



InterNational Committee for Information Technology Standards  
(INCITS) Secretariat: Information Technology  
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[www.INCITS.org](http://www.INCITS.org)



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**T11-2018-00179-v000**

**Approved Minutes  
INCITS Fibre Channel (T11) Technical Committee  
Regular Meeting #146  
5 April 2018 – 1 PM to 4 PM EDT  
Deerfield Beach, FL**

## **1 Opening Remarks and Introductions**

### **1.1 Introductory Remarks**

TC T11 chair Steve Wilson (Broadcom) convened regular meeting #146 of the INCITS Fibre Channel (T11) Technical Committee on Thursday, 5 April 2018 at 1:00 PM EDT. He introduced himself, and thanked our host Tom Palkert and Molex for the meeting facilities and amenities.

He next introduced Craig Carlson (QLogic / Cavium) as vice chair and Richard Johnson (Finisar) as secretary.

### **1.2 Self-introductions**

The chair requested those present to introduce themselves, with identification of the organizations they represent.

### **1.3 Operating under INCITS Procedures**

#### **1.3.1 Patent Information**

The chair indicated that among the rules and policies under which this Technical Committee operates are the ANSI intellectual property policies as specified in pages 1-3 of INCITS patent policy slides available from <http://www.incits.org/standards-information/legal-info>.

He displayed these pages without comment or explanation, and directed that questions about the policy should be referred to the questioner's legal counsel or the ANSI General Counsel.

### **1.3.2 Antitrust Guidelines**

The chair indicated that among the rules and policies under which this Technical Committee operates are the INCITS Antitrust Guidelines as specified in <http://www.incits.org/standards-information/legal-info>. Any person present at the meeting is responsible for objecting if he believes discussion in the meeting violates those guidelines. As examples, there should never be discussion of the following topics at any INCITS or INCITS subgroup meeting:

- Any company's prices or pricing policies;
- Specific R&D, sales and marketing plans;
- Any company's confidential product, product development or production strategies;
- Whether certain suppliers or customers will be served;
- Prices paid to input sources; or
- Complaints about individual firms or other actions that might tend to hinder a competitor in any market.

If such discussion is not immediately terminated, it is the chairperson's responsibility to terminate the meeting.

### **1.3.3 Public access rules**

The chair indicated that among the rules and policies under which this Technical Committee operates are the INCITS rules for operating in Public Access Mode, as specified in Section 3.11 of INCITS Organization, Policies, and Procedures (found at <http://www.incits.org>).

The chair encouraged those nonmembers who attend T11 meetings regularly or intend to attend T11 meetings regularly to join the organization. He further advised that nonmembers, by remaining in this meeting, acknowledge that they understand and agree to the policies of this meeting.

## 1.4 Attendance

The chair instructed those present how to register using the electronic attendance list for this meeting, found via the URL <http://standards.incits.org/login>. He reminded those present that both the electronic attendance list and physical presence at the meeting will be required to qualify as attendance for formal records of this meeting.

## 2 Approval of the Agenda

An electronic version of the agenda was posted as T11-2018-00083-v001. The chair presented the agenda with final updates as T11-2018-00083-v002 and made a call for any changes and new agenda items. No changes or new items were requested.

Chris Lyon (Amphenol) moved and Fred Knight (NetApp) seconded that T11-2018-00083-v002 as presented at this meeting be approved as the agenda for this meeting. The motion passed by acclamation.

## 3 Attendance and Membership

### 3.1 Gaining and Losing Voting Membership

Information on how membership is gained, maintained, and lost in any INCITS Technical Committee or Task Group may be found in the INCITS Organization, Policies, and Procedures found at <http://www.incits.org>. An overview of these requirements was introduced by the chair and was available to all attendees among the electronically distributed meeting documents.

The vice chair presented the current list of members and representatives, and invited corrections. The membership effective for this meeting, as adjusted for changes introduced at this meeting, is shown in annex A.1. Attendance for this meeting is shown in annex A.2. Attendance for the ad hoc meetings is shown in annex A.3.

### 3.2 Changes in Representation Since the Last Meeting

The following changes in representation have been made since the last meeting:

- **Cisco:** Rajesh L G is added as Alternate.
- **Finisar:** Jonathan King is added as Alternate.
- **GlobalFoundries:** Jon David Garlett is added as Alternate.

- **Molex:** Alexandra Haser becomes Principal, and Jay Neer becomes Alternate.
- **QLogic:** Akinori Maeda is added as Alternate.
- **Teledyne LeCroy:** Douglas Lee is added as Alternate.

### **3.3 New Voting Memberships**

- **Teledyne LeCroy** becomes a voting member for this meeting cycle.

### **3.4 Voting memberships in jeopardy for attendance**

- No member is in jeopardy for attendance for this meeting cycle.

### **3.5 Voting memberships in jeopardy for non-payment of dues**

- **Semtech** membership is canceled for non-payment of dues.

### **3.6 Voting memberships in jeopardy for letter ballot performance**

- No member is in jeopardy for letter ballot performance.

### **3.7 Membership for this meeting**

Technical Committee T11 had 21 voting members at the T11 regular meeting 8 February 2018. With one member gaining voting membership and no members losing voting membership, the voting membership of T11 becomes 22 effective this meeting.

Reflecting the above changes, the voting membership of T11 for this meeting is recorded in [annex A.1.2](#).

Reflecting the above changes, the advisory (i.e., nonvoting) membership of T11 for this meeting is recorded in [annex A.1.3](#).

### **3.8 Call for members of the press and journalists**

The chair requested members of the press and journalists to introduce themselves. No person attending the meeting made such an introduction.

### 3.9 Call for Quorum

The total membership for this meeting is 22. One third of the total membership for this meeting is 7. The number of member organizations that responded to the call for quorum was 18. This exceeds or equals one third of the total membership for this meeting and also exceeds or equals 4. A quorum is therefore present for this meeting.

### 3.10 Call for Guests

The chair requested those associated with organizations that are not members of T11 to introduce themselves. No one responded.

## 4 Document Distribution

The chair described the process for T11 document distribution via <http://standards.incits.org>.

## 5 Approval of Minutes - Meeting #145

The prior regular meeting of the INCITS Fibre Channel (T11) Technical Committee was #145 on 8 February 2018. The draft Minutes of that meeting were posted as document T11/2018-00052-v000.

T11 minutes are reviewed as posted on the T11 web site. Corrections may be requested either before the subsequent meeting by email to the T11 secretary ([richard.johnson@finisar.com](mailto:richard.johnson@finisar.com)) or at the subsequent meeting in person. No corrections were requested.

Greg McSorley (Amphenol) moved and Patti Driever (IBM) seconded to accept T11/2018-00052-v000 as the Minutes of T11 meeting #145 on 8 February 2018. The motion passed by acclamation.

See action item 18-004.

## 6 Review of Old Action Items

|        |   |
|--------|---|
| 18-001 | T11 secretary to post approved Minutes of T11 meeting #144 as agreed at T11 meeting #145. Completed by posting T11-2018-00051-v000 on February 9, 2018. |
| 18-002 | T11 chair to forward FC-PI-8 project proposal to INCITS for further processing. Completed   |

|        |   |
|--------|---|
|        | by email to Rachel Porter on February 21, 2018 (T11-2018-00073-v000).   |
| 18-003 | T11 vice-chair to update the meeting venue for August 2018. Completed by posting to ICMS on December 3, 2017. |

## 7 Review of T11 Project and Proposal Status

### 7.1 Project Proposals

No new project proposals have been processed by INCITS for this reporting period.

### 7.2 Project Status Review

The T11 Project status sheet was displayed (see [annex B.1](#)). The current version can be viewed at any time at <http://standards.incits.org>, in the “T11 Projects” folder in the documents section.

The chair reminded all TG chairs to assure the project status sheet is maintained to reflect changes in status of their projects.

## 8 Results of non-ISO Letter Ballots

There were no non-ISO letter ballots held for this meeting cycle.

## 9 Old Business

No old business was reopened.

## 10 Task Group T11.2 - Physical Interfaces

### 10.1 Report to T11 Plenary (T11-2018-00139-v000)

Task Group vice chair Dean Wallace gave the report posted as T11-2018-00139-v000 on activity at T11.2.

### 10.2 Actions

No actions were requested during this meeting cycle.

### **10.3 Other Items**

No other items were presented for TG T11.2.

## **11 Task Group T11.3 - Interconnection Schemes**

### **11.1 Report to T11 Plenary (T11-2018-00141-v000)**

Task Group chair Craig Carlson (QLogic / Cavium) presented the information posted as T11-2018-00141-v000 on activity at T11.3.

### **11.2 Actions**

#### **11.2.1 FC-NVMe AM1 Project Proposal**

Craig Carlson (QLogic) moved and Dave Peterson (Broadcom) seconded the following motion:

To approve the project proposal for FC-NVMe AM1 (2018-00072-v000) and to forward it to INCITS for further processing.

A show-of-hands vote was taken, with 18 affirming, 0 opposing, and 0 abstaining.

See action item 18-005.

#### **11.2.2 FC-FS-6 Project Proposal**

Craig Carlson (QLogic) moved and Patty Driever (IBM) seconded the following motion:

To approve the project proposal for FC-FS-6 (2018-00074-v001) and to forward it to INCITS for further processing.

No company chose to change its vote from that of clause 11.2.1: 18 affirming, 0 opposing, 0 abstaining.

See action item 18-006.

### **11.2.3 FC-FS-5 Letter Ballot**

TG T11.3 requests that the T11 chair conduct a letter ballot on FC-FS-5 Rev. 1.0 T11-2018-00082-v001 for forwarding to INCITS including first public review.

See action item 18-007.

### **11.3 Other Items**

No other items were presented for TG T11.3.

## **12 Joint TG T11.2 / T11.3 Items**

Task Group vice chair Dean Wallace (QLogic) gave report T11-2018-00131-v000 on the joint T11.2 – T11.3 meeting as part of the T11.2 plenary report.

## **13 T11 project activities**

### **13.1 FC-EE Technical Report (T11-2018-00076-v000)**

Dean Wallace (QLogic) moved and Chris Lyon (Amphenol) seconded the following motion:

To forward FC-EE document T11-2018-00076-v000 with accepted comments in comment resolution document T11-2018-00075-v002 to INCITS for further processing.

No company chose to change its vote from that of clause 11.2.1: 18 affirming, 0 opposing, 0 abstaining.

See action item 18-008.

## **14 Review of International Activity**

### **14.1 ISO Status Report (T11-2018-00117-v000)**

T11 International Representative Dave Peterson (Broadcom) presented the information posted as T11-2018-00117-v000 on project status at ISO (see [annex B.2](#)).



## **14.2 ISO Motions**

No ISO motions were submitted during this reporting period.

## **15 T11 New Business**

### **15.1 National Maintenance (T11-00080-v000)**

#### **15.1.1 Motion for Stabilization**

Steve Wilson (Broadcom) moved and Chris Lyon (Amphenol) seconded the following motion:

Motion to recommend to INCITS that the following standards be recommended for Stabilization (2/3 meeting). The rationale for stabilization is that the standards have ongoing validity and effectiveness, but they are mature and unlikely to require maintenance of any sort.

- INCITS 438-2008[R2013] Information technology – Server Management Command Line Protocol (SM CLP) Specification
- INCITS 443-2008[R2013] Information technology – Fibre Channel Storage Network PING (SNPing)
- INCITS 449-2008[R2013] Information technology – Fabric Application Interface Standard – 2 (FAIS-2)
- INCITS 419-2008[R2013] Information technology – Fibre Channel Backbone – 4 (FC-BB-4)
- INCITS 437-2008[R2013] Information technology – Fibre Channel – SATA Tunneling Protocol (FC-SATA)

Companies were asked if they wanted to change their vote from clause 11.2.1. No company requested a change: 18 affirming, 0 opposing, 0 abstaining.

See action item 18-009.

#### **15.1.2 Motion for Reaffirmation**

Steve Wilson (Broadcom) moved and Richard Johnson (Finisar) seconded the following motion:

Motion to recommend to INCITS that the following standards / technical reports be

recommended for Reaffirmation (2/3 meeting):

- INCITS 528-2013 Information technology – Common Building Blocks Specification
- INCITS 530-2013 Information technology – Architecture for Managed Computing Systems
- INCITS 531-2013 Information technology – Systems Management Discovery for Managed Computer Systems
- INCITS / ISO / IEC 11002:2008[2013] Information technology – Multipath management API
- INCITS / ISO / IEC 11989:2010[2013] Information technology – iSCSI Management API
- INCITS / ISO / IEC 13187:2011[2013] Information technology – Server Management Command Line Protocol (SM CLP) Specification
- INCITS / TR-32-2003[R2013] INCITS Technical Report for Information Technology – Fibre Channel – Management Information Base – FA (MIB-FA)
- INCITS / TR-33-2003[R2013] INCITS Technical Report for Information Technology – Fibre Channel Signal Modeling (FC-SM)
- INCITS / TR-44-2008[R2013] INCITS Technical Report for Information Technology – Fibre Channel Signal Modeling – 2 (FCSM-2)

Companies were asked if they wanted to change their vote from clause 11.2.1. No company requested a change: 18 affirming, 0 opposing, 0 abstaining.

See action item 18-010.

## **15.2 T11 Due Diligence**

J Metz (Cisco) gave a verbal proposal to T11.

## **16 Call for Patents**

### **16.1 Patent information registry**

The chair indicated that the current record of responses to prior calls for patents can be found in the T11 web site at <http://www.t11.org/t11/docreg.nsf/v2t?openForm&ent=35>.

## **16.2 Call for Patents**

### **16.2.1 Patent Information Overview**

The chair reminded the meeting that among the rules and policies under which T11 operates are the INCITS intellectual property policies. An overview of patent information relevant to T11 may be found in T11-2010-008v0.

### **16.2.2 INCITS/ISO patent disclosure form**

A template form for a patent declaration that is satisfactory to both INCITS and ISO can be found in <http://www.incits.org/standards-information/legal-info>.

No company responded to the call for patents.

## **17 Liaison Reports**

### **17.1 T11 report (T11-2018-00079-v000), INCITS Liaison report (T11-2018-00092-v000)**

Steve Wilson (Broadcom) presented the information posted as T11-2018-00079-v000 on activity at T11 as reported to other organizations, and the information posted as T11-2018-00092-v000 on activity at INCITS other than T11 project status.

### **17.2 TC T10 (T11-2018-00112-v000)**

Fred Knight (NetApp) reviewed report T11-2018-00112-v000 on activity at INCITS Technical Committee T10.

### **17.3 FCIA (T11-2018-00130-v000)**

Chris Lyon (Amphenol) gave report T11-2018-00130-v000 on activity at FCIA.

### **17.4 IEEE 802.3 (T11-2018-00137-v000)**

No one presented IEEE 802.3 liaison report T11-2018-00137-v000.

### **17.5 INCITS TC CS1 (none)**

No report on INCITS TC CS1 activity was given during this plenary meeting cycle.

### **17.6 SNIA and DMTF (T11-2018-00123-v000)**

Fred Knight (NetApp) discussed report T11-2018-00123-v000 on SNIA and DMTF activities.

### **17.7 NVMe (verbal)**

Craig Carlson (Cavium) gave a brief verbal report on recent NVMe activities.

### **17.8 COBO (none)**

No report on COBO activity was given during this plenary meeting cycle.

### **17.9 MEF (T11-2018-00111-v000)**

Steve Wilson (Broadcom) presented the Metro Ethernet Forum's proposal for possible liaison reports.

## **18 Administrative Matters**

### **18.1 Officer Appointments**

Officers of this Technical Committee and its Task Groups are:

|                                  |                                 |
|----------------------------------|---------------------------------|
| T11 Chairman                     | Steve Wilson (Broadcom)         |
| T11 International Representative | David Peterson (Broadcom)       |
| T11 Vice Chairman                | Craig Carlson (QLogic / Cavium) |
| T11 Secretary                    | Richard Johnson (Finisar)       |
| T11.2 Chairman                   | Tom Palkert (Macom)             |
| T11.2 Vice-Chairman              | Dean Wallace (QLogic / Cavium)  |
| T11.2 Secretary                  | Richard Johnson (Finisar)       |
| T11.3 Chairman                   | Craig Carlson (QLogic / Cavium) |
| T11.3 Vice-chairman              | Roger Hathorn (IBM)             |
| T11.3 Secretary                  | Patty Driever (IBM)             |

## 18.2 T11 Information Technology

### 18.2.1 Website status

The website status was given in the INCITS report.

## 19 Future Meeting Schedule

### 19.1 Authorization of adhoc meetings

The chair directed members to the ICMS T11.2 calendar located at the T11 section of the web site <http://standards.incits.org> the latest announcements of pending work group interim meetings and teleconferences. He advised that authorization of ad hoc work group meetings is delegated to the appropriate TG, if any.

The vice chair will account for these requests in the schedule for the T11 plenary week hosted by QLogic and Craig Carlson in Santa Fe, NM, 4-8 June 2018.

### 19.2 Guidelines for hosting T11 meetings (T11-2017-00151-v000)

For members who are considering hosting future plenary meetings, the chair directed their attention to “Guidelines for hosting T11 Plenary Weeks” T11-2017-00151-v000. This information includes guidelines for hosting a T11 meeting week and room night histories of past meeting weeks. This is required reading for those who are considering hosting because it summarizes the needs of the committee for meeting facilities and gives considerations that may reduce costs for the host.

Groups arranging to meet with T11 were strongly advised to confirm with the host any changes in their needs for meeting space well before the meeting. Failure to do so could easily cause serious inconvenience to the host and/or the group.

### 19.3 Request for hosts and 2018–2019 meeting schedule

The chair announced the following schedule for 2018-2019.

| Date               | Location     | Host Organization | Host Person   |
|--------------------|--------------|-------------------|---------------|
| June 4-8, 2018     | Santa Fe, NM | QLogic            | Craig Carlson |
| August 13-17, 2018 | (tbd)        | Amphenol          | Chris Lyon    |

|                    |                 |       |               |
|--------------------|-----------------|-------|---------------|
| October 1-5, 2018  | New Orleans, LA | FCIA  | Shelby Laramy |
| December 3-7, 2018 | (tbd)           | SFF   | Greg McSorley |
| February 4-8, 2019 | (tbd)           | (tbd) |               |
| April 8-12, 2019   | (tbd)           | (tbd) |               |
| June 3-7, 2019     | (tbd)           | (tbd) |               |
| August 12-16, 2019 | (tbd)           | (tbd) |               |
| October 7-11, 2019 | (tbd)           | (tbd) |               |
| December 2-6, 2019 | (tbd)           | (tbd) |               |

## 19.4 Approval of Meeting Venues

### 19.4.1 Approval of meeting venues

Greg McSorley (Amphenol) moved and Fred Knight (NetApp) seconded to approve that the December 2018 meeting venue be held in Raleigh, NC.

A show-of-hands vote was taken, with 17 affirming, 0 opposing, and 0 abstaining.

See action item 18-011.

## 19.5 Next meeting information

The chair reminded the membership that the next T11 plenary week is hosted by QLogic and Craig Carlson in Santa Fe, NM, 4-8 June 2018. He noted that detailed information about the hotel and the locale can be found on the INCITS website in the T11 Meeting Information folder under June 2018.

## 19.6 Letter to travel representatives on hotel rates (T11-2017-00150-v000)

The chair reminded the membership that

- T11 plenary meetings are hosted by volunteer organizations;
- A plenary host receives no reimbursement from T11 or INCITS for any expenses of hosting;

- A plenary host may depend on agreements with the meeting hotel in order to reduce the expenses of the host and also possibly, though not necessarily, reduced the room rates for the members; and
- A hotel may charge punitive extra fees to a host if the meeting does not achieve an agreed number of room nights identified with group members.

Therefore, T11 expects those attending meetings during a plenary week to stay at the meeting hotel and identify themselves as members of the T11 group, even though less expensive lodging may be found in the area, or even at the same hotel. Document T11-2017-00150-v000 has been posted which contains a letter to those with budget responsibilities for member organizations justifying this obligation.

### 19.7 Plenary week meeting map for June 2018 T11 meetings

The vice chair Craig Carlson (Cavium) presented the tentative meeting map of the next T11 meeting week. He advised members for the most recent meeting map of the next T11 regular meeting to go to the INCITS website, search the T11 Meeting Information folder under June 2018.

### 20 Final Attendance Notice / Check

The chair reviewed the electronically registered attendance list, advised that the list was about to close, and reminded those who had not registered that the list would then become the only source of attendance for formal records of this meeting.

Final registered attendance for T11 regular meeting #146 is shown in annex A.2. 24 people from 19 member organizations were in attendance.

### 21 Review of Action Items

|        |   |
|--------|---|
| 18-004 | T11 secretary to post approved Minutes of T11 meeting #145 as agreed at T11 meeting #146. (See <a href="#">clause 5</a> ) |
| 18-005 | T11 chair to forward FC-NVMe AM1 project proposal to INCITS for further processing. (See clause 11.2.1)                   |
| 18-006 | T11 chair to forward FC-FS-6 project proposal to INCITS for further processing. (See clause 11.2.2)                       |
| 18-007 | T11 chair to conduct T11 letter ballot on FC-FS-5 Rev. 1.0 T11-2018-00082-v001 for  |

|        |   |
|--------|---|
|        | forwarding to INCITS including first public review. (See clause 11.2.3)   |
| 18-008 | T11 chair to forward FC-EE document T11-2018-00076-v000 with accepted comments in comment resolution document T11-2018-00075-v002 to INCITS for further processing. (See clause 13.1) |
| 18-009 | T11 chair to forward to INCITS the results of the vote for national maintenance motion for stabilization. (See clause 15.1.1)   |
| 18-010 | T11 chair to forward to INCITS the results of the vote for national maintenance motion for reaffirmation. (See clause 15.1.2)   |
| 18-011 | T11 vice chair to update ICMS with approved December 2018 meeting location. (See clause 19.4.1)   |

## 22 Adjournment

Greg McSorley (Amphenol) moved to adjourn at 2:09 PM. The motion passed by acclamation.



## **Annex A Membership and Attendance**

### **A.1 Membership for this meeting**

#### **A.1.1 Emeritus Members**

These people have been granted Emeritus membership in INCITS Fibre Channel (T11) Technical Committee, recognizing their many years of skilled leadership and high quality technical contribution:

**James Coomes**

**William Ham**

**Robert Kembel**

**Robert Nixon**

**Schelto Van Doorn**

#### **A.1.2 Voting Members**

The following is the list of organizations that are voting members of record for regular meeting #146 of the INCITS Fibre Channel (T11) Technical Committee, including the recognized representatives of each member organization:

| <b>Organization</b> | <b>Representative Type</b> | <b>Representative</b> |
|---------------------|----------------------------|-----------------------|
| Amphenol            | Principal                  | Gregory McSorley      |
|                     | Alternate                  | Brad Brubaker         |
|                     | Alternate                  | Mike Davis            |
|                     | Alternate                  | Daniel Dillow         |
|                     | Alternate                  | Chris Lyon            |
|                     | Alternate                  | Alex Persaud          |
|                     | Alternate                  | Hu Silver             |
|                     | Alternate                  | Michael Wingard       |
| Broadcom Limited    | Principal                  | Steven L. Wilson      |

|           |           |                   |
|-----------|-----------|-------------------|
|           | Alternate | David Baldwin     |
|           | Alternate | Evan Beauprez     |
|           | Alternate | Ben Chu           |
|           | Alternate | Adam Healey       |
|           | Alternate | Howard Johnson    |
|           | Alternate | Mark Jones        |
|           | Alternate | Scott Kipp        |
|           | Alternate | Anil Mehta        |
|           | Alternate | David Peterson    |
|           | Alternate | Rob Peterson      |
|           | Alternate | Gautam Shiroor    |
|           | Alternate | James Smart       |
|           | Cisco     | Principal         |
| Alternate |           | Harsha Bharadwaj  |
| Alternate |           | Rajesh L G        |
| Alternate |           | Fabio Maino       |
| Alternate |           | J Metz            |
| Alternate |           | Landon Noll       |
| Alternate |           | Joe Pelissier     |
| Commscope | Principal | Yang (Sunny) Xu   |
|           | Alternate | Gary Gibbs        |
|           | Alternate | Gary Irwin        |
|           | Alternate | Paul Kolesar      |
| Corning   | Principal | Doug Coleman      |
|           | Alternate | Steven E. Swanson |
| DCS       | Principal | Kevin Ehringer    |
|           | Alternate | Zach Nason        |
|           | Alternate | Todd Wheeler      |
| Dell      | Principal | Louis Ricci       |
|           | Alternate | David Black       |
|           | Alternate | Gaurav Chawla     |

|                                   |           |                         |
|-----------------------------------|-----------|-------------------------|
|                                   | Alternate | Alan Rajapa             |
|                                   | Alternate | Erik Smith              |
|                                   | Alternate | Joseph White            |
|                                   | Alternate | Jeff Young              |
| Finisar                           | Principal | Chris Yien              |
|                                   | Alternate | Richard Johnson         |
|                                   | Alternate | Jonathan King           |
| Foxconn Interconnect Technologies | Principal | John Petrilla           |
|                                   | Alternate | Eric Chu                |
|                                   | Alternate | Randy Clark             |
|                                   | Alternate | Fred Fons               |
|                                   | Alternate | Glenn Moore             |
|                                   | Alternate | William Peters          |
| Fujitsu                           | Principal | Mark Malcolm            |
|                                   | Alternate | Kun Katsumata           |
|                                   | Alternate | Osamu Kimura            |
|                                   | Alternate | Eugene Owens            |
| Global Foundries                  | Principal | Adrian Butter           |
|                                   | Alternate | John Ewen               |
|                                   | Alternate | Jon Garlett             |
| Hewlett Packard Enterprise        | Principal | Barry Maskas            |
|                                   | Alternate | Rupin Mohan             |
|                                   | Alternate | Krishna Babu Puttagunta |
| IBM                               | Principal | Roger Hathorn           |
|                                   | Alternate | Patty Driever           |
| Keysight Technologies             | Principal | Stephen Didde           |
|                                   | Alternate | Steve Sekel             |
|                                   | Alternate | Hajime Takahashi        |
|                                   | Alternate | Joachim Vobis           |
| Macom                             | Principal | Tom Palkert             |
| Molex                             | Principal | Alexandra Haser         |

|                 |           |                     |
|-----------------|-----------|---------------------|
|                 | Alternate | Jay Neer            |
|                 | Alternate | Scott Sommers       |
| NetApp          | Principal | Frederick Knight    |
|                 | Alternate | John Meneghini      |
|                 | Alternate | Urmi Misra          |
| OFS             | Principal | Roman Shubochkin    |
|                 | Alternate | Mabud Choudhury     |
| QLogic          | Principal | Craig W. Carlson    |
|                 | Alternate | Anshul Agarwal      |
|                 | Alternate | Girish Basrur       |
|                 | Alternate | Kathy Caballero     |
|                 | Alternate | Robert Friend       |
|                 | Alternate | Duane Grigsby       |
|                 | Alternate | Ali Khwaja          |
|                 | Alternate | Stephen Lam         |
|                 | Alternate | Ray Leung           |
|                 | Alternate | Akinori Maeda       |
|                 | Alternate | Praveen Midha       |
|                 | Alternate | Trinh Nguyen        |
|                 | Alternate | Raul Oteyza         |
|                 | Alternate | Alan Spalding       |
|                 | Alternate | Gourangadoss Sundar |
|                 | Alternate | Darren Trap         |
|                 | Alternate | Andrew Vasquez      |
|                 | Alternate | Dean Wallace        |
| TE Connectivity | Principal | Nathan Tracy        |
|                 | Alternate | Melissa Knox        |
|                 | Alternate | Jeff Mason          |
|                 | Alternate | Andy Nowak          |
| Teledyne LeCroy | Principal | David Rogers        |
|                 | Alternate | Douglas Lee         |

|       |           |                |
|-------|-----------|----------------|
|       | Alternate | Henry Poelstra |
| Viavi | Principal | Jason Rusch    |
|       | Alternate | Scott Baxter   |
|       | Alternate | George Bullis  |
|       | Alternate | Paul Gentieu   |

### A.1.3 Advisory Members

The following is the list of organizations that are advisory (i.e., nonvoting) members of record for regular meeting #146 of the INCITS Fibre Channel (T11) Technical Committee, including the recognized representatives of each member organization:

| <b>Organization</b> | <b>Representative Type</b> | <b>Representative</b> |
|---------------------|----------------------------|-----------------------|
| Anritsu             | Principal                  | Ken Mochizuki         |
| Ciena               | Principal                  | Stephen Shew          |
|                     | Alternate                  | Sebastien Gareau      |
| Futurewei           | Principal                  | Philip Kufeldt        |
|                     | Alternate                  | Victor Gissen         |
|                     | Alternate                  | Yang Liu              |
|                     | Alternate                  | Xu Qi Ming            |
|                     | Alternate                  | Liu Qing              |
|                     | Alternate                  | Xin Qiu               |
|                     | Alternate                  | Eddy Zhou             |
| Hitachi Vantara     | Principal                  | Eric Hibbard          |
|                     | Alternate                  | Vincent Franceschini  |
|                     | Alternate                  | Michael Hay           |
|                     | Alternate                  | Akinobu Shimada       |
|                     | Alternate                  | Ken Wood              |
| Lumentum            | Principal                  | Dave Lewis            |
| MediaTek            | Principal                  | Tamir Ali             |
| Microsoft           | Principal                  | Lee Prewitt           |
|                     | Alternate                  | Paul Lubber           |

|         |           |                   |
|---------|-----------|-------------------|
|         | Alternate | Steve Olsson      |
| Panduit | Principal | Jose Castro       |
|         | Alternate | Bulent Kose       |
|         | Alternate | Robert Reid       |
|         | Alternate | Steve Skiest      |
| SmartDV | Principal | Deepak Kumar Tala |
| Unisys  | Principal | Jeffrey Dremann   |
|         | Alternate | Phil Shelton      |
| VMWare  | Principal | Neil MacLean      |
|         | Alternate | Murali Rajagopal  |
|         | Alternate | Ahmad Tawil       |

## A.2 Attendance at this meeting

### A.2.1 Member organizations

The following is the list of member organizations and their representatives recorded in the online attendance registry as attending regular meeting #146 of the INCITS Fibre Channel (T11) Technical Committee:

| <b>Organization</b>        | <b>Representative(s)</b> |
|----------------------------|--------------------------|
| AMPHENOL INTERCONNECT      | Chris Lyon               |
|                            | Greg McSorley            |
| BROADCOM                   | David Peterson           |
|                            | Steven L. Wilson         |
| CISCO                      | Mike Blair               |
|                            | J Metz                   |
| COMMSCOPE                  | Sunny Xu                 |
| CORNING                    | Doug Coleman             |
| DCS                        | Zach Nason               |
| DELL                       | David Black              |
|                            | Alan Rajapa              |
| FINISAR CORPORATION        | Richard Johnson          |
| FOXCONN INTERCONNECT TECH  | John Petrilla            |
| FUJITSU                    | Mark Malcolm             |
| GLOBALFOUNDRIES            | Adrian Butter            |
| HEWLETT PACKARD ENTERPRISE | Krishna Babu Puttagunta  |
| IBM                        | Patty Driever            |
| MOLEX                      | Jay Neer                 |
| NETAPP                     | Frederick Knight         |
| OFS FITEL                  | Mabud Choudhury          |
| PANDUIT                    | Jose Castro              |
| QLOGIC                     | Craig W. Carlson         |
|                            | Dean Wallace             |

|                 |                |
|-----------------|----------------|
| TELEDYNE LECROY | Henry Poelstra |
|-----------------|----------------|

**A.2.2 Ad hoc meeting attendance**

FC-NVMe-2 ad hoc, members

| Organization     | Representative(s) |
|------------------|-------------------|
| BROADCOM LIMITED | Steven L. Wilson  |
| CISCO            | Mike Blair        |
|                  | J Metz            |
| IBM              | Patty Driever     |
|                  | Roger Hathorn     |
| NETAPP           | Fred Knight       |
| QLOGIC           | Craig Carlson     |

FC-SW-7 ad hoc, members

| Organization               | Representative(s)       |
|----------------------------|-------------------------|
| BROADCOM LIMITED           | David Baldwin           |
|                            | David Peterson          |
|                            | Steven L. Wilson        |
| CISCO                      | Mike Blair              |
|                            | J Metz                  |
| DELL                       | David Black             |
| FUJITSU AMERICA            | Mark Malcolm            |
| HEWLETT PACKARD ENTERPRISE | Krishna Babu Puttagunta |
| IBM                        | Patty Driever           |
|                            | Roger Hathorn           |
| NETAPP                     | Fred Knight             |
| QLOGIC                     | Craig W. Carlson        |
| VIAVI                      | Jason Rusch             |

FC-PI-7 ad hoc, members



| <b>Organization</b>  | <b>Representative(s)</b> |
|----------------------|--------------------------|
| AMPHENOL             | Greg McSorley            |
| BROADCOM LIMITED     | Ben Chu                  |
|                      | Scott Kipp               |
| COMMSCOPE            | Sunny Xu                 |
| CORNING              | Doug Coleman             |
| DCS                  | Zach Nason               |
| DELL                 | Alan Rajapa              |
| FINISAR              | Richard Johnson          |
| FOXCONN INTERCONNECT | John Petrilla            |
| GLOBALFOUNDRIES      | Adrian Butter            |
| MACOM                | Tom Palkert              |
| OFS FITEL            | Mabud Choudhury          |
| PANDUIT              | Jose Castro              |
| TELEDYNE LECROY      | Henry Poelstra           |

FC-GS-8 ad hoc, members

| <b>Organization</b>        | <b>Representative(s)</b> |
|----------------------------|--------------------------|
| BROADCOM LIMITED           | David Baldwin            |
|                            | David Peterson           |
| CISCO                      | Mike Blair               |
|                            | J Metz                   |
| DELL                       | Alan Rajapa              |
| FUJITSU                    | Mark Malcolm             |
| HEWLETT PACKARD ENTERPRISE | Barry Maskas             |
| IBM                        | Roger Hathorn            |
|                            | Patty Driever            |
| NETAPP                     | Fred Knight              |
| VIAVI                      | Jason Rusch              |

FC-LS-4 ad hoc, members

| <b>Organization</b>        | <b>Representative(s)</b> |
|----------------------------|--------------------------|
| BROADCOM                   | David Baldwin            |
|                            | Steve Wilson             |
| CISCO                      | Mike Blair               |
|                            | J Metz                   |
| FUJITSU                    | Mark Malcolm             |
| HEWLETT PACKARD ENTERPRISE | Krishna Babu Puttagunta  |
| IBM                        | Roger Hathorn            |
|                            | Patty Driever            |
| NETAPP                     | Fred Knight              |
| QLOGIC                     | Craig Carlson            |
| VIAVI                      | Jason Rusch              |

FC-FS-5 ad hoc, members

| <b>Organization</b>        | <b>Representative(s)</b> |
|----------------------------|--------------------------|
| BROADCOM                   | David Baldwin            |
|                            | David Peterson           |
|                            | Steve Wilson             |
| CISCO                      | Mike Blair               |
|                            | J Metz                   |
| DELL                       | Alan Rajapa              |
| FUJITSU                    | Mark Malcolm             |
| GLOBALFOUNDRIES            | Adrian Butter            |
| HEWLETT PACKARD ENTERPRISE | Krishna Babu Puttagunta  |
| IBM                        | Roger Hathorn            |
|                            | Patty Driever            |
| NETAPP                     | Fred Knight              |
| QLOGIC                     | Craig Carlson            |
| TELEDYNE LECROY            | Henry Poelstra           |
| VIAVI                      | Jason Rusch              |

Joint T11.2 / T11.3 ad hoc, members:

|                             |                 |
|-----------------------------|-----------------|
| AMPHENOL                    | Greg McSorley   |
| BROADCOM LIMITED            | David Baldwin   |
|                             | David Peterson  |
|                             | James Smart     |
|                             | Steve Wilson    |
| COMMSCOPE                   | Gary Gibbs      |
|                             | Sunny Xu        |
| DCS                         | Zach Nason      |
| DELL                        | Alan Rajapa     |
| FINISAR                     | Richard Johnson |
| FOXCONN INTERCONNECT        | John Petrilla   |
| FUJTISU                     | Mark Malcolm    |
| GLOBALFOUNDRIES             | Adrian Butter   |
| HEWLETT PACKARD ENTERPRISES | Barry Maskas    |
| IBM                         | Roger Hathorn   |
| QLOGIC                      | Craig Carlson   |
| VIAMI                       | Jason Rusch     |

## Annex B Supporting Documents

### B.1 T11 Project Status

The following table indicates the status of all active T11 projects. It reflects the official status as reported on the T11 web site as of the T11 regular meeting #146 held on 5 April 2018.

| Standard                      | Status    | Action          | Target or Reaffirm Date | Editor   | Ad Hoc Chair | Secretary |
|-------------------------------|-----------|-----------------|-------------------------|----------|--------------|-----------|
| Projects in Development Stage |           |                 |                         |          |              |           |
| FC-FS-5                       | In dev.   | To T11          | Apr-18                  | Carlson  | Peterson     | Driever   |
| FC-GS-8                       | In dev.   | To T11          | Aug-18                  | Rusch    | Peterson     | Driever   |
| FC-LS-4                       | In dev.   | To T11          | Dec-18                  | Carlson  | Driever      | Rusch     |
| FC-PI-7                       | In dev.   | To T11          | Jun-18                  | Castro   | Wallace      | Wallace   |
| FC-PI-7P                      | In dev.   | ToT11           | Dec-18                  | Castro   | Wallace      | Wallace   |
| FC-PI-8                       | In dev.   | ToT11           | Dec-20                  |          | Wallace      | Wallace   |
| FC-SW-7                       | In dev.   | To T11.3        | Aug-18                  | Peterson | Carlson      | Peterson  |
| FC-MSQS-3                     | In dev.   | ToT11           | Dec-18                  | Castro   | Wallace      | Wallace   |
| FC-NVMe-2                     | In dev.   | ToT11.3         | Dec-18                  | Peterson | Carlson      | Hathorn   |
| Projects in Approval Stage    |           |                 |                         |          |              |           |
| FC-LS-3                       | At INCITS | Pre-Edit        | Jun-18                  | Carlson  | Peterson     | Driever   |
| FC-SB-6                       | At INCITS | Pre-Edit        | Jun-18                  | Driever  | Hathorn      | Dickerson |
| FC-NVMe                       | At INCITS | EB Review       | Jun-18                  | Peterson | Carlson      | Hathorn   |
| FC-EE                         | At INCITS | T11 LB Complete | Jun-18                  | Carlson  | Wallace      | Wallace   |

## B.2 T11 project status at ISO

The following tables indicates the status of all active T11 projects at ISO. It reflects the official status as reported at the T11 regular meeting #146, 5 April 2018 in document T11-2018-00117-v000.

### B.2.1 Active T11 SC25 WG4 Projects

| Document    | ISO/IEC #<br>(T11 allocated) | Step  | Status                |
|-------------|------------------------------|-------|-----------------------|
| FC-SP-2+AM1 | 14165-432                    | 10.98 | Resurrecting project. |
| FC-BB-6     | 14165-246                    | 00.60 | Resurrecting project. |
| FC-SB-5     | 14165-225                    | 00.60 | Resurrecting project. |

### B.2.2 Active Miscellaneous WG4 Projects

| JTC1/SC25<br>Project Num | Document | ISO/IEC #<br>(T11<br>allocated) | Step | Status |
|--------------------------|----------|---------------------------------|------|--------|
|                          |          |                                 |      |        |

### B.2.3 Published WG4 Projects

| Document   | ISO/IEC #  | Step  | Status    | Maintenance          |
|--|------------|-------|-----------|----------------------|
| FC-BaseT   | 14165-151  | 60.60 | Published |                      |
| SMI-S v1.5   | 24775:2012 | 60.60 | Published |                      |
| FC-AE-ASM  | 14165-313  | 60.60 | Published |                      |
| FC-AE-RDMA   | 14165-314  | 60.60 | Published |                      |
| FC-BB-3  | 14165-243  | 60.60 | Published | Stabilize – Dec 2017 |
| Server Management<br>Command Line Protocol<br>(SM-CLP) | 13187      | 60.60 | Published | Confirm – Aug 2016   |
| Storage Management                                     | 24775      | 60.60 | Published |                      |
| FC-MI-2  | 14165-372  | 60.60 | Published |                      |

|                            |             |       |            |                       |
|----------------------------|-------------|-------|------------|-----------------------|
| iSCSI Management API (IMA) | 11989       | 60.60 | Published  | Confirm-Jun15         |
| FC-SW-3                    | 14165-133   | 60.60 | Published  | Confirm – Apr15       |
| FC-AV                      | 14165-321   | 60.60 | Published. | Confirm-Dec14         |
| FC-AE-1553                 | 14165-312   | 60.60 | Published. |                       |
| FAIS                       | 14165-521   | 60.60 | Published. | Confirm-Feb14         |
| FC-GS-4                    | 14165-414   | 60.60 | Published  | Stabilize – Oct 2017  |
| FC-FS                      | 14165-251   | 60.60 | Published  | Withdrawn - Feb. 2013 |
| FC-VI                      | 14165-331   | 60.60 | Published  | Stabilize – Dec 2017  |
| 10GFC                      | 14165-116   | 60.60 | Published  | Stabilize - Apr 2016  |
| MJSQ                       | 14165-117   | 60.60 | Published  |                       |
| RL                         | 24740       | 60.60 | Published  |                       |
| SMS (was SMI-S)            | 24775       | 60.60 | Published  |                       |
| SNIA MMA                   | 11002       | 60.60 | Published  | Confirm - Aug. 2013   |
| 10GFC-Amendment 1          | 14165-116-1 | 60.60 | Published  |                       |
| FC-AL-2-1                  | 14165-122   | 60.60 | Published. |                       |
| FC-AL-2-2                  | 14165-122   | 60.60 | Published  |                       |

### B.2.4 ISO step codes

The following explains the ISO step codes (ISC), which are two numbers separated by a dot. The first number is described in the table. The second part is percent complete.

| Stage               | NWIP     | Convert to ISO | FCD      | Edit/DoC | FDIS     | Edit/DoC | Publish |
|---------------------|----------|----------------|----------|----------|----------|----------|---------|
| Ballot Time         | 2 months |                | 4 months |          | 2 months |          |         |
| first number of ISC | 10       | 20             | 40       |          | 50       | 60       | 60.60   |