3 voters

Y: 39

Y: 23

N: 49

N: 33

A: 16

A: 3

Motion fails

**Motion #3:** Move to adopt 4x10G CWDM as per "cole\_01\_0908.pdf" as the baseline proposal for the 40GE 10km SMF PMD objective.

Technical  $\geq 75\%$

M: H. Frazier

S: P. Anslow

All in room

802.3 voters

Y: 74

Y: 41

N: 26

N: 20

A: 6

A: 1

Motion fails

**Motion #4:** Move to remove the 40GE 10km SMF PMD objective from the P802.3ba project.

Technical  $\geq 75\%$

M: C. Cole

S: B. Booth

All in room

802.3 voters

Y: 33

Y: 16

N: 43

N: 21

A: 27

A: 19

Motion fails

Break at 10:00am

Reconvene at 10:35am

#### Presentation #19

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Title – SFP+ Compliance Boards Requirements and Construction

By – Ali Ghiasi, Broadcom

See – ghiasi\_02\_0908.pdf

#### *Discussion*

- Several spoke favorably toward the idea of creating a compliance board ad hoc
- an update will be made to the presentation to correct mislabeled figures

#### Presentation #20

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Title – TP1 and TP4 Testing with Compliance Boards

By – Mike Dudek, JDSU

See – dudek\_01\_0908.pdf

#### *Discussion*

- Clarifying questions were asked and answered.

The meeting moved to a review of the draft 0.9 from the Editorial team, chaired by Ilango Ganga at 11:20am.

Review of draft 0.9 done through page 34 line 40.

Break for lunch at 12:04pm.

Reconvene at 1:30pm to continue document review

Review completed through page 80.

Break at 3:04pm

Reconvene at 3:42pm

Break at 6:04pm

Reconvened at 6:30pm

Break at 8:00pm on September 17, 2008

Reconvene at 7:34am on September 18, 2008. The Chair displayed the patent slides and made a call for patents. No one came forward.



Review of draft 0.9 continued.

Break at 10:04am

Reconvened at 10:36am

Continued review of draft 0.9

Break at 12:05pm for lunch

Reconvened at 1:35pm.

The Chair opened with some remarks responding to questions he had been asked about procedural aspects of bringing a possible motion for reconsideration of an earlier motion.

Review of draft 0.9 continued.

Break at 3:08pm

Reconvene at 3:30pm

Continued review of draft 0.9

After completion of the review of clause 156, the Chair informed the task force that there was a request to put a motion before the group. A task force member from the prevailing side of Motion #3 offered the following to allow the group another opportunity to reach consensus on the baseline for the 40GbE 10km SMF interface:

**Motion #5:** Move to reconsider Motion #3.

Procedural >50%

M: S. Sambasivan S: H. Frazier

Y: 91

N: 0

A: 10

Motion passes

The motion returned to the table as:

**Motion #3 Reconsidered:** Move to adopt 4x10G CWDM as per "cole\_01\_0908.pdf" as the baseline proposal for the 40GE 10km SMF PMD objective.

Technical ≥75%

M: H. Frazier S: P. Anslow

All in room 802.3 voters

Y: Y:

N: N:

A: A:

**Motion #6:** Move to postpone discussion of "Motion #3 reconsidered" to Friday, September 19 after the Chair's opening remarks.

Procedural >50%

M: H Frazier S: T. Baldwin

Passes by voice without opposition

Review of draft 0.9 continued with clause 157.  
Review of draft 0.9 was completed.

The chair announced that the meeting would resume at 8:30am on Friday. After opening remarks, the reconsideration of motion 3 will take place. If this succeeds, the Task Force will review proposed text for cole\_01\_0908.pdf (see [http://www.ieee802.org/3/ba/private/king\\_01\\_0908.pdf](http://www.ieee802.org/3/ba/private/king_01_0908.pdf)).

Break for the day at 6:30pm

Reconvene at 8:37am on September 17, 2008.

The Chair displayed the patent slides and issued a call for patents. No one came forward.

The Chair reminded the task force per Motion #5 that Motion #3 would be reconsidered. If this reconsideration is successful, the proposed text in king\_01\_0908.pdf would be reviewed for clause 157 as possible text for inclusion in Draft 1.0.

The Chair announced that he is investigating whether he can add an adjacent and co-located interim meeting on Sunday prior to the plenary meeting in November.

**Motion #3 Reconsidered**: Move to adopt 4x10G CWDM as per "cole\_01\_0908.pdf" as the baseline proposal for the 40GE 10km SMF PMD objective.

Technical  $\geq 75\%$

M: H. Frazier S: P. Anslow

All in room 802.3 voters

Y: 71 Y: 39

N: 3 N: 2

A: 23 A: 16

Motion passes

**Straw Poll #5**: (Requested by Matt Traverso) I believe that the 40GbE serial PMD proposal is worthy of consideration in a future project.

Y: 86

The meeting then undertook review of king\_01\_0908.pdf, proposed draft text for cole\_01\_0908.pdf adopted above in "Motion 3 Reconsidered".

Break at 10:04am

Reconvene at 10:40am

Resume review of king\_01\_0908.pdf

After completing review of the draft of clause 157, the group returned to reconsider a few definitions.

Break for lunch at 11:29am.

Reconvene at 1:40pm

**Motion #7:** Move to adopt Draft 0.9 and king\_01\_0908 as modified by the comments contained in D0\_9\_Comments\_0908.pdf as the basis for Draft 1.0.

Technical ≥75%

M: I. Ganga

S: H. Barrass

Y: 59

N: 0

A: 1

Motion passes

#### Presentation #21

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Title – Chief Editor's Closing Report

By – Ilango Ganga, Intel, Chief Editor

See – ganga\_02\_0908.pdf

##### *Discussion*

- Key items needing comments and supporting presentations were identified
- Clarifying questions were asked and answered.

#### Presentation #22

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Title – The Case for Extended Reach MM Objectives

By – Paul Kolesar, CommScope

See – kolesar\_01\_0908.pdf

##### *Discussion*

- Clarifying questions were asked and answered.

#### Presentation #23

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Title – Long Data Centre Links vs Length

By – Alan Flatman, LAN technologies

See – flatman\_01\_0908.pdf

##### *Discussion*

- Clarifying questions were asked and answered.

Break at 3:05pm

Reconvene at 3:33pm

**Straw Poll #6:** (Requested by Paul Kolesar) The goal for extending the reach on MMF should be:

A. at least 150m on OM3

B. at least 250m on OM4

C. both A and B

D. at least 200m on OM4

E. both A and D

F. there should be no goal for extended reach

Result:

A: 7

B: 3

C: 5

D: 1

E: 0

F: 27

**Motion #8:** Move that 802.3ba approve the text in anslow\_01\_0908.pdf, attaching 8023ba\_D0\_9.pdf and king\_01\_0908.pdf, with editorial license granted to the Chair (or his appointed agent) as an informal communication by the Chair to ITU-T Study Group 15.

Technical  $\geq 75\%$

M: P. Anslow S: J. King

Passed unopposed by voice

The Chair reminded participants that the next meeting of the Task Force will be at the November 2008 plenary in Dallas. The Chair is investigating holding a co-located interim on the Sunday prior to the plenary week (November 9) and will transmit details as soon as this can be confirmed.

The January interim will be a 4-day meeting, provisionally the week of January 12 in New Orleans.

**Straw Poll #7:** How many will attend the 802.3ba task force meetings at the January 2008 interim (provisionally New Orleans, w/o January 12, 2009)?

By the chair's estimate, approximately 3/4 in the room raised their hand, but as many participants had already departed this could not be relied on as an accurate count.

### **Future Meetings:**

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#### **Nov 2008 Plenary**

- Nov 10 – 13
- Hyatt Regency Dallas at Reunion
- Dallas, Tx, USA
- Possibility of adjacent and co-located interim meeting on Sunday, November 9

#### **Jan 2009 Interim**

- Jan 12-16
- Hotel TBD
- New Orleans, LA, USA

#### **Mar 2009 Plenary**

- Mar 10 – 13
- Hyatt Regency Vancouver and Fairmont Hotel
- Vancouver, BC, Canada

Motion to adjourn - moved by T. Palkert; 2<sup>nd</sup> by B. Booth. Motion approved unopposed by voice.

Meeting adjourned at 4:20pm on September 19, 2008

| IEEE 802.3ba Attendance Sheet - Interim Meeting, Sept. 16-19, Seoul, KR |            |                             |                             | 9/16/2008 | 9/17/2008 | 9/18/2008 | 9/19/2008 |
|---|------------|-----------------------------|-----------------------------|-----------|-----------|-----------|-----------|
| Last Name   | First Name | Employer                    | Affiliation                 | Tues      | Weds      | Thurs     | Friday    |
| Abbas   | Ghani      | Ericsson, UK                | Ericsson, UK                | x         | x         | x         | x         |
| Alie  | Stephen    | Cortina Systems             | Cortina Systems             | x         | x         | x         | x         |
| Alping  | Arne       | Ericsson AB                 | Ericsson AB                 | x         | x         | x         | x         |
| Alush   | Yehuda     | Nokia Siemens Networks      | Nokia Siemens Networks      | x         | x         | x         |           |
| Anslow  | Pete       | Nortel                      | Nortel                      | x         | x         | x         | x         |
| Baird   | James      | Agilent Technologies        |                             | x         | x         |           | x         |
| Baldwin   | Thananya   | Ixia                        | Ixia                        | x         | x         | x         | x         |
| Bandyopadhyay   | Jaya       | Juniper Networks            | Juniper Networks            | x         | x         | x         | x         |
| Barbieri  | Alessandro | Cisco                       | Cisco                       | x         | x         | x         |           |
| Barrass   | Hugh       | Cisco                       | Cisco                       |           | x         | x         | x         |
| Bennett   | Mike       | LBNL                        | LBNL                        |           | x         | x         |           |
| Booth   | Brad       | AMCC                        | AMCC                        |           | x         |           |           |
| Bottorff  | Paul       | Nortel                      | Nortel Networks             |           |           |           | x         |
| Braun   | Ralf-Peter | Deutsche Telekom, T-Systems | Deutsche Telekom, T-Systems | x         | x         | x         | x         |
| Breuer  | Dirk       | Deutsche Telekom, T-Systems | Deutsche Telekom, T-Systems | x         | x         | x         | x         |
| Caggioni  | Francesco  | AMCC                        | AMCC                        | x         | x         | x         | x         |
| Carroll   | Martin     | Verizon                     | Verizon                     | x         | x         | x         | x         |
| Chang   | Frank      | Vitesse                     | Vitesse                     | x         |           | x         | x         |
| Chang   | Sun-Hyok   | ETRI                        |                             | x         | x         | x         | x         |
| Chiwu   | Ding       | Huawei                      | Huawei                      | x         | x         | x         | x         |

|            |             |                         |                         |   |   |   |   |
|------------|-------------|-------------------------|-------------------------|---|---|---|---|
| Cho        | Eun-Young   | ETRI                    |                         |   |   |   | x |
| Chung      | Hwan-Seok   | ETRI                    | ETRI                    | x | x | x | x |
| Cole       | Chris       | Finisar                 | Finisar                 | x | x | x | x |
| D'Ambrosia | John        | Force 10 Networks       | Force 10 Networks       | x | x | x | x |
| D'Andrea   | Dave        | Lightwire               | Lightwire               | x | x | x | x |
| Dawe       | Piers       | Avago Technologies      | Avago Technologies      | x | x | x | x |
| Diab       | Wael        | Broadcom                | Broadcom                | x |   | x |   |
| DiMinico   | Christopher | MC Communications/LEONI | MC Communications/LEONI | x | x | x | x |
| Dove       | Dan         | Procurve by HP          | Procurve by HP          |   |   |   | x |
| Dudek      | Mike        | JDSU                    | JDSU                    | x | x | x | x |
| Flatman    | Alan        | LAN Technologies        | LAN Technologies        | x | x | x | x |
| Frazier    | Howard      | Broadcom                | Broadcom                | x |   | x |   |
| Ganga      | Ilango      | Intel                   | Intel                   | x | x | x | x |
| Gentieu    | Paul        | Finisar Corp.           | Finisar Corp.           | x | x | x | x |
| Ghiasi     | Ali         | Broadcom                | Broadcom                | x | x |   |   |
| Green      | Larry       | Ixia                    | Ixia                    | x | x |   | x |
| Grimwood   | Michael     | Broadcom                | Broadcom                |   |   | x |   |
| Grow       | Bob         | Intel                   | Intel                   |   | x | x | x |
| Gu         | Yuan        | ZTE Corporation         |                         | x | x | x | x |
| Gustlin    | Mark        | Cisco                   | Cisco                   | x | x | x | x |
| Hammond    | Bernie      | ADC Telecommunications  | ADC Telecommunications  | x | x |   |   |
| Han        | Kyeong-Ean  | ETRI                    |                         | x | x |   |   |

|           |                |                     |                     |   |   |   |   |
|-----------|----------------|---------------------|---------------------|---|---|---|---|
| Healey    | Adam           | LSI                 | LSI                 |   | x | x | x |
| Hiramoto  | Kiyo           | Opnext Japan        | Opnext Japan        | x | x | x | x |
| Horner    | Rita           | Avago Technologies  | Avago Technologies  | x | x | x | x |
| Huang     | Xi             | Huawei              | Huawei              |   | x | x | x |
| Ishibe    | Kazuhiko       | Anristu             | Anristu             | x | x | x | x |
| Ishida    | Osamu          | NTT                 | NTT                 | x | x | x | x |
| Isono     | Hideki         | Fujitsu Ltd.        | Fujitsu Ltd.        | x | x | x | x |
| Iwadate   | Hirotake       | Sumitomo Electric   |                     | x | x | x | x |
| Jones     | Nevin          | LSI                 | LSI                 | x |   |   | x |
| Joo       | Bheom<br>Soon  | ETRI                | ETRI                | x |   | x | x |
| Kang      | Tae-kyu        | ETRI                | ETRI                | x | x |   | x |
| Kang      | Sae_kyoung     | ETRI                | ETRI                |   | X |   |   |
| Kim       | Seung-<br>Hwan | ETRI                | ETRI                | x | x | x | x |
| King      | Jonathan       | Finisar Corp.       | Finisar Corp.       | x | x | x | x |
| Kipp      | Scott          | Brocade             | Brocade             | x | x | x |   |
| Kiwon     | Kim            | ETRI                |                     |   |   |   | x |
| Kobayashi | Shoukei        | NTT                 | NTT                 | x | x | x | x |
| Kolesar   | Paul           | CommScope           | CommScope           | x | x | x | x |
| Kserami   | Malaz          | ICU                 |                     | x | x | x | x |
| Kumagai   | Seiji          | Endyna Devices Inc. | Endyna Devices Inc. |   |   |   | x |
| Kwon      | KiYul          | LG-NT               |                     |   |   | x | x |
| Latchman  | Ryan           | Gennum              | Gennum              | x | x | x |   |

|             |            |                        |                        |   |   |   |   |
|-------------|------------|------------------------|------------------------|---|---|---|---|
| Law         | David      | 3Com                   | 3Com                   | x | x |   | x |
| LeCheminant | Greg       | Agilent Technologies   | Agilent Technologies   | x | x | x | x |
| Lee         | Kyu Sang   | ICU                    | ICU                    | x | x | x |   |
| Lee         | Sang-Soo   | ETRI                   | ETRI                   | x | x | x | x |
| Lee         | Joon Ki    | ETRI                   |                        | x | x |   |   |
| Lee         | Chan Kyun  | ICU                    |                        | x | x | x | x |
| Lee         | Jyung Chan | ETRI                   | ETRI                   |   | x |   |   |
| Li          | Mike       | Altera                 | Altera                 | x | x | x | x |
| Maki        | Jeffery    | Juniper Networks       | Juniper Networks       | x | x | x | x |
| Mariotti    | Carlo      | Cisco                  | Cisco                  | x | x | x | x |
| Marris      | Arthur     | Cadence                | Cadence                | x | x | x | x |
| Martin      | Arlon      | Kotura                 | Kotura                 |   | x | x | x |
| Martin      | David W.   | Nortel Networks        | Nortel Networks        |   |   |   | x |
| McClay      | Phil       | Zarlink Semiconductor  | Zarlink Semiconductor  |   | x | x | x |
| McDonough   | John       | NEC America            | NEC America            | x | x | x | x |
| Meyer       | Jeffrey    | Centellax              | Centellax              | x | x | x | x |
| Mooney      | Paul       | Spirent Communications | Spirent Communications | x | x | x | x |
| Mori        | Kazuyuki   | Fujitsu Labs           | Fujitsu Labs           | x | x | x | x |
| Muller      | Shimon     | Sun                    | Sun                    | x | x | x | x |
| Nakamoto    | Edward     | Spirent Communications | Spirent Communications | x | x | x | x |
| Neer        | Jay        | Molex                  | Molex                  | x | x | x |   |
| Nicholl     | Gary       | Cisco                  | Cisco                  | x | x |   | x |



|            |             |                             |                        |   |   |   |   |
|------------|-------------|-----------------------------|------------------------|---|---|---|---|
| Noh        | George      | Vitesse Semiconductors      | Vitesse Semiconductors | x | x | x | x |
| Nowell     | Mark        | Cisco                       | Cisco                  | x | x | x | x |
| Obara      | Satoshi     | Fujitsu                     | Fujitsu                | x | x | x | x |
| Ofelt      | David       | Juniper Networks            | Juniper Networks       | x | x | x | x |
| Okuyama    | Takeshi     | Fujitsu                     |                        |   | x | x | x |
| Oomori     | Hirota      | Sumitomo Electric           | Sumitomo Electric      | x | x | x | x |
| Paatzsch   | Thomas      | Cube Optics                 | Cube Optics            | x | x | x |   |
| Palkert    | Tom         | Xilinx, Luxtera             | Xilinx, Luxtera        | x | x | x | x |
| Parsons    | Glenn       | Nortel                      | Nortel                 |   |   |   | x |
| Pepper     | Gerald      | Ixia                        | Ixia                   | x | x | x | x |
| Petrilla   | John        | Avago Technologies          | Avago Technologies     | x | x | x | x |
| Pillai     | Velu        | Broadcom                    | Broadcom               |   |   | x |   |
| Quast      | Holger      | V.I. Systems GMBH           | V.I. Systems GMBH      | x | x |   | x |
| Rhee       | J.-K. Kevin | ICU                         | ICU                    | x | x | x | x |
| Roese      | Jasef       | Deutsche Telekom, T-Systems |                        |   |   |   | x |
| Rouyer     | Jessy       | Alcatel-Lucent              |                        |   |   |   | x |
| Sambasivan | Sam         | AT&T                        | AT&T                   | x | x | x | x |
| Sayre      | Edward      | NESA                        | NESA                   | x | x | x | x |
| Seo        | Inshik      | LTI                         |                        | x |   |   |   |
| Serbay     | Murat       | MergeOptics                 | MergeOptics            | x | x | x | x |
| Shafai     | Farhard     | Sarance                     | Sarance                |   | x | x |   |
| Shang      | Song        | Sierra Monolithics          | Sierra Monolithics     | x | x |   |   |

|             |             |                            |                                 |   |   |   |   |
|-------------|-------------|----------------------------|---------------------------------|---|---|---|---|
| Shigematsu  | Masayuki    | Innovation Core SEI, Inc.  | Innovation Core SEI, Inc.       |   | x | x | x |
| Shin        | Jong-Yoon   | ETRI                       | ETRI                            | x | x | x | x |
| Shin        | Myung Ki    | ETRI                       |                                 | x |   |   |   |
| Shioiri     | Satomi      | NEC                        | NEC                             | x | x | x | x |
| Simsarian   | Jesse       | Alcatel-Lucent             | Alcatel-Lucent                  | x | x | x | x |
| Steenman    | Henk        | AMS-IX                     | AMS-IX                          | x | x | x | x |
| Suzuki      | Kenyichi    | NTT                        | NTT Access Network Systems Labs |   |   |   | x |
| Swanson     | Steve       | Corning                    | Corning                         | x | x | x | x |
| Takahashi   | Hidenori    | KDDI R&D Laboratories Inc. | KDDI R&D Laboratories Inc.      | x | x | x | x |
| Thiagarajan | Sashi       | Ciena                      | Ciena                           | x | x | x | x |
| Toyoda      | Hidehiro    | Hitachi                    | Hitachi                         | x | x | x | x |
| Traverso    | Matt        | Opnext                     | Opnext                          |   | x | x | x |
| Trowbridge  | Steve       | Alcatel-Lucent             | Alcatel-Lucent                  | x | x | x | x |
| Tsumura     | Eddie       | Excelight                  | Excelight                       | x | x | x | x |
| Turner      | Brad        | Juniper                    | Juniper                         | x | x | x | x |
| Vanderlaan  | Paul        | Nexans                     | Nexans                          | x | x | x | x |
| Vetteth     | Anoop       | Cisco                      | Cisco                           |   | x |   |   |
| Yang        | Choong-reol | ETRI                       | ETRI                            | x | x | x | x |
| Yao         | Alex        | The Siemon Co.             | The Siemon Co.                  | x | x | x | x |
| Yashiki     | Kenichiro   | NEC                        | NEC                             | x | x | x | x |
| Yuanwang    | Zhang       | ZTE Corporation            |                                 | x | x | x | x |
| Zivny       | Pavel       | Tektronix                  | Tektronix                       | x | x | x | x |

