

Accredited Standards Committee\*

**InterNational Committee for Information Technology Standards (INCITS)**

<b>Doc. No.:</b> T10/06-417r0
-------------------------------

**Date:** September 22, 2006

**Reply to:** John Lohmeyer

To: T10 Membership  
From: Ralph Weber / John Lohmeyer  
Subject: Minutes of T10 Plenary Meeting #75 -- September 14, 2006  
Nashua, NH

## Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. Approval of Minutes - July 2006 - Colorado Springs, CO (T10/06-319r0)
5. Document Distribution
6. Call for Patents
7. Review of Old Action Items
8. Project Status Reports
  - 8.1 Project Status Summary and INCITS Liaison [Lohmeyer]
    - 8.1.1 INCITS Antitrust Guidelines
  - 8.2 Bridge Controller Commands (BCC) Project 1528-D [Elliott]
  - 8.3 SCSI Enclosure Services - 2 (SES-2) Project 1559-D [Elliott]
  - 8.4 SCSI Stream Commands - 3 (SSC-3) Project 1611-D [Peterson]
  - 8.5 MultiMedia Command Set - 5 (MMC-5) Project 1675-D [McFerrin]
  - 8.6 SCSI Architecture Model - 4 (SAM-4) Project 1683-D [Penokie]
  - 8.7 SCSI / ATA Translation (SAT) Project 1711-D [Sheffield]
  - 8.8 Object-Based Storage Devices - 2 (OSD-2) Project 1729-D [Weber]
  - 8.9 SCSI Media Changer Command Set - 3 (SMC-3) Project 1730-D [Banther]
  - 8.10 SCSI Primary Commands - 4 (SPC-4) Project 1731-D [Weber]
  - 8.11 Serial Attached SCSI Driver Interface (SDI) Project 1740-D [Elliott]
  - 8.12 Automation/Drive Interface - Commands - 2 (ADC-2) Project 1741-D [Suhler]
  - 8.13 Automation/Drive Interface - Transport Protocol - 2 (ADT-2) Project 1742-D [Suhler]
  - 8.14 Serial Attached SCSI - 2 (SAS-2) Project 1760-D [Elliott]
  - 8.15 SCSI Block Commands - 3 (SBC-3) Project 1799-D [Penokie]
  - 8.16 SCSI / ATA Translation - 2 (SAT-2) Project 1826-D [Overby]
  - 8.17 Fibre Channel Protocol - 4 (FCP-4) Project 1828-D [Peterson]
  - 8.18 MultiMedia Command Set - 6 (MMC-6) Project 1836-D [McFerrin]
9. Old Business
10. New Business
  - 10.1 Five-Year Maintenance Review of INCITS/T10 Standards (06-403) [Purnell]
  - 10.2 Actions on SAS Protocol Working Group Recommendations
  - 10.3 Actions on SAS PHY Working Group Recommendations
  - 10.4 Actions on SAT Working Group Recommendations
  - 10.5 Actions on CAP Working Group Recommendations
  - 10.6 Actions on Other Working Group Recommendations
  - 10.7 Potential Liaison with MIPI Alliance (06-380 and 06-379) [Rich/Shimor]

\*Operating under the procedures of The American National Standards Institute.

**INCITS Secretariat, Information Technology Industry Council (ITI)**

1250 Eye Street NW, Suite 200, Washington, DC 20005-3922

Email: [incits@itic.org](mailto:incits@itic.org) Telephone: 202-737-8888 FAX: 202-638-4922

11. ISO/IEC
  - 11.1 ISO/IEC Report [Robinson]
  - 11.2 ISO/IEC Business [Robinson]
    - 11.2.1 ISO/IEC FCD 24739-1, ATA/ATAPI-7 V1
    - 11.2.2 ISO/IEC FCD 14776-121 PIP
12. Liaison Reports
  - 12.1 T11 Liaison Report [Snively]
  - 12.2 T13 Liaison Report [Colegrove]
  - 12.3 SFF Industry Group [Allan]
  - 12.4 SCSI Trade Association (STA) [Czekalski]
  - 12.5 IETF SCSI over IP [Black/Robinson]
  - 12.6 SNIA [open]
  - 12.7 Trusted Computing Group [Cummings/Fitzpatrick]
  - 12.8 IEEE P1667 [Shimor]
13. Review of Action Items
14. Meeting Schedule
  - 14.1 Authorization of Working Group Meetings
15. Adjournment

## Results of Meeting

### 1. Opening Remarks

John Lohmeyer, the T10 Chair, called the meeting to order at 9:00 a.m., Thursday September 14, 2006. He thanked Zane Daggett of Hitachi Cable Manchester for hosting the meeting.

John said that INCITS subgroup membership forms and the T10 document subscription forms are available on the meeting web site. He said that people should use these forms to ensure the INCITS Secretariat has the latest membership information. These forms should be mailed directly to the INCITS Secretariat.

As is customary, the people attending introduced themselves. Attendance was taken electronically via the meeting web site.

### 2. Approval of Agenda

No additions/changes were made to the draft agenda.

John Lohmeyer moved and Ralph Weber seconded that the agenda be approved. In the absence of any objections, the motion passed unanimously.

The following items were added or modified in the agenda during the course of the meeting:

11.2.2 ISO/IEC FCD 14776-121 PIP

### 3. Attendance and Membership

The membership requirements were reviewed. INCITS rules permit one vote per organization. An individual from a new organization must attend two out of three consecutive plenary meetings. He/she may apply for voting member-

ship the second meeting via a letter to the Chair of T10. The individual may begin voting at the beginning of his/her second meeting. People who continue to attend T10 meetings are expected to join T10 and to pay INCITS Service Fees.

To maintain membership, organizations must pay the INCITS Service Fee (\$800 per year).

John briefly discussed the mailing fees. Complete pricing information is contained in the 2006 membership form (available at [http://www.t10.org/ftp/t10/mem\\_form.txt](http://www.t10.org/ftp/t10/mem_form.txt)).

There are also minimum attendance requirements to maintain voting membership on T10. If a member organization fails to attend two of the last three T10 meetings, they are warned that failing to attend the next T10 meeting would result in their membership being terminated.

The Chair said he had sent emails to 14 people from 8 organizations informing them that their membership was in jeopardy due to non-attendance (see 06-353r0) and that their membership would be terminated if they did not attend this meeting. The following organizations were in attendance jeopardy:

Broadcom Corp.  
General Dynamics  
Hitachi Cable Manchester  
Iomega Corp.  
McDATA  
Oracle  
QLogic Corp.  
Texas Instruments

All organizations in attendance jeopardy were present except:

Broadcom Corp.  
QLogic Corp.

Craig Carlson requested by email that the QLogic membership be changed to Advisory.

The organizations that were not present had their representatives changed to Advisory (non-voting) status.

John Lohmeyer called for requests to join the committee. The following organizations joined at this meeting:

STMicroelectronics

The T10 membership during the meeting was 46 organizations, down from the 47 member organizations extant at the time the meeting was convened. Enclosure (1) is the list of the people present at the meeting and enclosure (2) is the current T10 membership list.

John Lohmeyer reminded members that failure to vote on two out of the last three letter ballots also would result in membership jeopardy. The current letter ballot jeopardy status is as shown:

T10 Letter Ballot Jeopardy Report -- 2006/05/05

Ballot:	05-134r0	06-080r0	06-184r0
Report:	05-135r0	06-081r0	06-185r0
Acronym:	FCP-3	SAT	MMC-5

Organization

## Key:

Yes Organization voted Yes  
 No Organization voted No  
 Abs Organization voted Abstain  
 DNV Organization failed to return letter ballot  
 -- Organization was not a voting member for the letter ballot  
 (\*) Organization is in letter ballot jeopardy

#### 4. Approval of Minutes - July 2006 - Colorado Springs, CO (T10/06-319r0)

John Lohmeyer moved and Ralph Weber seconded that the minutes be approved as written. In the absence of any objections, the motion passed unanimously.

#### 5. Document Distribution

Members who have any problems with their mailing subscription should deal directly with Parthenia Purnell (ppurnell@itic.org) (202) 626-5741. A subscription form is included on the meeting disk.

John Lohmeyer requested that all documents for the next mailing be uploaded to the T10 web site by 10:30 a.m. on Thursday September 21, 2006. Documents received after this time may go into a subsequent mailing.

John reminded the committee of the requirements for document submission. Since T10 meets its document retention requirements by preparing mailings, documents included in the mailing must be suitable for archiving. This means that Portable Document Format (PDF) and/or native-format electronic originals with proper identification must be submitted.

People can obtain T10 document numbers for new and revised T10 documents by filling out a web form at <http://www.t10.org/members/>. The assigned T10 document number will be sent to the requestor by e-mail. The requestor may then reply to this email, including the document to be posted as an attachment. The document will be automatically posted on the T10 web site.

T10 members can complete this entire process using their personal T10 password. John explained that members who do not know their password should surf to the above URL and click on the "forgot password" link to have their password sent to them via e-mail.

John noted that non-members can also use the above document number process, but their requests will require approval by an administrator.

Minutes are available on the T10 World Wide Web page (see below), and are distributed to the T10 Reflector.

To be added to the T10 Reflector, send an e-mail to [majordomo@t10.org](mailto:majordomo@t10.org) with the line 'subscribe t10' in the message body.

The INCITS Secretariat maintains a World Wide Web page at:

<http://www.incits.org/>.

LSI Logic maintains a web site on behalf of T10 on a server donated by the SCSI Trade Association at:

<http://www.t10.org/>

There is also a mirror site at:

<http://www.t11.org/t10/>

The T10 document register is available at:

<ftp://ftp.t10.org/t10/dr.txt>

## 6. Call for Patents

John Lohmeyer explained that this is a regular agenda item to identify any potential patent issues with developing standards and technical reports.

For additional information on ANSI procedures and the ANSI patent policy, please see the INCITS web page at <http://www.incits.org/call.htm>. The contact for INCITS patent issues is Lynn Barra (lbarra at itic dot org) or (202) 626-5739. Gene Milligan prepared a useful "Handy dandy Technical Committee's Patents Guide", which is available at <ftp://ftp.t10.org/t10/document.99/99-291r0.pdf>.

John Lohmeyer presented a summary of the ANSI patent policy prepared by Gary Robinson. The summary is also included on the Rules and Procedures (plus Patent Information) page on the T10 web site.

Bob Sheffield reminded the committee that a statement of the Intel patent policy can be found in T10/01-041r0.

John asked that anyone who knows of other applicable patents to contact him.

There were no other responses to the call for patents other than those mentioned above.

## 7. Review of Old Action Items

- 637 John Lohmeyer will report to INCITS that T10 has appointed Avraham Shimor as the T10 liaison to IEEE P1667. *Complete.*
- 638 John Lohmeyer will add an IEEE P1667 liaison report to the next T10 agenda. *Complete.*
- 639 Bill McFerrin will produce MMC-5 revision 3b. *Complete.*
- 640 John Lohmeyer will forward MMC-5 Rev 3b to INCITS for further processing toward first public review. *Complete.*
- 641 Gary Robinson will notify INCITS that T10 recommends that the JTC1/SC25 TAG vote to approve ISO/IEC FCD 24740: 25n1164, Information technology - Responsive Link, project 1.25.13.10.14. *Complete.*
- 642 Gary Robinson will notify INCITS that T10 recommends that David Peterson be added the September SC 25 delegation, making the delegation: Robert Snively (Head of Delegation), Roger Cummings, Claudio DeSanti, Horst Truedstedt, Mark Overby, and David Peterson. *Complete.*
- 643 Gary Robinson will contact the SBP-3 editor regarding the ISO status of SBP-3 and prepare a motion for T10 action in September. *Carryover.*

## **8. Project Status Reports**

### **8.1 Project Status Summary and INCITS Liaison [Lohmeyer]**

John Lohmeyer said that the current T10 project status summary was included on the meeting web site and will be included in the mailing as usual.

#### **8.1.1 INCITS Antitrust Guidelines**

All T10 members should be aware of the INCITS antitrust guidelines available at <http://www.incits.org/natrust.htm>.

John reminded committee members that all persons present at a T10 meeting are responsible for identifying potential violations of the antitrust guidelines and reporting them to the chair. Discussions of the following topics are considered sensitive:

- \* 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.

### **8.2 Bridge Controller Commands (BCC) Project 1528-D [Elliott]**

Rob Elliott reported that there has been no activity on BCC and that the anticipated forwarding date should be revised from November 2006 to July 2008.

### **8.3 SCSI Enclosure Services - 2 (SES-2) Project 1559-D [Elliott]**

Rob Elliott reported that no proposals have been approved for SES-2 and no new working draft revision needs to be prepared. Rob noted that he expects a forwarding letter ballot on SES-2 following the July 2008 meeting.

### **8.4 SCSI Stream Commands - 3 (SSC-3) Project 1611-D [Peterson]**

Dave Peterson reported on the activities of the SSC-3 working group (minutes in 06-429) and provided an electronic report in 06-434r0.

### **8.5 MultiMedia Command Set - 5 (MMC-5) Project 1675-D [McFerrin]**

John Lohmeyer reported that the MMC-5 first public review ends October 2, 2006.

### **8.6 SCSI Architecture Model - 4 (SAM-4) Project 1683-D [Penokie]**

George Penokie reported that no proposals were accepted for SAM-4 at this meeting and so no new revision will be posted before the next meeting.

### **8.7 SCSI / ATA Translation (SAT) Project 1711-D [Sheffield]**

Bob Sheffield reported that the SAT working group (minutes in 06-381 and 06-415) recommended forwarding SAT r09 to first public review on a vote of 10:1:1. He further noted a 6:1:3 vote which recommended accepting 06-378r1 as correcting errors found in interim SAT drafts.

Bob Sheffield moved that 06-121r5 and 06-378r1 be accepted as resolving the SAT letter ballot comments and that SAT r09 be forwarded to INCITS for further processing towards first public review. Mark Overby seconded the motion. The motion passed on a vote of 37:0:1:8:=46.

In view of the successful resolution of his letter ballot comments Kevin Marks asked that the Dell No vote on the letter ballot be changed to a Yes. In view of the successful resolution of his letter ballot comments Ralph Weber asked that the ENDL No vote on the letter ballot be changed to a Yes. In view of the successful resolution of his letter ballot comments Rob Elliott asked that the Hewlett Packard No vote on the letter ballot be changed to a Yes. In view of the successful resolution of his letter ballot comments George Penokie asked that the IBM No vote on the letter ballot be changed to a Yes. In view of the successful resolution of his letter ballot comments John Lohmeyer asked that the LSI Logic No vote on the letter ballot be changed to a Yes. In view of the successful resolution of his letter ballot comments Robert Sheffield asked that the Intel No vote on the letter ballot be changed to a Yes. In view of the successful resolution of his letter ballot comments Gerry Houlder asked that the Maxtor No vote on the letter ballot be changed to a Yes (note Seagate acquired Maxtor during the interval in which the SAT letter ballot comments were resolved). In view of the successful resolution of his letter ballot comments Mark Overby asked that the Nvidia No vote on the letter ballot be changed to a Yes. In view of the successful resolution of his letter ballot comments Curtis Stevens asked that the Western Digital No vote on the letter ballot be changed to a Yes.

John Lohmeyer took an action item to forward SAT r09 to INCITS for further processing towards first public review.

#### **8.8 Object-Based Storage Devices - 2 (OSD-2) Project 1729-D [Weber]**

Ralph Weber reported that five OSD-2 proposals had been deferred due to insufficient CAP meeting time. Since there are no approved proposals needing incorporation, no new OSD-2 revision will be produced before the November meeting.

#### **8.9 SCSI Media Changer Command Set - 3 (SMC-3) Project 1730-D [Banther]**

Michael Banther reported on the activities of the SMC-3 working group (minutes in 06-423) and provided an electronic report in 06-430.

#### **8.10 SCSI Primary Commands - 4 (SPC-4) Project 1731-D [Weber]**

Ralph Weber reported that SPC-4 r07 will be posted in time for the mailing and will incorporate all approved proposals.

#### **8.11 Serial Attached SCSI Driver Interface (SDI) Project 1740-D [Elliott]**

Rob Elliott noted that there has been no activity on this project.

#### **8.12 Automation/Drive Interface - Commands - 2 (ADC-2) Project 1741-D [Suhler]**

Paul Suhler reported on the activities of the ADI working group (minutes in 06-401) and provided an electronic report in 06-424. He noted that a new revision of ADC-2 will be prepared for a T10 letter ballot and the letter ballot on forwarding ADC-2 r07 is planned to commence before the November meeting week. He stated that the first public review forwarding date for ADC-2 should be listed as July 2007.

Paul Entzel took an action item to prepare ADC-2 r07. John Lohmeyer took an action item to conduct a letter ballot on forwarding ADC-2 r07 to first public review.

### **8.13 Automation/Drive Interface - Transport Protocol - 2 (ADT-2) Project 1742-D [Suhler]**

Paul Suhler reported on the activities of the ADI working group (minutes in 06-401) and provided an electronic report in 06-424. He stated that the first public review forwarding date for ADT-2 should be listed as November 2007.

### **8.14 Serial Attached SCSI - 2 (SAS-2) Project 1760-D [Elliott]**

Rob Elliott reported that several SAS-2 protocol proposals have been recommended (minutes in 06-376r1 and 06-414). The SAS-2 physical working group (minutes in 06-423) approved no recommendations, but the spread-spectrum clocking proposal will be considered under agenda item 10.3 absent a working group recommendation.

A SAS-2 revision will be posted containing all approved proposals in time for the mailing.

### **8.15 SCSI Block Commands - 3 (SBC-3) Project 1799-D [Penokie]**

George Penokie reported that a new revision will be posted containing changes approved at this meeting; however maybe not in time for the mailing.

### **8.16 SCSI / ATA Translation - 2 (SAT-2) Project 1826-D [Overby]**

Mark Overby reported that work will begin on SAT-2 during the November meeting week.

### **8.17 Fibre Channel Protocol - 4 (FCP-4) Project 1828-D [Peterson]**

David Peterson reported on the activities of the FCP-4 working group (minutes in 06-428) and provided an electronic report in 06-433r0.

### **8.18 MultiMedia Command Set - 6 (MMC-6) Project 1836-D [McFerrin]**

Bill McFerrin was not present since the MMC working group is meeting in Seattle later today.

## **9. Old Business**

There was no old business.

## **10. New Business**

### **10.1 Five-Year Maintenance Review of INCITS/T10 Standards (06-403) [Purnell]**

George Penokie moved that T10 recommend that SMD-E, SPC, SPI-4, and SSM be withdrawn and that SSA-S3P, SSA-PH2, SSA-TL2, SDV, and SRP be reaffirmed. Curtis Stevens seconded the motion. The motion passed on a roll call vote of 37:0:0:9=46 which met the two-thirds rule. Details of the roll call vote were as follows:



<b>Organization</b>	<b>Voter</b>	<b>Vote</b>
Adaptec, Inc.	Chris Fore	Yes
AMCC	Paul von Stamwitz	Yes
Amphenol Interconnect		(not present)
Brocade		(not present)
Dallas Semiconductor	Steve Robalino	Yes
Dell, Inc.	Kevin Marks	Yes
EMC Corp.	David Black	Yes
Emulex	Robert H. Nixon	Yes
ENDL	Ralph O. Weber	Yes
FCI	Douglas Wagner	Yes
Foxconn Electronics	Elwood Parsons	Yes
Fujitsu	Mike Fitzpatrick	Yes
General Dynamics	Nathan Hastad	Yes
Hewlett Packard Co.	Rob Elliott	Yes
Hitachi Cable Manchester		(not present)
Hitachi Global Storage Tech.	Dan Colegrove	Yes
IBM Corp.	George O. Penokie	Yes
Intel Corp.	Robert Sheffield	Yes
Iomega Corp.	Robert Payne	Yes
KnowledgeTek, Inc.	Dennis Moore	Yes
Lexar Media, Inc.	John Geldman	Yes
LSI Logic Corp.	John Lohmeyer	Yes
M-Systems	Donald Rich	Yes
Marvell Semiconductor, Inc.	David Geddes	Yes
McDATA	David Peterson	Yes
Microsoft Corp.	Mark Benedikt	Yes
Molex Inc.	Jay Neer	Yes
Network Appliance	Frederick Knight	Yes
Nvidia Corp.	Mark Overby	Yes
Oracle	James Williams	Yes
Panasonic Technologies, Inc		(not present)
Philips Electronics		(not present)
Pivot3, Inc.		(not present)
PMC-Sierra	Tim Symons	Yes
Quantum Corp.	Paul Entzel	Yes
Seagate Technology	Gerald Houlder	Yes
Sierra Logic, Inc.	William Martin	Yes
STMicroelectronics, Inc.	Stephen Finch	Yes
Sun Microsystems, Inc.		(not present)
Symantec	Roger Cummings	Yes
Texas Instruments	Paul D. Aloisi	Yes
TycoElectronics	Dan Gorenc	Yes
Vitesse Semiconductor	Jim Scott	Yes
Western Digital	Curtis Stevens	Yes
Xiotech Corp.		(not present)
Xyratex		(not present)

This two-thirds roll call vote passed (37:0:0:9=46).

John Lohmeyer took an action item to notify INCITS that T10 recommends the withdrawal of SMD-E, SPC, SPI-4, and SSM and the reaffirmation of SSA-S3P, SSA-PH2, SSA-TL2, SDV, and SRP. John Lohmeyer took an action item to conduct a five-year maintenance review of MMC and MMC-3 during the November T10 meeting week.

## 10.2 Actions on SAS Protocol Working Group Recommendations

The recommendations from the SAS protocol working group (minutes in 06-376r1 and 06-414) were presented to the committee.

George Penokie reviewed the following proposals recommended for inclusion in SAS-2:

- 06-279r3 (Allow more than one ZPSDS in a SAS domain) [Elliott]
- 06-281r3 (Enable and Disable Zoning) [Elliott]
- 06-286r5 (SMP ZONE LOCK) [Symons]
- 06-201r6 (SMP CONFIGURE PHY ZONE function) [Symons]
- 06-203r6 (SMP REPORT ZONE PERMISSION function) [Symons]
- 06-288r6 (SMP ZONE ACTIVATE) [Symons]
- 06-289r6 (SMP ZONE UNLOCK) [Symons]
- 06-377r1 (Broadcast (Activate)) [Symons]
- 06-358r5 (Zone Configuration model) [Symons]
- 06-202r9 (SMP CONFIGURE ZONE PERMISSION function) [Symons]
- 06-326r2 (SMP Zone Lock Timer) [Symons]
- 06-418r1 (Enable disable zone management function revision) [Symons]
- 06-384r1 (OPEN\_REJECT\_RETRY during zoning changes) [Elliott]
- 06-402r0 (Changes to ATTACHED SATA DEVICE bit) [Day]
- 06-299r1 (Clarifications of the SCSI power conditions in SAS) [Owens and Marks]
- 06-405r0 (Transport Layer Retries Fix) [Penokie]
- 06-408r1 (Race condition for transition out of SP12:SAS\_Fail state) [Martin]
- 06-409r1 (IDENTIFY address frame REASON field) [Elliott]
- 06-188r2 (Support multiple STP affiliations) [Elliott]

Tim Symons moved that 06-279r3, 06-281r3, 06-286r5, 06-201r6, 06-203r6, 06-288r6, 06-289r6, 06-377r1, 06-358r5, 06-202r9, 06-326r2, 06-418r1, 06-384r1, 06-402r0, 06-299r1, 06-405r0, 06-408r1, and 06-409r1 be approved for inclusion in SAS-2. Rob Elliott seconded the motion. The motion passed on a vote of 33:0:3:10=46.

Rob Elliott moved that 06-188r2 be approved for inclusion in SAS-2. Curtis Stevens seconded the motion. The motion failed on a vote of 4:8:25:9=46.

Kevin Marks and Mark Overby stated that they voted no because the proposal left too much outside the scope of the standard.

## 10.3 Actions on SAS PHY Working Group Recommendations

There were no approved recommendations made by the SAS physical working group (minutes in 06-423). However, a vote to recommend spread-spectrum clocking (06-263r6) [Elliott] narrowly failed by a vote of 7:7:14.

Rob Elliott moved that 06-263r6 be approved for inclusion in SAS-2. Kevin Marks second the motion. Rob Elliott requested that a roll call vote be conducted on the motion.

George Penokie spoke in opposition to the motion, noting that spread-spectrum clocking reduces pulse heights and adds signal jitter. Rob Elliott spoke in favor of the motion noting that spread-spectrum clocking is critical to meeting EMI requirements in deskside 6 Gbs SAS applications.

The motion passed on a roll call vote of 22:2:15:7=46. Details of the roll call vote were as follows:

<b>Organization</b>	<b>Voter</b>	<b>Vote</b>
Adaptec, Inc.	Chris Fore	Yes
AMCC	Paul von Stamwitz	Yes
Amphenol Interconnect Brocade	Michael Wingard	Yes (written vote) (not present)
Dallas Semiconductor	Steve Robalino	Yes
Dell, Inc.	Kevin Marks	Yes
EMC Corp.	Mickey Felton	Yes
Emulex	Robert H. Nixon	Abstain
ENDL	Ralph O. Weber	Abstain
FCI	Douglas Wagner	Yes
Foxconn Electronics	Elwood Parsons	Yes
Fujitsu	Mike Fitzpatrick	Abstain
General Dynamics	Nathan Hastad	Abstain
Hewlett Packard Co.	Rob Elliott	Yes
Hitachi Cable Manchester		(not present)
Hitachi Global Storage Tech.	Dan Colegrove	No
IBM Corp.	George O. Penokie	No
Intel Corp.	Robert Sheffield	Yes
Iomega Corp.	Robert Payne	Abstain
KnowledgeTek, Inc.	Dennis Moore	Abstain
Lexar Media, Inc.	John Goldman	Abstain
LSI Logic Corp.	John Lohmeyer	Yes
M-Systems	Donald Rich	Abstain
Marvell Semiconductor, Inc.	David Geddes	Yes
McDATA	David Peterson	Abstain
Microsoft Corp.	Mark Benedikt	Yes
Molex Inc.	Jay Neer	Yes
Network Appliance	Frederick Knight	Yes
Nvidia Corp.	Mark Overby	Yes
Oracle	James Williams	Abstain
Panasonic Technologies, Inc		(not present)
Philips Electronics		(not present)
Pivot3, Inc.	Bill Galloway	Yes (written vote)
PMC-Sierra	Tim Symons	Yes
Quantum Corp.	Paul Entzel	Yes
Seagate Technology	Gerald Houlder	Yes
Sierra Logic, Inc.	William Martin	Abstain
STMicroelectronics, Inc.	Stephen Finch	Abstain
Sun Microsystems, Inc.		(not present)
Symantec	Roger Cummings	Abstain
Texas Instruments	Paul D. Aloisi	Abstain
TycoElectronics	Dan Gorenc	Yes
Vitesse Semiconductor	Jim Scott	Yes
Western Digital	Curtis Stevens	Abstain
Xiotech Corp.		(not present)
Xyratex		(not present)

This simple majority roll call vote passed (22:2:15:7=46).

#### **10.4 Actions on SAT Working Group Recommendations**

The SAT working group (minutes in 06-415) recommended that SAT be forwarded to INCITS for first public review and the committee processed that recommendation under agenda item 8.7.

### **10.5 Actions on CAP Working Group Recommendations**

The recommendations from the CAP working group (minutes in 06-416) were presented to the committee.

George Penokie reviewed the following proposals recommended for inclusion in SPC-4:

06-321r1 (Statistics and Performance log pages command cleanup) [Elliott]  
06-221r3 (Peripheral device informational identifier) [Elliott]

George Penokie reviewed 06-350r0 (Power conditions state machine clarification) [Marks] a proposal recommended for inclusion in SPC-4 and SBC-3.

Rob Elliott moved that 06-321r1 and 06-221r3 be approved for inclusion in SPC-4 and that 06-350r0 be approved for inclusion in SPC-4 and SBC-3. Gerry Houlder seconded the motion. The motion passed on a vote of 35:0:1:10=46.

George Penokie reviewed 06-034r5 (Physical blocks sans FORMAT UNIT LBA TO ALIGN field) [Elliott] a proposal recommended for inclusion in SBC-3.

Rob Elliott moved that 06-034r5 be approved for inclusion in SBC-3. Curtis Stevens seconded the motion. Rob Elliott requested a roll call vote.

The motion passed on a roll call vote of 11:4:20:11=46. Details of the roll call vote were as follows:

<b>Organization</b>	<b>Voter</b>	<b>Vote</b>
Adaptec, Inc.	Chris Fore	Yes
AMCC	Paul von Stamwitz	Yes
Amphenol Interconnect		(not present)
Brocade		(not present)
Dallas Semiconductor	Steve Robalino	Yes
Dell, Inc.		(not present)
EMC Corp.	David Black	No
Emulex	Robert H. Nixon	Abstain
ENDL	Ralph O. Weber	Yes
FCI	Douglas Wagner	Abstain
Foxconn Electronics	Elwood Parsons	Abstain
Fujitsu	Mike Fitzpatrick	Abstain
General Dynamics		(not present)
Hewlett Packard Co.	Rob Elliott	Yes
Hitachi Cable Manchester		(not present)
Hitachi Global Storage Tech.	Dan Colegrove	No
IBM Corp.	George O. Penokie	No
Intel Corp.	Robert Sheffield	Abstain
Iomega Corp.	Robert Payne	Abstain
KnowledgeTek, Inc.	Dennis Moore	Abstain
Lexar Media, Inc.	John Geldman	Yes
LSI Logic Corp.	John Lohmeyer	Abstain
M-Systems	Donald Rich	Yes
Marvell Semiconductor, Inc.	David Geddes	Abstain
McDATA	David Peterson	Abstain
Microsoft Corp.	Mark Benedikt	Abstain
Molex Inc.	Jay Neer	Abstain
Network Appliance	Frederick Knight	Abstain
Nvidia Corp.	Mark Overby	Yes
Oracle	James Williams	Abstain
Panasonic Technologies, Inc		(not present)
Philips Electronics		(not present)
Pivot3, Inc.		(not present)
PMC-Sierra	Tim Symons	Abstain
Quantum Corp.	Paul Entzel	Abstain
Seagate Technology	Gerald Houlder	Yes
Sierra Logic, Inc.	William Martin	No
STMicroelectronics, Inc.	Stephen Finch	Abstain
Sun Microsystems, Inc.		(not present)
Symantec	Roger Cummings	Yes
Texas Instruments	Paul D. Aloisi	Abstain
TycoElectronics	Dan Gorenc	Abstain
Vitesse Semiconductor	Jim Scott	Abstain
Western Digital	Curtis Stevens	Yes
Xiotech Corp.		(not present)
Xyratex		(not present)

This simple majority roll call vote passed (11:4:20:11=46).

### 10.6 Actions on Other Working Group Recommendations

The recommendations from the FCP-4 working group (minutes in 06-428) were presented to the committee.

George Penokie and Dave Peterson reviewed the following proposals recommended for inclusion in FCP-4:

- 06-406r1 (LS\_RJT for REC Conflict between FC-LS and FCP-4) [Penokie]
- 06-236r1 (Fix race condition between REC ACC and FCP\_XFER\_RDY) [Entzel]

Paul Entzel moved that 06-406r1 and 06-236r1 be approved for inclusion in FCP-4. Dave Peterson seconded the motion. The motion passed on a vote of 27:0:9:10=46.

#### **10.7 Potential Liaison with MIPI Alliance (06-380 and 06-379) [Rich/Shimor]**

Donald Rich presented a letter requesting establishment of a liaison between T10 and MIPI Alliance regarding references to OSD by MIPI standards which are under development. The committee requested two months to consider the request before voting on it.

### **11. ISO/IEC**

#### **11.1 ISO/IEC Report [Robinson]**

In the absence of Gary Robinson, John Lohmeyer presented the ISO/IEC report (06-407).

#### **11.2 ISO/IEC Business [Robinson]**

##### **11.2.1 ISO/IEC FCD 24739-1, ATA/ATAPI-7 V1**

Mark Overby moved that T10 recommends that the JTC1/SC25 TAG vote to approve ISO/IEC FCD 24739-1, Information technology, AT Attachment with Packet Interface - 7 Part 1 - Register Delivered Command Set, Logical Register Set, (ATA/ATAPI-7 V1), SC:25N1074. Curtis Stevens seconded the motion. The roll call motion passed as follows:

<b>Organization</b>	<b>Voter</b>	<b>Vote</b>
Adaptec, Inc.	Chris Fore	Yes
AMCC	Paul von Stamwitz	Yes
Amphenol Interconnect		(not present)
Brocade		(not present)
Dallas Semiconductor	Steve Robalino	Yes
Dell, Inc.	Kevin Marks	Yes
EMC Corp.	David Black	Yes
Emulex	Robert H. Nixon	Yes
ENDL	Ralph O. Weber	Yes
FCI		(not present)
Foxconn Electronics		(not present)
Fujitsu	Mike Fitzpatrick	Yes
General Dynamics	Nathan Hastad	Yes
Hewlett Packard Co.	Rob Elliott	Yes
Hitachi Cable Manchester	Zane Daggett	Yes
Hitachi Global Storage Tech.	Dan Colegrove	Yes
IBM Corp.	George O. Penokie	Yes
Intel Corp.	Robert Sheffield	Yes
Iomega Corp.	Robert Payne	Yes
KnowledgeTek, Inc.	Dennis Moore	Yes
Lexar Media, Inc.	John Geldman	Yes
LSI Logic Corp.	John Lohmeyer	Yes
M-Systems	Donald Rich	Yes
Marvell Semiconductor, Inc.	David Geddes	Yes
McDATA	David Peterson	Yes
Microsoft Corp.	Mark Benedikt	Yes
Molex Inc.	Jay Neer	Yes
Network Appliance	Frederick Knight	Yes
Nvidia Corp.	Mark Overby	Yes
Oracle	James Williams	Yes
Panasonic Technologies, Inc		(not present)
Philips Electronics		(not present)
Pivot3, Inc.		(not present)
PMC-Sierra	Tim Symons	Yes
Quantum Corp.	Paul Entzel	Yes
Seagate Technology	Gerald Houlder	Yes
Sierra Logic, Inc.	William Martin	Yes
STMicroelectronics, Inc.	Stephen Finch	Yes
Sun Microsystems, Inc.		(not present)
Symantec	Roger Cummings	Yes
Texas Instruments	Paul D. Aloisi	Yes
TycoElectronics		(not present)
Vitesse Semiconductor	Jim Scott	Yes
Western Digital	Curtis Stevens	Yes
Xiotech Corp.		(not present)
Xyratex		(not present)

This two-thirds roll call vote passed (35:0:0:11=46).

Gary Robinson was given an action item to recommend that the JTC1/SC25 TAG vote to approve ISO/IEC FCD 24739-1, Information technology, AT Attachment with Packet Interface - 7 Part 1 - Register Delivered Command Set, Logical Register Set, (ATA/ATAPI-7 V1), SC:25N1074.

**11.2.2 ISO/IEC FCD 14776-121 PIP**

Paul Aloisi moved that T10 recommends that the JTC1/SC25 TAG vote to approve ISO/IEC FCD 14776-121, Project 1.25.13.11.38, Information technology, SCSI Passive Interconnect Performance. Bob Nixon seconded the motion. The roll call motion passed as follows:

<b>Organization</b>	<b>Voter</b>	<b>Vote</b>
Adaptec, Inc.	Chris Fore	Yes
AMCC	Paul von Stamwitz	Yes
Amphenol Interconnect		(not present)
Brocade		(not present)
Dallas Semiconductor	Steve Robalino	Yes
Dell, Inc.	Kevin Marks	Yes
EMC Corp.	David Black	Yes
Emulex	Robert H. Nixon	Yes
ENDL	Ralph O. Weber	Yes
FCI		(not present)
Foxconn Electronics		(not present)
Fujitsu	Mike Fitzpatrick	Yes
General Dynamics	Nathan Hastad	Yes
Hewlett Packard Co.	Rob Elliott	Yes
Hitachi Cable Manchester	Zane Daggett	Yes
Hitachi Global Storage Tech.	Dan Colegrove	Yes
IBM Corp.	George O. Penokie	Yes
Intel Corp.	Robert Sheffield	Yes
Iomega Corp.	Robert Payne	Yes
KnowledgeTek, Inc.	Dennis Moore	Yes
Lexar Media, Inc.	John Geldman	Yes
LSI Logic Corp.	John Lohmeyer	Yes
M-Systems	Donald Rich	Yes
Marvell Semiconductor, Inc.	David Geddes	Yes
McDATA	David Peterson	Yes
Microsoft Corp.	Mark Benedikt	Yes
Molex Inc.	Jay Neer	Yes
Network Appliance	Frederick Knight	Yes
Nvidia Corp.	Mark Overby	Yes
Oracle	James Williams	Yes
Panasonic Technologies, Inc		(not present)
Philips Electronics		(not present)
Pivot3, Inc.		(not present)
PMC-Sierra	Tim Symons	Yes
Quantum Corp.	Paul Entzel	Yes
Seagate Technology	Gerald Houlder	Yes
Sierra Logic, Inc.	William Martin	Yes
STMicroelectronics, Inc.	Stephen Finch	Yes
Sun Microsystems, Inc.		(not present)
Symantec	Roger Cummings	Yes
Texas Instruments	Paul D. Aloisi	Yes
TycoElectronics		(not present)
Vitesse Semiconductor	Jim Scott	Yes
Western Digital	Curtis Stevens	Yes
Xiotech Corp.		(not present)
Xyratex		(not present)

This two-thirds roll call vote passed (35:0:0:11=46).

Gary Robinson was given an action item to recommend that the JTC1/SC25 TAG vote to approve ISO/IEC FCD 14776-121, Project 1.25.13.11.38, Information technology, SCSI Passive Interconnect Performance.



## 12. Liaison Reports

### 12.1 T11 Liaison Report [Snively]

In the absence of Bob Snively, Ralph Weber presented an electronic liaison report (06-404).

### 12.2 T13 Liaison Report [Colegrove]

Dan Colegrove provided an oral report to the committee on the activities of T13. For details regarding T13 activities see [www.t13.org](http://www.t13.org).

### 12.3 SFF Industry Group [Allan]

In the absence of Dal Allan, no SFF Industry Group liaison report was available.

### 12.4 SCSI Trade Association (STA) [Czekalski]

Marty Czekalski presented an electronic report (06-436) on the activities of the SCSI Trade Association.

### 12.5 IETF SCSI over IP [Black/Robinson]

David Black reported that the iSCSI maintenance draft is not collecting any major issues. Work is nearing conclusion on a draft to add a detailed support reporting function to iSCSI "login".

### 12.6 SNIA [open]

No report was made.

### 12.7 Trusted Computing Group [Cummings/Fitzpatrick]

Mike Fitzpatrick provided an electronic report in 06-437 on TCG activities and presented its contents to the committee.

### 12.8 IEEE P1667 [Shimor]

In the absence of Avraham Shimor, Donald Rich provided an electronic report in 06-435 on IEEE P1667 activities and presented its contents to the committee.

## 13. Review of Action Items

- 643 Gary Robinson will contact the SBP-3 editor regarding the ISO status of SBP-3 and prepare a motion for T10 action in September.
- 644 John Lohmeyer will forward SAT r09 to INCITS for further processing towards first public review.
- 645 Paul Entzel will prepare ADC-2 r07.
- 646 John Lohmeyer will conduct a letter ballot on forwarding ADC-2 r07 to first public review.
- 647 John Lohmeyer will notify INCITS that T10 recommends the withdrawal of SMD-E, SPC, SPI-4, and SSM and the reaffirmation of SSA-S3P, SSA-PH2, SSA-TL2, SDV, and SRP.
- 648 John Lohmeyer will conduct a five-year maintenance review of MMC and MMC-3 during the November T10 meeting week.
- 649 Gary Robinson will recommend that the JTC1/SC25 TAG vote to approve ISO/IEC FCD 24739-1, Information technology, AT Attachment with Packet Interface - 7 Part 1 - Register Delivered Command Set, Logical Register Set, (ATA/ATAPI-7 V1), SC:25N1074.

- 650 Gary Robinson will recommend that the JTC1/SC25 TAG vote to approve ISO/IEC FCD 14776-121, Project 1.25.13.11.38, Information technology, SCSI Passive Interconnect Performance.

#### **14. Meeting Schedule**

The next plenary meeting of T10 will be Thursday November 9, 2006 in Las Vegas, NV at the Atrium Suites Las Vegas Hotel (1-866-404-5286) hosted by Hitachi GST. The meeting will begin at 9:00 a.m. on Thursday.

The meeting list for the next plenary week is:

November 2006 Meeting Map  
(2006/09/14 Version)

Monday 11/06	9	10	11	12	1	2	3	4	5	6	7	8	
	+=====+												
	ADI-2 WG / SMC-3 WG											(15)	
	+=====+												
	SAS Protocol WG											(40)	
	+=====+												
	IEEE P1619 Meeting											(20)	
	+-----+												
	USB MSC Lock WG *											(15)	
	+-----+												
Tuesday 11/07	9	10	11	12	1	2	3	4	5	6	7	8	
	+=====+												
	SAS Physical WG											(45)	
	+=====+												
	SAT WG   CAP WG											(20/40)	
	+=====+												
	STA Marcom *											(20)	
	+-----+												
	SSC-3 WG /FCP-4 WG											(25)	
	+=====+												
Wednesday 11/08	9	10	11	12	1	2	3	4	5	6	7	8	
	+=====+												
	CAP WG											(40)	
	+=====+												
	SFF											(25)	
	+-----+												
	STA Plenary * / TCC*											(20)	
	+-----+												
Thursday 11/09	9	10	11	12	1	2	3	4	5	6	7	8	
	+=====+												
	T10 Plenary											(50/25)	
	+=====+												
Friday 11/10	9	10	11	12	1	2	3	4	5	6	7	8	
	No meetings planned for Friday.												

/ means the next meeting starts when the previous meeting concludes  
 Meetings marked with == are T10-authorized meetings.  
 Meetings marked with -- are other groups and may change without notice.  
 Meetings marked with (\*) are closed meetings of other groups.

Other T10-authorized meetings:

Meeting	Date	Location / Contact
SAS Protocol Call(s)	TBA	TBA via T10 reflector / Elliott
SAS Zoning Calls	TBA	TBA via T10 reflector / Lohmeyer
SAS PHY Calls	Weekly Thu 10a CDT	TBA via T10 reflector / Cox

## Map Abbreviation Key:

ad hoc: a.k.a., working group  
ADI: Automation Drive Interface (tape library interface)  
Amnd: Amendment  
CAP: Commands, Architecture, and Protocols  
FC: Fibre Channel  
I/F: Interface  
IETF: Internet Engineering Task Force (the group that sets Internet standards)  
iFC: Internet Fibre Channel  
IPS: Internet Protocol SCSI  
iSCSI: Internet SCSI  
LB: Letter Ballot  
Lock SG: Study Group to examine need for Locking removable storage devices  
MMC: Multimedia Commands (CD-ROM, DVD, etc.)  
OSD: Object-based Storage Device  
PH or PHY: Physical (Connectors, Cables, Transceivers, etc.)  
Prot: Protocol  
Plenary: Full Committee Meeting  
Res: Resolution  
SAS: Serial Attached SCSI  
SAT: SCSI / ATA Translation  
SBC-2: SCSI Block Commands - 2  
SCSI: Small Computer System Interface  
SDI: Serial Attached SCSI Driver Interface  
SES: SCSI Enclosure Services  
SFF: SFF Industry Group (not an INCITS activity)  
SG: Study Group  
SMC-3: SCSI Medium Changer - 3 Commands  
SPC-4: SCSI Primary Commands - 4 (4th generation)  
SSC-3: SCSI Stream Commands - 2 (includes Tape)  
STA: SCSI Trade Association (Closed meeting -- not an INCITS activity)  
STA Marcom: STA Marketing Communications (Closed meeting -- not an INCITS activity)  
STP: Serial ATA Tunneled Protocol  
T10: SCSI Storage Interfaces Technical Committee  
T11: Device Level Interfaces Technical Committee  
WG: Working Group (same as Ad Hoc Group)

For more information about T10 activities, please contact the following people:

Activity	Contact	Telephone/Email
ADT, ADC, ADT-2, ADC-2	Paul Entzel	(720) 406-5782 paul.entzel@quantum.com
SBC-2, SES-2, SAS-1.1, SAS-2, BCC, SDI	Rob Elliott	(281) 518-5037 Elliott@hp.com
MMC-4, MMC-5, MMC-6	Bill McFerrin	(325) 423-1560 billmc@tstar.net
SBP-3	Peter Johansson	(510) 527-3926 PJohansson@ACM.org
SAM-4, SBC-3	George Penokie	(507) 253-5208 gop@us.ibm.com
SAT	Bob Sheffield	(480) 554-8597 robert.l.sheffield@intel.com
SAT-2	Mark Overby	(425) 417-9412 moverby@nvidia.com
SMC-2	Erich Oetting	(303) 673-2178 Erich_Oetting@Stortek.com
SMC-3	Noud Snelder	+31408446108 Noud.snelder@bdt.de
SPC-3, SAM-3, SPC-4, OSD-2	Ralph Weber	(214) 912-1373 roweber@acm.org
SSC-3, FCP-3, FCP-4	Dave Peterson	(763) 268-6139 david.peterson@mcddata.com
Other Activities	John Lohmeyer	(719) 533-7560 lohmeier@t10.org

The long-term T10 meeting week schedule is:

Date	Location	Host/Comments
Sep 11-15, 2006	Nashua, NH	Hitachi Cable Manchester
Nov 6-10, 2006	Las Vegas, NV	Hitachi GST
Approved dates and locations (except March and November) for 2007:		
Jan 15-19, 2007	Orlando, FL	Symantec
Mar 12-16, 2007	TBD	SCSI Trade Association
May 7-11, 2007	Seattle, WA	Microsoft Corp.
Jul 9-13, 2007	Colorado Springs, CO	LSI Logic
Sep 17-21, 2007	Vancouver, BC Canada	PMC-Sierra
Nov 5-9, 2007		
Proposed dates for 2008:		
Jan 14-18, 2008		
Mar 10-14, 2008	TBD	Nvidia
May 5-9, 2008		
Jul 14-18, 2008	Colorado Springs, CO	LSI Logic
Sep 8-12, 2008		
Nov 3-7, 2008		

John Lohmeyer asked people interested hosting one of the above meetings to contact him.

John Lohmeyer moved and Gerry Houlder seconded that the 2007 meeting locations through September, excluding the specific March 2007 location, be approved. Because T10 has a standing rule requiring two-thirds approval for meeting locations outside the contiguous 48 United States, this motion required a two-thirds vote. The motion passed 32:0:0:14=46, which met the two-thirds rule.

#### **14.1 Authorization of Working Group Meetings**

John noted that the working group meetings are required to operate under the same voting procedures as does T10 (that is, one vote per organization) and the results of a working group are not binding on the parent committee. Working groups should strive to achieve consensus prior to bringing issues to T10.

Curtis Stevens moved that T10 authorize the T10-related meetings and events in the list above that had not previously been approved through the end of October 2006. Bill Martin seconded the motion. The motion passed 25:2:1:18=46.

#### **15. Adjournment**

John Lohmeyer moved and Ralph Weber seconded that the meeting be adjourned. In the absence of any objections, the motion passed unanimously. The meeting was adjourned at 11:35 a.m. on Thursday September 14, 2006.

**Enclosure(1) -- Meeting Attendees**

Name	S	Organization
Mr. Chris Fore	P	Adaptec, Inc.
Mr. Paul von Stamwitz	P	AMCC
Mr. Steve Robalino	A	Dallas Semiconductor
Mr. Kevin Marks	P	Dell, Inc.
Mr. David Black	A	EMC Corp.
Mr. Mickey Felton	A#	EMC Corp.
Mr. Robert H. Nixon	P	Emulex
Mr. Ralph O. Weber	P	ENDL Texas
Mr. Douglas Wagner	P	FCI
Mr. Elwood Parsons	P	Foxconn Electronics
Mr. Mike Fitzpatrick	P	Fujitsu
Mr. Nathan Hastad	P	General Dynamics
Mr. Michael Banther	V	Hewlett Packard Co.
Mr. Rob Elliott	P	Hewlett Packard Co.
Mr. Zane Daggett	P	Hitachi Cable Manchester
Mr. Dan Colegrove	P	Hitachi Global Storage Tech.
Mr. James Rockrohr	V	IBM
Mr. George O. Penokie	P	IBM Corp.
Mr. Robert Sheffield	P	Intel Corp.
Mr. Robert Payne	P	Iomega Corp.
Mr. Joel Silverman	AV	Kawasaki Microelectronics Am
Mr. Dennis Moore	P	KnowledgeTek, Inc.
Mr. John Geldman	P	Lexar Media, Inc.
Mr. John Lohmeyer	P	LSI Logic Corp.
Mr. Donald Rich	A#	m-systems Flash Disk Pioneers
Mr. David Geddes	P	Marvell Semiconductor, Inc.
Mr. Paul Wassenberg	A	Marvell Semiconductor, Inc.
Mr. David Peterson	P	McDATA
Mr. Mark Benedikt	P	Microsoft Corporation
Mr. Jay Neer	P	Molex Inc.
Mr. Frederick Knight	A	Network Appliance
Mr. Mark Overby	P	Nvidia Corp.
Mr. James Williams	P	Oracle
Mr. Tim Symons	P	PMC-Sierra
Mr. Paul Entzel	P	Quantum Corp.
Dr. Paul Suhler	A	Quantum Corp.
Mr. Alvin Cox	A	Seagate Technology
Mr. Martin Czekalski	V	Seagate Technology
Mr. Gerald Houlder	P	Seagate Technology
Mr. William Martin	P	Sierra Logic, Inc.
Mr. Stephen Finch	P	STMicroelectronics, Inc.
Mr. Roger Cummings	P	Symantec
Mr. Paul D. Aloisi	P	Texas Instruments
Mr. Dan Gorenc	A	TycoElectronics
Mr. Jim Scott	A.	Vitesse Semiconductor
Mr. Curtis Stevens	P	Western Digital

46 People Present

Status Key: P - Principal  
 A,A# - Alternate  
 AV - Advisory Member

L - Liaison  
 V - Visitor

**Enclosure(2) -- T10 Attendance Database**

Generated on 2006/09/18 at 11:08:05

Mr. Chris Fore (P) Phone: (919) 287-2024  
Adaptec, Inc. Fax: (919) 287-2099  
523 Davis Drive, Suite 500 Email: chris\_fore at adaptec dot com  
Durham, NC 27713

Mr. Tom Treadway (A) Phone: 321-207-1267  
Adaptec, Inc. Fax:  
2602 Challenger Tech Court Email: tom\_treadway at adaptec dot com  
Suite 190  
Orlando, FL 32826

Mr. Ziad Matni (AV) Phone: 610-712-3569  
Agere Systems Fax:  
1110 American Parkway NE Email: matni at agere dot com  
Allentown, PA 18109

Mr. Ken Paist (AV) Phone: (610) 712-3265  
Agere Systems Fax:  
Room 12D-225B Email: paist at agere dot com  
1110 American Parkway NE  
Allentown, PA 18109-9138

Mr. Paul von Stamwitz (P) Phone: (408) 542-8767  
AMCC Fax: (408) 542-8605  
215 Moffett Park Drive Email: pvstamwitz at amcc dot com  
Sunnyvale, CA 95089

Mr. Michael Wingard (P) Phone: (607) 786-4241  
Amphenol Interconnect Fax: (607) 786-4311  
20 Valley St. Email: mike dot wingard at aipce dot com  
Endicott, NY 13760

Mr. Paul Griffith (AV) Phone: 408-313-6643  
Broadcom Corp. Fax:  
2451 Mission College Email: griffith at broadcom dot com  
Santa Clara, CA 95054

Mr. Robert Snively (P) Phone: (408) 333-8135  
Brocade Comm. Systems, Inc. Fax:  
1745 Technology Drive Email: rsnively at brocade dot com  
San Jose, CA 95110

Mr. Steven Wilson (A) Phone: (408) 333-8128  
Brocade Comm. Systems, Inc. Fax: (408) 392-6655  
1745 Technology Drive Email: swilson at brocade dot com  
San Jose, CA 95110

Dr. Claudio DeSanti (AV) Phone: (408) 853-9172  
Cisco Systems, Inc. Fax: (408) 853-9172



170 W. Tasman Dr.  
San Jose, CA 95134

Email: cds at cisco dot com

Mr. Fabio Maino (AV)  
Cisco Systems, Inc.  
170 W. Tasman Dr.  
San Jose, CA 95134

Phone: (408) 853-7530  
Fax: (408) 853-7530  
Email: fmaino at cisco dot com

Mr. John Tyndall (AV)  
Crossroads Systems, Inc.  
8300 North Mopac Expressway  
Austin, TX 78749

Phone: (512) 928-7282  
Fax:  
Email: jtyndall at crossroads dot com

Mr. James A. Lott, Jr. (P)  
Dallas Semiconductor  
4401 S. Beltwood Pkwy.  
Dallas, TX 75244-3292

Phone: (972) 371-4939  
Fax: (972) 371-4370  
Email: jim dot lott at dalsemi dot com

Mr. Steve Robalino (A)  
Dallas Semiconductor

Phone: (512) 423-6198  
Fax:  
Email: Steven dot robalino at dalsemi dot com

Mr. Gideon Avida (P)  
Decru  
275 Shoreline Dr.  
Suite 450  
Redwood City, CA 94065

Phone: (650)413-6700  
Fax: (650)413-6790  
Email: gideon at decru dot com

Mr. Kevin Marks (P)  
Dell, Inc.  
One Dell Way - MS 8540  
Round Rock, TX 78682

Phone: (512) 723-9173  
Fax: (512) 723-6657  
Email: kevin\_marks at dell dot com

Mr. Gary S. Robinson (P)  
EMC Corp.  
85 East India Row  
Apt 18C  
Boston, MA, 02110

Phone: (617) 512-8859  
Fax:  
Email: g dot robinson at computer dot org

Mr. David Black (A)  
EMC Corp.  
176 South St.  
Hopkinton, MA 01748

Phone: (508) 293-7953  
Fax: (508) 293-7786  
Email: black\_david at emc dot com

Mr. Mickey Felton (A#)  
EMC Corp.  
21 coslin Drive  
Southboro, MA 01772

Phone: 508 382 7206  
Fax:  
Email: felton\_mickey at emc dot com

Mr. Robert H. Nixon (P) Phone: (714) 885-3525  
Emulex Fax: (714) 885-3794  
3333 Susan St. Email: bob dot nixon at emulex dot com  
Costa Mesa, CA 92626

Mr. Kenneth Hirata (A) Phone: (714) 662-5600  
Emulex Fax: (714) 885-3794  
3333 Susan St Email: Ken dot Hirata at Emulex dot com  
Costa Mesa, CA 92626

Mr. I. Dal Allan (A) Phone: (408) 867-6630  
ENDL Fax: (408) 867-2115  
14426 Black Walnut Ct. Email: endlcom at acm dot org  
Saratoga, CA 95070

Mr. Ralph O. Weber (P) Phone: (214) 912-1373  
ENDL Texas Fax: (972) 596-2775  
Suite 102#178 Email: roweber at ieee dot org  
18484 Preston Rd.  
Dallas, TX 75252

Mr. Keith Holt (A) Phone: (316) 636-8665  
Engenio Information Tech. Fax:  
3718 N. Rock Rd. Email: keith dot holt at lsil dot com  
Wichita, KS 67226-1397

Mr. Douglas Wagner (P) Phone: (805) 498-0325  
FCI Fax:  
472 Delwood Ct. Email: dwagner at fciconnect dot com  
Newbury Park, CA 91320-4819

Mr. Elwood Parsons (P) Phone: (717) 558-7518 x141  
Foxconn Electronics Fax: (717) 558-9306  
100 S. 38th St. Email: elwood dot parsons at foxconn dot  
com  
Harrisburg, PA 17105

Mr. Mike Fitzpatrick (P) Phone: (405) 820-5809  
Fujitsu Fax: (405) 755-8073  
1255 East Arques Ave. Email: mfitzpatrick at us dot fujitsu dot  
com  
Sunnyvale, CA 94085

Mr. Ben-Koon Lin (A) Phone: (408) 894-3979  
Fujitsu Fax: (408) 894-3908  
2904 Orchard Pkwy. Email: blin at fcpa dot fujitsu dot com  
San Jose, CA 95134

Mr. Erhard Weiss (AV) Phone: 49-821-804-3602  
Fujitsu Siemens Comp. gmbH Fax: 49-821-804-2910  
Depatment: SNI PC SB ESW Email: weiss dot abg at sni dot de

Burgermeister-Ulrich-St  
D-86199 Augsburg Germany

Mr. Bob Thornton (AV) Phone: (408) 745-4932  
Fujitsu Takamisawa America Fax: (408) 745-4971  
250 E. Caribbean Dr. Email: bthornto at fta dot fujitsu dot com  
Sunnyvale, CA 94089

Mr. Nathan Hastad (P) Phone: (952) 921-6237  
General Dynamics Fax: (952) 956-5445  
8800 Queen Avenue South Email: nathan dot hastad at gd-ais dot com  
Bloomington, MN 55431

Mr. Tim Mackley (A) Phone: (952) 921-6866  
General Dynamics Fax:  
8800 Queen Ave. S. Email: timothy dot mackley at gd-ais dot  
com  
Bloomington, MN 55431

Ms. Liza Hunt (XO) Phone:  
Global Engineering Documents Fax:  
15 Inverness Way East Email:  
Englewood, CO 80112-5704

Mr. Rob Elliott (P) Phone: (281) 518-5037  
Hewlett Packard Co. Fax: (281) 518-7135  
MC140801 Email: Elliott at hp dot com  
PO Box 692000  
Houston, TX 77269-2000

Dr. William Ham (A) Phone: (978) 828-9102  
Hewlett Packard Co. Fax: (978) 470-0321  
92 Wildwood Road Email: bill\_ham at ix dot netcom dot com  
Andover, MA 01810

Mr. Zane Daggett (P) Phone: (603) 669-4347 x236  
Hitachi Cable Manchester Fax: (603) 669-9621  
900 Holt Ave. Email: zdaggett at hcm dot hitachi dot com  
Manchester, NH 03109

Mr. Mike Guzman (A) Phone: (603) 669-4347  
Hitachi Cable Manchester Fax: (603) 669-9621  
900 Holt Ave. Email: mguzman at hcm dot hitachi dot com  
Manchester, NH 03109

Mr. Hitoshi (Todd) Horita (A#) Phone: (603) 669-4347  
Hitachi Cable Manchester Fax: (603) 669-9621  
900 Holt Ave. Email: horita dot hitoshi at hitachi-cable  
dot co dot jp  
Manchester, NH 03109

Mr. Dan Colegrove (P) Phone: (702) 614-6119  
Hitachi Global Storage Tech. Fax: (702) 614-7955  
2903 Carmelo Dr. Email: daniel dot colegrove at hgst dot com  
Henderson, NV 89052

Ms. Sally Castillo (A) Phone: (507) 322-2316  
Hitachi Global Storage Tech. Fax: (507) 322-2413  
3055 41st Street NW Email: Sally dot Castillo at hgst dot com  
Rochester, MN, 55901

Mr. George O. Penokie (P) Phone: (507) 253-5208  
IBM Corp. Fax: (507) 253-2880  
MS 2C6 Email: gop at us dot ibm dot com  
3605 Highway 52 N.  
Rochester, MN 55901

Mr. Kevin Butt (A) Phone: (520) 799-5280  
IBM Corp. Fax:  
M/S 9032-2 6TY Email: kdbutt at us dot ibm dot com  
9000 S. Rita Rd.  
Tucson, AZ 85744

Mr. Robert Sheffield (P) Phone: (480) 554-8597  
Intel Corp. Fax: (480) 554-7347  
5000 W. Chandler Blvd. Email: robert dot l dot sheffield at intel  
dot com  
Chandler, AZ 85226-3699

Dr. Mark Seidel (A) Phone: (480) 554-9755  
Intel Corp. Fax:  
5000 W. Chandler Blvd. Email: mark dot n dot seidel at intel dot  
com  
Chandler, AZ 85226

Mr. Roger Jeppsen (AV) Phone: 480-552-0584  
Intel Corporation Fax: 480-554-6617  
5000 W. Chandler Blvd. Email: roger dot c dot jeppsen at intel  
dot com  
M/S CH6-332  
Chandler, AZ 85226

Mr. Robert Payne (P) Phone: (801) 332-4438  
Iomega Corp. Fax: (801) 778-4170  
1821 Iomega Way Email: PayneR at iomega dot com  
Roy, UT 84067

Mr. Joel Silverman (AV) Phone: (408) 570-0555 x405  
Kawasaki Microelectronics Am Fax:  
2570 North 1st Street #301 Email: joel at k-micro dot us  
San Jose, CA 95131

Mr. Hugh Curley (AV) Phone: 303-682-1886  
KnowledgeTek Fax:

3405 Larkspur Drive  
Longmont, Co 80503

Email: hcurley at indra dot com

Mr. Dennis Moore (P)  
KnowledgeTek, Inc.  
8620 Wolff Ct., Suite 108  
Westminster, CO 80031

Phone: (303) 465-1800  
Fax: (303) 426-2600  
Email: dmoore at ix dot netcom dot com

Mr. John Geldman (P)  
Lexar Media, Inc.  
47300 Bayside Parkway  
Fremont, CA 94538

Phone: (510) 580 8715  
Fax: (510) 580 0504  
Email: jgeldman at lexar dot com

Mr. Martin Furuhjelm (A)  
Lexar Media, Inc.  
47300 Bayside Parkway  
Fremont, CA 94538

Phone: (510) 580-2368  
Fax: (510) 580-0478  
Email: mfuluhjelm at lexar dot com

Mr. Pat LaVarre (A#)  
Lexar Media, Inc.  
47300 Bayside Parkway  
Fremont, CA 94538

Phone: (510) 743 4533  
Fax: (510) 580 0504  
Email: p dot lavarre at ieee dot org

Mr. John Lohmeyer (P)  
LSI Logic Corp.  
4420 ArrowsWest Dr.  
Colorado Springs, CO 80907

Phone: (719) 533-7560  
Fax: (719) 533-7183  
Email: lohmeier at t10 dot org

Mr. Avraham Shimor (P)  
M-Systems  
7 Atir Yeda Str  
  
Kfar Saba 44425  
Israel

Phone: +972528444610  
Fax: +97235466888  
Email: avraham dot shimor at m-systems dot com

Mr. Ariel Sobelman (A)  
M-Systems  
7 Atir Yeda St  
  
Kfar Saba, 44425  
Israel

Phone: +972-52-4444104  
Fax:  
Email: ariel dot sobelman at m-systems dot com

Mr. Donald Rich (A#)  
M-Systems Flash Disk Pioneers  
7 Atir Yeda St.  
Kfar Saba Israel 44425

Phone: +972 54 922 2188  
Fax: +972 3 548 8666  
Email: donald dot rich at m-systems dot com

Mr. David Geddes (P)  
Marvell Semiconductor, Inc.  
5488 Marvell Lane  
E-203  
Santa Clara CA 95054

Phone: (408) 222-3307  
Fax: (408) 988-0136  
Email: dgeddes at marvell dot com

Mr. Paul Wassenberg (A) Phone: 949-614-7714  
Marvell Semiconductor, Inc. Fax: 949-614-7780  
26880 Aliso Viejo Pkwy, #100 Email: paulw at marvell dot com  
Aliso Viejo, CA 92656

Mr. Wei Zhou (A#) Phone: (408) 314-0355  
Marvell Semiconductor, Inc. Fax:  
700 First Avenue Email: wzhou at marvell dot com  
Sunnyvale CA 94089

Mr. David Peterson (P) Phone: (763) 268-6139  
McDATA Fax:  
6000 Nathan Lane North Email: david dot peterson at mcdata dot com  
Minneapolis, MN 55442

Mr. Tim Brackett (AV) Phone: (707) 836-7883  
Meritec Fax: (707) 836-7959  
1382 West Jackson Street Email: tbrackett at meritec dot com  
Painesville, OH 44077

Mr. Edward Cady (AV) Phone: (503) 359-4556  
Meritec Fax: (503) 359-9273  
1382 West Jackson Street Email: ecady at meritec dot com  
Painesville, OH 44077

Mr. David Walp (A#) Phone: (425)7034187  
Microsoft Corp Fax:  
1 Microsoft Way Email: dwalp at microsoft dot com  
Redmond, WA 98052

Mr. Robert Griswold (A) Phone: (425) 707-0271  
Microsoft Corp. Fax: (425) 936-7329  
One Microsoft Way. Email: rogris at microsoft dot com  
Redmond, WA 98052

Mr. Mark Benedikt (P) Phone: (425) 704-9998  
Microsoft Corporation Fax: (425) 936-7329  
One Microsoft Way Email: markben at microsoft dot com  
Redmond, WA 98052

Mr. Jay Neer (P) Phone: (561) 447-2907 x3889  
Molex Inc. Fax: (561) 447-2908  
399 W. Camino Gardens Blvd. Email: jay dot neer at molex dot com  
Suite 103  
Boca Raton, FL 33432

Mr. Galen Fromm (A#) Phone: (630) 718-5270  
Molex Inc. Fax:  
2222 Wellington Ct. Email: galen dot fromm at molex dot com  
Lisle, IL 60532

Mr. Jerry Kachlic (A) Phone: (630) 718-5991  
Molex Inc. Fax: (630) 512-8622  
2216 Wellington Court Email: jerry dot kachlic at molex dot com  
Lisle, IL 60532

Mr. Faisal Faruqui (AV) Phone: (408) 473-1370  
NeoScale Systems Inc. Fax: (408) 473-1307  
1655 McCarthy Boulevard Email: ffaruqui at neoscale dot com  
Milpitas, CA 95035-8000

Mr. Landon Noll (AV) Phone: (408) 473-1300  
NeoScale Systems Inc. Fax:  
1655 McCarthy Boulevard Email: lnoll at neoscale dot com  
Milpitas, CA 95035-8000

Mr. Frederick Knight (A) Phone: (919) 476-5362  
Network Appliance Fax:  
7301 Kit Creek Road Email: Frederick dot Knight at netapp dot  
com

P.O. Box 13917  
RTP, NC 27709

Mr. Mark Overby (P) Phone: (425) 417-9412  
Nvidia Corp. Fax:  
2701 San Thomas Expy Email: moverby at nvidia dot com  
Santa Clara, CA 95050

Mr. James Williams (P) Phone: (650) 506-5120  
Oracle Fax: (650) 506-5120  
500 Oracle Parkway Email: James dot A dot Williams at oracle  
dot com

Mailstop: 4op1220  
Redwood Shores, CA 94065

Mr. William Bridge (A) Phone: (650) 506-6350  
Oracle Fax: (650) 506-6350  
500 Oracle Parkway Email: Bill dot Bridge at Oracle dot com  
Mailstop: 4op1220  
Redwood Shores, CA 94065

Mr. Takaharu Ai (A) Phone: +81-6-6906-2706  
Panasonic AVC Networks Co. Fax: +81-6-6905-4697  
1-15, Matsuo-choy Email: ai dot takaharu at jp dot panasonic  
dot com

Kadoma, Osaka  
Japan 571-8504

Dr. Terence J. Nelson (P) Phone: (908) 464-1652  
Panasonic Technologies, Inc. Fax: (908) 464-0149  
167 Maple St. Email: terry at tjnelson dot com  
New Providence, NJ 07974

Mr. William P. McFerrin (P) Phone: (325) 423-1560  
Philips Electronics/CD Edge Fax:  
PO Box 381 Email: billmc37 at ctesc dot net  
Llano, TX 78643

Mr. Bill Galloway (P) Phone: (281) 516-6002  
Pivot3, Inc. Fax: (281) 516-6099  
6605 Cypresswood Dr. Email: billg at pivot3 dot com  
Suite 350  
Spring, TX 77379

Mr. Thomas Grieff (A) Phone: (281) 516-6042  
Pivot3, Inc. Fax: (281) 516-6099  
6605 Cypresswood Dr. Email: billg at pivot3 dot com  
Suite 350  
Spring, TX 77379

Mr. Tim Symons (P) Phone: (604) 415 6000 x2264  
PMC-Sierra Fax:  
100-2700 Production Way Email: Tim\_Symons at pmc-sierra dot com  
Burnaby,  
BC, V5A 4X1. Canada

Mr. Yuriy Greshishchev (A) Phone: 613-271-4034  
PMC-Sierra Fax: 613-271-7007  
4th Floor - 411 Legget Drive Email: Yuriy\_Greshishchev at pmc-sierra  
dot com  
Kanata, Ontario K2K 3C9  
Canada

Mr. Craig W. Carlson (AV) Phone: (952) 932-4064  
QLogic Corp. Fax:  
6321 Bury Drive Email: craig dot carlson at qlogic dot com  
Eden Prairie, MN 55346

Mr. Skip Jones (AV) Phone: (949) 389-6368  
QLogic Corp. Fax: (949) 389-6114  
26600 Laguna Hills Dr. Email: skip dot jones at qlogic dot com  
Aliso Viejo, CA 92656

Mr. Paul Entzel (P) Phone: (720) 406-5782  
Quantum Corp. Fax: (720) 406-5762  
4001 Discovery Dr. Email: paul dot entzel at quantum dot com  
Boulder, CO 80303

Dr. Paul Suhler (A) Phone: (714) 641-2485  
Quantum Corp. Fax: (714) 966-7328  
1650 Sunflower Ave. Email: paul dot suhler at quantum dot com  
Costa Mesa, CA 97626

Mr. John A. Fobel (AV) Phone: (909) 987-3966  
Rancho Technology, Inc. Fax: (909) 989-2365  
10783 Bell Court Email: johnf at rancho dot com  
Rancho Cucamonga, CA 91730



Mr. Gerald Houlder (P) Phone: (952) 402-2869  
Seagate Technology Fax: (952) 402-3471  
Mailstop SHK231 Email: gerry dot houlder at seagate dot com  
1280 Disc Drive  
Shakopee, MN 55379-1863

Mr. Alvin Cox (A) Phone: (405) 350-7424  
Seagate Technology Fax:  
1849 Ridgeway Drive Email: Alvin dot Cox at seagate dot com  
Yukon, OK 73099

Mr. William Martin (P) Phone: (916) 772-3658  
Sierra Logic, Inc. Fax: (916) 771-5416  
7213 Marblethorpe Dr Email: bill\_martin at sierralogic dot com  
Roseville, CA 95747

Mr. Narayan Ayalasomayajula (A) Phone: (916) 772-1234 x116  
Sierra Logic, Inc. Fax: (916) 771-1811  
9083 Foothills Blvd., #300 Email: narayan at sierralogic dot com  
Roseville, CA 95747

Mr. James T. Lie (AV) Phone: (510) 490-7795  
SiliconStor Inc. Fax:  
48430 Lakeview Blvd. Email: jlie at siliconstor dot com  
Fremont, CA 94538

Mr. Stephen Finch (P) Phone: (303) 381-3587  
STMicroelectronics, Inc. Fax: (303) 381-3660  
1625 S Fordham St, Suite 500 Email: steve dot finch at st dot com  
Longmont, CO 80503

Mr. Vit Novak (P) Phone: (510) 936-3284  
Sun Microsystems, Inc. Fax: (510) 936-2527  
MS NWK16-211 Email: vit dot novak at sun dot com  
7777 Gateway Blvd.  
Newark, CA 94560

Mr. Charles Binford (A) Phone: (316) 315-0382 x222  
Sun Microsystems, Inc. Fax: (509) 756-4425  
3450 N. Rock Rd., Suite 301 Email: Charles dot Binford at sun dot com  
Wichita, KS 67226

Mr. Dwayne Edling (A#) Phone: 303-661-5299  
Sun Microsystems, Inc. Fax:  
1 StorageTek Drive Email: dwayne dot edling at sun dot com  
Louisville, CO 80028

Mr. Erich Oetting (A#) Phone: (303) 673-2178  
Sun Microsystems, Inc. Fax:  
One StorageTek Drive Email: erich dot oetting at sun dot com

Louisville, CO 80028-4272

Mr. Roger Cummings (P) Phone: (407) 357-7257  
Symantec Fax:  
Post Stop HRO3-3 Email: roger\_cummings at symantec dot com  
1001 Heathrow Park Lane  
Heathrow, FL 32746

Mr. Raymond Gilson (A) Phone: 651.746.7281  
Symantec Corporation Fax: 651.746.6713  
Mail Stop ROS2-3 Email: raymond\_gilson at symantec dot com  
2815 Cleveland Avenue  
Roseville, MN 55113

Mr. Halvard Eriksen (AV) Phone: +47-22189090  
Tandberg Data ASA Fax:  
PO Box 134 Kjelsas Email: halvard dot eriksen at tandberg dot  
com

N-0411  
Oslo, Norway

Mr. Anders Emil Olsen (AV) Phone: +47-22189090  
Tandberg Data ASA Fax:  
PO Box 134 Kjelsas Email: anders dot emil dot olsen at  
tandberg dot com

N-0411  
Oslo, Norway

Mr. Kjartan Nesbakken Haugen (AV) Phone:  
Tandberg Storage Fax:  
PO Box 196 Kjelsaas, N-0411 Oslo Email: kjartan dot haugen at  
tandbergstorage dot com

Norway

Mr. Anders Liverud (AV) Phone: +4722189555  
Tandberg Storage Fax: +4722189257  
PO Box 196 Kjelsas Email: anders dot liverud at  
tandbergstorage dot com

N-0411 Oslo  
Norway

Mr. Paul D. Aloisi (P) Phone: (603) 222-8687  
Texas Instruments Fax: (603) 222-8700  
50 Phillipe Cote St. Email: Paul\_Aloisi at ti dot com  
Manchester, NH 03101

Mr. Robert Kando (A) Phone: (603) 222-8667  
Texas Instruments Fax:  
50 Phillipe Cote St. Email: Robert\_Kando at ti dot com  
Manchester, NH 03101

Mr. Tom McGoldrick (AV) Phone: (949) 462-7575  
Toshiba Fax: (949) 462-7510  
9740 Irvine Blvd. Email: Tom dot McGoldrick at tais dot  
toshiba dot com

Irvine, CA 92618

Mr. Scott Wright (AV) Phone: (949) 462-7551  
Toshiba Fax: (949) 581-1170  
9740 Irvine Blvd. Email: Scott dot Wright at tais dot  
toshiba dot com

Irvine, CA 92618

Ms. Ashlie Fan (P) Phone: (508) 926-4148  
TycoElectronics Fax: (508) 752-4230  
125 Goddard Memorial Drive Email: afan at madisoncable dot com  
Worcester, MA 01603

Mr. Dan Gorenc (A) Phone: (717) 986-3518  
TycoElectronics Fax: (717) 592-2566  
M/S 128-053 Email: daniel dot gorenc at  
tycoelectronics dot com

PO Box 3608  
Harrisburg, PA 17105-3608

Mr. Ron Mathews (AV) Phone: (949) 380-5077  
UNISYS Corporation Fax: (949) 380-5858  
N1101 Email: ronald dot mathews at unisys dot com  
25725 Jeronimo Road  
Mission Viejo, CA 92691

Mr. Phil Shelton (AV) Phone: (949) 380-5111  
UNISYS Corporation Fax: (949) 380-5858  
MV201 Email: phil dot shelton at unisys dot com  
25725 Jeronimo Road  
Mission Viejo, CA 92691

Mr. George Ren (AV) Phone: (408) 235-3002  
Universal Scientific Industrial Co Fax: (408) 982-0145  
3600 Peterson Way Email: ren at ms dot usi dot com dot tw  
Santa Clara, CA 95054

Mr. Robin Yan (AV) Phone: (408) 235-3002  
Universal Scientific Industrial Co Fax: (408) 982-0145  
3600 Peterson Way Email: robin\_y at ms dot usi dot com dot tw  
Santa Clara, CA 95054

Mr. Gregory Tabor (P) Phone: (719) 867-6200  
Vitesse Semiconductor Fax: (719) 867-6203  
4323 ArrowsWest Drive Email: greg at vitesse dot com  
Colorado Springs, CO 80907

Mr. David Allen (A) Phone: 719-867-6280  
Vitesse Semiconductor Fax:  
4323 ArrowsWest Dr. Email: dallen at vitesse dot com  
Colorado Springs, CO 80907

Mr. Kevin Witt (A#) Phone: (719) 867-4438  
Vitesse Semiconductor Fax:  
Vitesse Semiconductor Email: kwitt at vitesse dot com  
4323 ArrowsWest Dr.  
Colorado Springs, CO 80907

Mr. Curtis Stevens (P) Phone: 949-672-7933  
Western Digital Fax:  
20511 Lake Forest Dr. Email: Curtis dot Stevens at wdc dot com  
Lake Forest, Ca. 92630

Mr. Mark Evans (A) Phone: (408) 363-5257  
Western Digital Fax:  
Email: Mark dot Evans at wdc dot com

Mr. Jeff Williams (P) Phone: (952) 983-2445  
Xiotech Corp. Fax: (952) 983-2320  
6455 Flying Cloud Drive Email: jeff\_williams at xiotech dot com  
Eden Prarie, MN 55344

Mr. Rich Ramos (P) Phone: (312) 224-8852  
Xyratex Fax:  
860 Embarcadero Dr Email: rich\_ramos at us dot xyratex dot com  
Ste 10  
W. Sacramento CA 95691