

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

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Date: March 25, 2002

Reply to: John Lohmeyer

To: T10 Membership  
From: Ralph Weber & John Lohmeyer  
Subject: Parallel SCSI Working Group Meeting -- March 12, 2002  
Dallas, TX

## Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. SPI-5 Topics
  - 4.1 Periodic structures on SCSI buses (00-352) [Barnes]
  - 4.2 SPI-5 Programmable Termination (01-270) [Aloisi]
  - 4.3 Timing Budget (02-047) [Petty]
  - 4.4 SPI-5 Testing [Manildi]
  - 4.5 Ultra640 SCSI Receiver Offset Issues (02-038) [Brown]
  - 4.6 Ultra640 SCSI Training Pattern Proposal (02-039) [Leshay]
  - 4.7 Driver/Receiver Asymmetry Correction (02-045) [Petty]
  - 4.8 Proposal for offset correction for Ultra640 SCSI for SPI-5 (02-079) [Brown]
  - 4.9 SPI-5 Status
  - 4.10 Messages During Packetized [Bellamy]
  - 4.11 Negotiation Issues [Galloway]
  - 4.12 Offset Numbers In Annex F [Sweazey]
  - 4.13 Timing Budget in SPI-4 [Petty]
  - 4.14 Training Patterns [Houlder]
5. Old Business
  - 5.1 Project Proposal for SPI-6 (01-145) [Lohmeyer]
  - 5.2 PIP Report [Ham]
6. New Business
  - 6.1 FCP-2, SPI-3/4 SPC-2/3 Protocol Identifier field location conflicts (reflector messages) [Houlder]
7. Review of Recommendations to the Plenary
8. Meeting Schedule
9. Adjournment

## Results of Meeting

### 1. Opening Remarks

John Lohmeyer, the T10 Chair, called the meeting to order at 9:00 a.m., Tuesday, March 12, 2002. He thanked Paul Aloisi of Texas Instruments for hosting the meeting.

As is customary, the people attending introduced themselves and a copy of the attendance list was circulated.

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## 2. Approval of Agenda

The draft agenda was approved with the following changes:

- 4.10 Messages During Packetized [Bellamy]
- 4.11 Negotiation Issues [Galloway]
- 4.12 Offset Numbers In Annex F [Sweazey]
- 4.13 Timing Budget in SPI-4 [Petty]
- 4.14 Training Patterns [Houlder]

No items were added/revised during the course of the meeting.

## 3. Attendance and Membership

Attendance at working group meetings does not count toward minimum attendance requirements for T10 membership. Working group meetings are open to any person or organization directly and materially affected by T10's scope of work. The following people attended the meeting:

Name	S	Organization	Electronic Mail Address
Mr. Vince Bastiani	V	Adaptec Consultant	bass.tech@gte.net
Mr. Ron Roberts	P	Adaptec, Inc.	Ron_Roberts@adaptec.com
Mr. Bill Galloway	P	BREA Technologies, Inc.	billg@breatech.com
Mr. Brian Forbes	P	Brocade Comm. Systems, Inc.	bforbes@brocade.com
Mr. Robert C. Elliott	P	Compaq Computer Corp.	Robert.Elliott@compaq.com
Dr. William Ham	A	Compaq Computer Corp.	bill_ham@ix.netcom.com
Mr. Wayne Bellamy	V	Compaq Computer Corp.	wayne.bellamy@compaq.com
Mr. Ralph O. Weber	P	ENDL Texas	roweber@acm.org
Mr. Eugene Lew	P	Fujitsu	elew@fcpa.fujitsu.com
Mr. Nathan Hastad	P	General Dynamics	nathan.hastad@gd-ais.com
Mr. George O. Penokie	P	IBM / Tivoli Systems	gop@us.ibm.com
Mr. John Lohmeyer	P	LSI Logic Corp.	lohmeier@t10.org
Mr. William Petty	A	LSI Logic Corp.	william.petty@lsil.com
Mr. Travis Bradfield	V	LSI Logic Corp.	travis.bradfield@lsil.com
Mr. Mark Evans	P	Maxtor Corp.	mark_evans@maxtor.com
Mr. Russ Brown	V	Maxtor Corp.	russ_brown@maxtor.com
Mr. Richard Uber	V	Maxtor Corp.	richard_uber@maxtor.com
Mr. Ting Li Chan	V	QLogic Corp.	ting.chan@qlogic.com
Mr. Gerald Houlder	P	Seagate Technology	gerry_houlder@seagate.com
Mr. Paul Sweazey	AV	Seagate Technology	sweazey@cdg.stsv.seagate.com
Mr. Vit Novak	P	Sun Microsystems, Inc.	vit.novak@sun.com
Mr. Paul D. Aloisi	P	Texas Instruments	Paul_Aloisi@ti.com
Mr. Donald R. Getty	A	Texas Instruments	donald_getty@ti.com

23 People Present

Status Key: P - Principal  
 A,A# - Alternate  
 AV - Advisory Member  
 L - Liaison  
 V - Visitor

## **4. SPI-5 Topics**

### **4.1 Periodic structures on SCSI buses (00-352) [Barnes]**

Based on the recommendations of Bill Ham and Paul Aloisi, the group agreed remove this item from this and future agendas.

### **4.2 SPI-5 Programmable Termination (01-270) [Aloisi]**

Paul Aloisi presented the revised termination requirements relaxation proposal (01-270r2) noting that the changes are exactly what the last working group requested. Paul Aloisi moved that 01-270r2 be recommended for inclusion in SPI-5. Mark Evans seconded the motion. In the absence of any objections, the motion passed unanimously.

### **4.3 Timing Budget (02-047) [Petty]**

Bill Petty presented the latest revision of the SPI-5 timing budget (02-047r1). As a result of reconciling the SPI-5 budget with the approved SPI-4 budget, the total had become negative.

The group discussed what to do in order to get the total positive again.

Bill noted that all the compensation techniques discussed so far plus some are going to be required to get a positive budget.

In order to get a timing budget in SPI-5 r0, the group agreed to reduce the "System Noise Transmit and Receive" and "Cross Talk Induced Jitter" values, without substantial justification for the change.

Bill Petty moved that 02-113r0 be recommended for inclusion in SPI-5. Paul Aloisi second the motion. In the absence of any objections, the motion passed unanimously.

### **4.4 SPI-5 Testing [Manildi]**

In the absence of Bruce Manildi, discussion of this topic was deferred to the next meeting.

### **4.5 Ultra640 SCSI Receiver Offset Issues (02-038) [Brown]**

Mark Evans asked that this item be removed from this and future agendas.

### **4.6 Ultra640 SCSI Training Pattern Proposal (02-039) [Leshay]**

Mark Evans noted that the issues raised in January have been resolved without any changes in the proposal and then presented 02-039r0. In response to a question from Bill Ham, Mark Evans stated that the goal of the proposal is to keep the time values in the training pattern constant for SPI-5, meaning that the number of transitions will double in nearly all the cases.

Gerry Houlder stated that, because the number of pulse cycles differs between Fast-160 and Fast-320, the examples should be changed to be tables. George requested a detailed proposal with all the wording changes prior to incorporation of that idea.

Mark Evans moved that 02-039r0 be recommended for inclusion in SPI-5. Bill Galloway seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **4.7 Driver/Receiver Asymmetry Correction (02-045) [Petty]**

Bill Petty asked that item be removed from this and future agendas.

#### **4.8 Proposal for offset correction for Ultra640 SCSI for SPI-5 (02-079) [Brown]**

Mark Evans presented a proposal to add the concept of differential offset in Annex A (02-079r0). He noted that the proposal draws on the ideas presented in 02-038r0 to the January group.

Bill Ham questioned the specifics of the proposal regarding exact requirements on the receiver. Mark and Bill agreed on a revision to the proposal.

Mark Evans moved that 02-079r1 (r0 as revised) be recommended for inclusion in SPI-5. Bill Galloway seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **4.9 SPI-5 Status**

George Penokie reported that he plans on incorporating all the approved proposals in SPI-5 r0, to be made available prior to the next meeting.

#### **4.10 Messages During Packetized [Bellamy]**

Wayne Bellamy asked that the group consider making the MESSAGE IN phase DISCONNECT message not supported in packetized for SPI-5.

Since this was seen as a problem also in SPI-4, Bill Ham asked how a change such as this could be made in SPI-4. John Lohmeyer described both the public review process on SPI-4 and options the committee for revising the dpANS after public review.

Wayne described a similar request for the RESTORE POINTERS and MODIFY DATA POINTERS messages, also in packetized. Bill Galloway supported Wayne on this point.

Bill Galloway volunteered to write a detailed proposal for SPI-5 based on the consensus of the group. Bill noted that his preference would be to make MODIFY DATA POINTERS obsolete in SPI-5 and George Penokie asked that he announce that specifically on the T10 reflector.

The group agreed that this is a SPI-5 issue, only and does not need to be changed in SPI-4. If SPI-4 were to be changed for some other reason, George suggested that we also make these changes in SPI-4.

#### **4.11 Negotiation Issues [Galloway]**

Bill Galloway raised concerns about Figure 19 in 4.12.7.5 in SPI-4. The Figure shows that switching to another bus phase after a WDTR indicates success in the negotiation. Bill argued that, since going to another bus phase is a violation of the SDTR/WDTR protocol, it should not be considered success.

Rob Elliott felt that the table should indicate that a WDTR not followed by an SDTR is at least partially successful. Bill was willing to allow the initiator to "muddle on" with as much information as it has, but he was unyielding on the question of calling the negotiation successful.

Gerry Houlder noted that the requirement that WDTR be followed by an SDTR is relatively new.

Bill Galloway agreed to write a specific change proposal for SPI-5.

#### **4.12 Offset Numbers In Annex F [Sweazey]**

Paul Sweazey questioned the REQ/ACK offset values in table F.3. George agreed that the numbers are wrong, noting that the values do not agree with the rules for paced transfers.

Paul noted that the information in the table is informative and so the changes are not critical in SPI-4.

George Penokie took notes on the specific needed editorial changes for SPI-5 and agreed to make them in SPI-5.

#### **4.13 Timing Budget in SPI-4 [Petty]**

Bill Petty questioned the content of SPI-4 table 49, specifically the "system noise at launch" and "system noise at receiver". Bill Petty wondered if the two values were really the same thing. Ting Chan and Bill Ham stated that they are different things and Bill Ham explained the causes of the differences to Bill Petty's satisfaction.

#### **4.14 Training Patterns [Houlder]**

Gerry Houlder raised questioned a statement that a signal be asserted and negated 8 times in the SPI-4 training pattern, whereas the time allowed to do the assertions and negations only is long enough for 4 cycles (see SPI-4 10.7.4.3.3).

The group agreed that the example equation computing the time contains a wrong value (6.25 should be 12.5) and that the change is editorial. George agreed to make the editorial change in SPI-5. Gerry asked that, if any changes are made in SPI-4, this change be made too and George agreed.

### **5. Old Business**

#### **5.1 Project Proposal for SPI-6 (01-145) [Lohmeyer]**

John Lohmeyer asked that this item be deferred to the May meeting.

#### **5.2 PIP Report [Ham]**

Bill Ham reported that the PIP working group is meeting twice per month in order to be ready for letter ballot in May.

### **6. New Business**

#### **6.1 FCP-2, SPI-3/4 SPC-2/3 Protocol Identifier field location conflicts (reflector messages) [Houlder]**

Gerry Houlder asked that the protocol identifier field be moved from byte 2 to byte 3. The group refused to make the change on the grounds that all other protocols have the field in byte 2.

Gerry raised a similar question about the sub page format and here the agreed solution was to change SPC-3. Gerry agreed to prepare a proposal for changing SPC-3.

### **7. Review of Recommendations to the Plenary**

Ralph Weber noted that the following recommendations have been made to the T10 plenary:

- SPI-5 Programmable Termination (01-270r2) [Aloisi]
- Ultra640 SCSI Training Pattern Proposal (02-039r0) [Evans]

Proposal for offset correction for Ultra640 SCSI for SPI-5 (02-079)r1 [Evans] {r0 as revised}  
SPI-5 timing budget (02-113r0) [Petty]

## **8. Meeting Schedule**

The next meeting of the Parallel SCSI Working Group will be Monday April 29, 2002 commencing at 9:00 a.m. in Nashua, NH at the Sheraton Nashua Hotel (603-888-9970).

## **9. Adjournment**

The meeting was adjourned at 12:30 p.m. on Tuesday, March 12, 2002.