

Accredited Standards Committee\*  
**National Committee for Information Technology Standards (NCITS)**

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Date: March 8, 2001

Reply to: John Lohmeyer

To: T10 Membership  
From: Ralph Weber & John Lohmeyer  
Subject: Parallel SCSI Working Group Meeting -- March 6, 2001  
Dallas, TX

## Agenda

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2. Approval of Agenda
3. Attendance and Membership
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    - 4.1.2 Receiver Response Requirements (00-332) [Ham]
    - 4.1.3 Periodic structures on SCSI buses (00-352) [Barnes]
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  - 4.2 SPI-4 Protocol Topics
    - 4.2.1 Proposed changes to SPI IU exception handling (00-384) [Srinivasan]
    - 4.2.2 SPI-4: SCC Subpages for SPI initiator negotiated settings (01-066) [Elliott]
    - 4.2.3 Paced Timing Protocol Clarification (e-mail)
    - 4.2.4 Streaming Clarification (e-mail)
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    - 4.2.6 Corrections to SPI-4 Driving and Asserting SCSI Signals (01-096) [Moore]
    - 4.2.7 Packetized CRC Intervals (01-097) [Moore]
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5. New Business
6. Meeting Schedule
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## Results of Meeting

### 1. Opening Remarks

John Lohmeyer, the T10 Chair, called the meeting to order at 9:00 a.m., Tuesday, March 6, 2001. 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.

## 2. Approval of Agenda

The draft agenda was approved with the following changes:

- 4.2.3 Paced Timing Protocol Clarification (e-mail)
- 4.2.4 Streaming Clarification (e-mail)
- 4.2.5 QAS Question (e-mail)
- 4.2.6 Corrections to SPI-4 Driving and Asserting SCSI Signals (01-096r0) [Moore]
- 4.2.7 Packetized CRC Intervals (01-097r0) [Moore]

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. Ron Roberts	P	Adaptec, Inc.	Ron_Roberts@adaptec.com
Mr. Charles Brill	P	AMP / Tyco Electronics	cebrill@ix.netcom.com
Mr. Bill Mable	P	Amphenol Interconnect	mableaipc@aol.com
Mr. Vince Bastiani	V	Bass Technology Consulting	bass.tech@gte.net
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. Neil Wanamaker	P	Crossroads Systems, Inc.	ntw@crossroads.com
Mr. John Tyndall	A	Crossroads Systems, Inc.	jtyndall@crossroads.com
Mr. Gary S. Robinson	P	EMC	robinson_gary@emc.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.j.hastad@gd-is.com
Mr. George O. Penokie	P	IBM / Tivoli Systems	gpenokie@tivoli.com
Mr. Dennis Moore	P	KnowledgeTek, Inc.	dmoore@ix.netcom.com
Mr. John Lohmeyer	P	LSI Logic Corp.	lohmeier@t10.org
Mr. William Petty	A	LSI Logic Corp.	william.petty@lsil.com
Mr. Brian Day	V	LSI Logic Corp.	brian.day@lsil.com
Mr. Richard Moore	A#	QLogic Corp.	r_moore@qlc.com
Mr. Dean Wallace	A	QLogic Corp.	d_wallace@qlc.com
Mr. Ting Li Chan	V	QLogic Corp.	t_chan@qlc.com
Mr. Richard L. Romaniec	V	QLogic Corp.	r_romaniec@qlc.com
Mr. Mark Evans	P	Quantum Corp.	mark.evans@quantum.com
Mr. Bruce Leshay	V	Quantum Corp.	bleshay@tdh.qntm.com
Mr. Gerald Houlder	P	Seagate Technology	gerry_houlder@seagate.com
Mr. Paul D. Aloisi	P	Texas Instruments	Paul_Aloisi@ti.com
Mr. Mike Kosco	V	Texas Instruments	mike@chipcraft.com
Mr. Ron Mathews	AV	UNISYS Corporation	ronald.mathews@unisys.com

28 People Present

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

## 4. SPI-4 Topics

### 4.1 SPI-4 Physical Topics

#### 4.1.1 Proposal for Ultra320 AAF receiver input signal specification for SPI-4 (00-400 & 00-408) [Brown]

Bruce Leshay presented a proposal for signal characterization in Ultra320 when AAF is used (00-400r1). The group discussed the relationship between the several proposed requirements, how the requirements can be observed and measured, and how the requirements relate to a working filtering receiver. Bill Ham expressed concerns over issues of skew and jitter. Phone consultation was conducted with Russ Brown who was unable to attend the meeting owing to problems with airline flight cancellations.

Mark Evans moved that 00-400r2 (r0 as revised here) be recommended for inclusion in SPI-4. George Penokie seconded the motion.

Bill Ham asked that the proposal be revised to state that the requirements it states will be used as inputs to the process of developing cable plant requirements and after a lengthy discussion Mark Evans declined to add such a statement in the r2 revision. Concerns were raised about how interconnect specifications will be derived from the receiver requirements (AAF and/or precompensation). It was noted that these issues were raised previously.

To verify the changes, the revision 0 contents were compared line by line with the revision 2 contents.

The motion passed on a vote of 5:3:4.

#### 4.1.2 Receiver Response Requirements (00-332) [Ham]

Bill Ham noted that 00-332r3 has been available since the January meeting. Concerns were raised about the pulse width relationship between this proposal's must reject requirement and the AAF must accept requirement. The proposal was revised.

Bill Ham moved that 00-332r4 (r3 as revised) be recommended for inclusion in SPI-4. Bruce Leshay seconded the motion. The motion passed on a vote of 11:1:2.

George Penokie asked where the text is to be added in SPI-4 and on the recommendation of Paul Aloisi, Bill Ham further revised r3 to state that the text goes into the receiver section of Annex A.

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

John Lohmeyer reported that Larry Barnes asked for discussion of this item to be deferred to the next meeting.

#### 4.1.4 Minimum drive levels (01-094) [Bridgewater]

Wally Bridgewater presented a proposal to change the minimum drive levels (01-094r0). The main request in the proposal was that the minimum drive level be reduced from 320 mV to 185 mV. The request was justified based on power dissipation in protocol chips. Questions were raised about aspects of the model used to justify the ability to operate at the lower minimum drive level. Wally agreed to bring a better-justified proposal to the next meeting.

## 4.2 SPI-4 Protocol Topics

### 4.2.1 Proposed changes to SPI IU exception handling (00-384) [Srinivasan]

John Lohmeyer reported that Mr. Srinivasan asked for this topic to be dropped from this and future agendas.

### 4.2.2 SPI-4: SCC Subpages for SPI initiator negotiated settings (01-066) [Elliott]

Rob Elliott presented a proposal that would allow an initiator communicating with a RAID controller to determine the negotiated transfer rates used by the RAID controller to communicate with the disk drives it is using on the secondary SCSI buses (01-066r0). Questions were raised about how the proposal relates to the existing model for SCC devices. Proposed improvements to the proposal included use of the well known LUN and/or definition of an ASC/ASCQ to be reported as a unit attention condition.

Rob agreed to revise the proposal to be included in a future command set related to well-known LUNs.

### 4.2.3 Paced Timing Protocol Clarification (e-mail)

George Penokie presented an e-mail message from Brian Day containing two questions regarding timing specification in training for paced transfers.

1. SEL behavior when starting a training sequence after a reselection.

It's my understanding from section 10.7.2 that the target shall release the SEL line two system deskews after detecting the assertion of BSY from the initiator. In section 10.8.4.2.2, it states that the target shall assert SEL two system deskews before asserting REQ. How soon after releasing SEL from the reselection phase can a target reassert it to prepare for training? Essentially, is there any minimum deassertion time between those two events?

The group discussed several existing requirements in this area. Brian Day moved that after reselection targets must release SEL for a minimum two deskew delays before asserting SEL as described in SPI-4 subclause 10.8.4.2.2. Bruce Leshay seconded the motion. In the absence of any objections, the motion was approved unanimously.

2. Ending pacing transfers from DT DATA IN

From section 10.8.4.3.4, the target negates the REQ and P1 lines once the offset has gone to zero. Then it states the rules in 10.13 must be followed. Is there any minimum time restriction on the target from negating the REQ/P1 to changing the phase lines? If the target is allowed to simultaneously negate the REQ/P1 and change phase, the initiator may actually see a REQ in the new phase during that switch if the cable skews the REQ "slower" than the phase lines... which to the initiator would look like a violation of section 10.13. I was expecting to find some requirement on the target for that, but didn't see one.

The group discussed the how best to minimize the timing impact of the needed change. Brian agreed that no resolution is needed for this problem. He's just going to modify his product to deal with the issue.

### 4.2.4 Streaming Clarification (e-mail)

Brian Day reviewed an issue raised by Sriram Srinivasan.

Subclause 16.3.12.1 says "A RD\_STRM bit of one indicates read streaming shall be enabled..." Does "shall be enabled" mean that the target shall use ONLY SPI L\_Qs with data stream type for read data transfer or choose to use it sometimes and choose to use data type in the SPI L\_Q some other times? In other words, can a task, say, a SCSI read command, be completed by using a combination of streaming

and non-streaming reads in one or more connections with an initiator with whom the target has negotiated a RD\_STRM bit of 1?

Sriram's email noted that the same question applies in the write streaming case.

The group discussed the cited requirement and related requirements and concluded that a clarification of the current text would be good. Wording the clarification proved to be too difficult in the meeting setting so George Penokie agreed to work offline to write the needed non-substantive clarification.

#### 4.2.5 QAS Question (e-mail)

George Penokie presented a question about QAS.

What happens if the initiator on the I\_T nexus detects a parity error on a QAS message? And, to make things even more interesting, the device that wants the bus does not see a parity error on the same QAS message?

The group reviewed the discussion of the issue as it occurred on the reflector. It was agreed that if the initiator detects the parity error then it asserts ATN. Bruce Leshay's question was, "what next?" Bruce and George walked through the issues that follow that question. The conclusion of the discussion was that the target should go bus free, with the only remaining issue being whether it would be an unexpected bus free or not.

Bruce Leshay moved that in 10.5.4 a requirement be added that if ATN is asserted, then the target shall go to message out, receive all the message bytes, and then perform an unexpected bus free. George Penokie seconded the motion. In the absence of any objections, the motion passed unanimously.

#### 4.2.6 Corrections to SPI-4 Driving and Asserting SCSI Signals (01-096) [Moore]

Richard Moore reviewed a proposal to address editor's notes 3 and 6 in SPI-4 revision 3 (01-096r0). Revisions were requested and agreed by Richard. Richard Moore moved that 01-096r1 (r0 as modified) be recommended for inclusion in SPI-4. Bruce Leshay seconded the motion. In the absence of any objections, the motion passed unanimously.

#### 4.2.7 Packetized CRC Intervals (01-097) [Moore]

Richard Moore expressed concerns that the behavior is not well documented when there are miss matches between the CRC interval and the streaming interval and proposed changes to improve the definition of the behavior (01-097r0). The group discussed how best to clarify the behavior. George agreed to correct the first identified omission as an editorial change.

The second part of the proposal to add restrictions on iuCRC intervals met with opposition. Richard agreed to work on a revised proposal that would address the objections.

### 4.3 SPI-4 working draft review [Penokie]

George Penokie lead a review of the editor's notes in SPI-4 revision 3.

## 5. New Business

No new business was brought before the meeting.

## **6. Meeting Schedule**

The next meeting of the Parallel SCSI Working Group will be Tuesday May 1, 2001 commencing at 9:00 a.m. in Nashua, NH at the Sheraton Hotel (603-888-9970).

## **7. Adjournment**

The meeting was adjourned at 6:25 p.m. on Tuesday, March 6, 2001.