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

Doc. No.: T10/99-267r0

Date: September 20, 1999
Reply to: John Lohmeyer

To: T10 Membership
From: Ralph Weber & John Lohmeyer
Subject: SCSI Physical Working Group Meeting -- September 13-14, 1999
           Huntington Beach, CA

Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. SPI-3 Topics
    4.1   Review of SPI-3 working draft [Penokie]
    4.2   Crosstalk Issues with 99-111r3 (99-215r1) [Aloisi]
    4.3   Cable Media Performance Testing (98-219r5) [Ham]
    4.4   QAS Arbitration Fairness (99-225r0) [Elliott]
    4.5   SPI-3 Setup and Hold Timings text changes (99-241r0) [Elliott]
    4.6   Task Management Handling changes for SPI-3 (99-227r2) [Penokie]
    4.7   Proposed addition to SPI-3 integrity check fall back procedure (99-242r1) [Lohmeyer]
    4.8   Forcing Bus Free from QAS (99-274r0) [Moore]
5. SPI-4 Topics
    5.1   Load Compensation [Novak]
    5.2   Cable/System Simulation Issues (99-204) [Wallace]
    5.3   Next Generation Cable Performance [Ham]
    5.4   SCSI out of band communications method (99-213) [Petty]
    5.5   Presentation on Ultra320 (99-248) [Bastiani]
    5.6   Extended Addressing for SPI-4 (99-249r1, 99-250r1) [Monia]
    5.7   SPI-4 ISI reduction via transmit pre-compensation (99-260r0) [Petty]
    5.8   SPI-4 timing budget utilizing receiver signal deskew method (99-261r0) [Petty]
    5.9   SPI-4 clocking proposal (99-262r0) [Petty]
    5.10 Margin Control (99-264) [Lamers]
    5.11 Setting Extended Addresses (99-273) [Milligan]
    5.12 Flow Control (99-142r0) [Lamers]
6. Domain Validation Technical Report Topics
7. New Business
    7.1   Project Proposal for SCSI Signal Modeling (SSM) (99-243) [Ham]
8. Meeting Schedule
9. Adjournment

Results of Meeting

1.   Opening Remarks

George Penokie, the T10 Vice-chair, called the meeting to order at 1:00 p.m., Monday September 13, 1999. He thanked Skip Jones of QLogic 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 additions and changes:

    5.10   Margin Control (99-264) [Lamers]
    5.11   Setting Extended Addresses (99-273) [Milligan]
    7.1   Project Proposal for SCSI Signal Modeling (SSM) (99-243) [Ham]

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

    4.8   Forcing Bus Free from QAS (99-274r0) [Moore]
    5.12   Flow Control (99-142r0) [Lamers]

3.   Attendance and Membership

Attendance at working group meetings does not count toward minimum attendance requirements for T10 member-ship. 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:

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          Name            S        Organization         Electronic Mail Address
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Mr. Lawrence J. Lamers P  Adaptec, Inc.            ljlamers@ieee.org
Mr. Vincent Bastiani   A# Adaptec, Inc.            bastiani@corp.adaptec.com
Mr. Wally Bridgewater  A# Adaptec, Inc.            wally@eng.adaptec.com
Mr. Tariq Abou-Jeyab   O  Adaptec, Inc.            tajeyab@corp.adaptec.com
Mr. Charles Monia      V  Adaptec, Inc.            cmonia@corp.adaptec.com
Mr. Gregg Neely        P  Andataco                 greggn@andataco.com
Mr. Joseph Basista     O  C&M Corp.                joebasista@aol.com
Mr. Edward Haske       P  CMD Technology           haske@cmd.com
Mr. Robert C. Elliott  P  Compaq Computer Corp.    Robert.Elliott@compaq.com
Mr. Charles Tashbook   P  Dallas Semiconductor     charles.tashbook@dalsemi.
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Mr. Ricardo Dominguez  P  Dell Computer            ricardo_dominguez@dell.
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Mr. Julian Ferry       O  Foxconn                  julferry@aol.com
Mr. Stephen Jarvis     O  Foxconn
Mr. Eugene Lew         P  Fujitsu                  elew@fcpa.fujitsu.com
Mr. Ben-Koon Lin       A  Fujitsu (FCPA)           blin@fcpa.fujitsu.com
Mr. Donald Woelz       V  Genroco, Inc.            don@genroco.com
Ms. Jacqueline Sylvia  A  Hitachi Cable Manchester jsylvia@hcm.hitachi.com
Mr. George O. Penokie  P  IBM Corp.                gop@us.ibm.com
Mr. Louis Grantham     P  Linfinity Micro          lgrantham@linfinity.com
Mr. John Lohmeyer      P  LSI Logic Corp.          lohmeyer@t10.org
Mr. Ralph O. Weber     A  LSI Logic Corp.          roweber@acm.org
Mr. Alan Littlewood    V  LSI Logic Corp.          alanl@lsil.com
Mr. William Petty      V  LSI Logic Corp.          william.petty@lsil.com
Ms. Jie Fan            P  Madison Cable Corp.      jfan@madisoncable.com
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Mr. Jay Neer          A  Molex Inc.            jneer@molex.com
Mr. Skip Jones        P  QLogic Corp.          sk_jones@qlc.com
Mr. Richard Moore     A# QLogic Corp.          r_moore@qlc.com
Mr. Dean Wallace      A  QLogic Corp.          d_wallace@qlc.com
Mr. Mark Evans        P  Quantum Corp.         mark.evans@quantum.com
Mr. Richard Uber      V  Quantum Corp.         duber@tdh.qntm.com
Mr. Gene Milligan     P  Seagate Technology    Gene_Milligan@notes.
                                               seagate.com
Mr. Gerald Houlder    A  Seagate Technology    gerry_houlder@notes.
                                               seagate.com
Mr. Daniel (Dan) F.   O  Seagate Technology    daniel_f_smith@notes.
Smith                                          seagate.com
Mr. Mayank R. Patel   V  Seagate Technology    mayank_r_patel@notes.
                                               seagate.com
Mr. Robert Morris     P  Texas Instruments     bob.morris@ti.com
Mr. Stephen G. Finch  A  Texas Instruments     steve.finch@tus.ssi1.com
Mr. Paul D. Aloisi    P  Unitrode Corporation  aloisi@unitrode.com
Mr. Donald R. Getty   A  Unitrode Corporation  gettd@unitrode.com
Mr. Jeffrey L.        P  Western Digital       Jeffrey.L.Williams@wdc.
Williams                 Corporation           com
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39 People Present

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Status Key:  P    -  Principal
             A,A# -  Alternate
             O    -  Observer
             L    -  Liaison
             V    -  Visitor
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4.   SPI-3 Topics

4.1 Review of SPI-3 working draft [Penokie]

George Penokie discussed several issues (editor's notes, e-mail comments, and comments from the group) in SPI-3 with the group.

4.2 Crosstalk Issues with 99-111r3 (99-215r1) [Aloisi]

Paul Aloisi described a problem with the crosstalk specification in 99-111r3 and showed the changes made to produce 99-111r5, which resolves the problem.

4.3 Cable Media Performance Testing (98-219r5) [Ham]

Bill Ham reviewed the cable requirements proposal (99-111r5). The group agreed on several changes and Bill agreed to revise the proposal. In the absence of any objections, the group recommended that 99-111r6 (r5 as revised) for inclusion in SPI-3. Bill then turned to the proposed new normative annex describing cable testing methods (98-219r5). In the absence of any objections, the group recommended that 98-219r5 be included in SPI-3 as a replacement for Annex F.

4.4 QAS Arbitration Fairness (99-225r0) [Elliott]

Rob Elliott presented a proposal to define fairness between QAS and non-QAS devices. He noted that the case having greatest interest would be hot-plugging of non-QAS devices in a QAS configuration. Larry Lamers

described why hot-plugging is not an issue. Rob indicated that he would not operate a bus in QAS when even one device on the bus could not handle QAS. Thus, fairness would not be important in the normal case. Rob asked Larry (and Richard Moore) to prepare a proposal to delete the those statements in SPI-3 that support mixed QAS and non-QAS operation on a bus. The proposal was handled later in the agenda, see 4.8 below.

4.5   SPI-3 Setup and Hold Timings text changes (99-241r0) [Elliott]

Rob Elliott presented a proposal to clarify the requirements when a device negotiates to a speed that is slower than the maximum supported. Concerns were raised about whether the statements apply to receivers or to receivers and transmitters. Gene Milligan suggested that the problem be resolved by relying on the contents (or modifying the contents) of note 4 in table 30. Rob agreed that the note was sufficient, and withdrew the proposal. George stated that the strikeouts in the proposal had already been introduced as editorial changes in the latest SPI-3 revision.

4.6   Task Management Handling changes for SPI-3 (99-227r2) [Penokie]

George Penokie reviewed a proposal to define packetized task management function handling similar to non-packetized by requiring a transition to bus free phase after successful completion. He further noted that the proposal requires both packetized and non-packetized to go to bus free phase after processing a CLEAR ACA task management function. Ralph Weber asked that a glossary entry be added for task management function and George agreed. Mark Evans asked that the proposal be reviewed at the general SCSI Working Group meeting later in the week.

4.7   Proposed addition to SPI-3 integrity check fall back procedure (99-242r1) [Lohmeyer]

John Lohmeyer presented a proposal concerning how to handle double transition clocking failures induced by using a SPI-2 expander between SPI-3 devices. The intent of the proposal is to increase the probability that the SPI-2 expander will detect the renegotiation of transfer parameters. The group decided to resolve the problem by removing text from SPI-3, instead of changing it, and by including John's proposed note in the Physical Layer Integrity Checking Annex. John agreed to revise the proposal to meet the group's decision.

Gene Milligan raised questions about the interactions of packetized and expanders. John proposed additional wording changes.

On a vote of 12:1:1, the group recommended that 99-242r2 (r1 as modified) be approved for inclusion in SPI-3. Larry Lamers stated that his no vote was based on an opinion that no changes are needed in the standard.

4.8   Forcing Bus Free from QAS (99-274r0) [Moore]

Richard Moore proposed a method for initiators to force a transition to bus free phase from QAS. He explained that the proposal addresses the problem raised by Rob Elliott (see 4.4 above). George made the changes in the first part of the proposal, which he deemed editorial. In the absence of any objections, the group unanimously recommended that all of 99-274r0 be approved for incorporation in SPI-3.

5.   SPI-4 Topics

George Penokie asked the group to exercise restraint in their criticism of the proposals, as this is the first time many of them have been presented.

5.1   Load Compensation [Novak]

In the absence of Vit Novak, action on this topic was deferred to the November meeting.

5.2   Cable/System Simulation Issues (99-204) [Wallace]

Dean Wallace described an effort to develop a method for modeling complete SCSI systems. He then presented a project proposal (see 7.1 below).

5.3   Next Generation Cable Performance [Ham]

Bill Ham presented an overview of the next generation activities of the cable group. He mentioned that the top activities on the list are handling cable assemblies and considering balance.

5.4   SCSI out of band communications method (99-213) [Petty]

Bill Petty reported that no new work has been done on this proposal since the last meeting.

5.5   Presentation on Ultra320 (99-248) [Bastiani]

Vince Bastiani presented a review of the issues that must be addressed during the development of a faster transfer rate protocol in SPI-4.

5.6   Extended Addressing for SPI-4 (99-249r1, 99-250r1) [Monia]

Charles Monia presented a review (99-249r1) of a proposal to extend the address space to 64 addressable devices on a 16-bit parallel bus (99-250r1). The group discussed the proposal. Charles listed the future activities planned for the effort and agreed to return with additional information at the next meeting.

5.7   SPI-4 ISI reduction via transmit pre-compensation (99-260r0) [Petty]

Bill Petty presented a proposal to reduce ISI by precompensating the transmitted signal. Concerns were raised about how the current integrated circuit design and modeling tools would be affected by the techniques described in the proposal. It was pointed out that modeling inadequecies should not preclude adopting the technique -- the modeling tools should be enhanced instead. Bill agreed to bring a revised proposal to the next meeting.

5.8   SPI-4 timing budget utilizing receiver signal deskew method (99-261r0) [Petty]

Bill Petty presented a proposal describing a method of receiver deskew that can remove most of the signal skew. The group discussed the table listing sources of skew and made several changes. Several issues were raised with the proposed deskewing method. Bill was given guidance on areas needing changes in the next revision of the proposal. Bill agreed to bring a revised proposal to the next meeting.

5.9   SPI-4 clocking proposal (99-262r0) [Petty]

Bill Petty presented a proposal for a free-running clock (similar to one of the proposals made by Vince Bastiani in 5.5 above). He note that the proposals differ in which signal lines carry the free-running clock and data strobing signals. Bill agreed to bring a revised proposal to the next meeting.

5.10 Margin Control (99-264r0) [Lamers]

Larry Lamers presented a proposal for a new command to instruct a device regarding had to adjust its margins. He also presented a method to accomplish the same capability using parallel bus messages. The group discussed the alternatives. Larry asked the group to think about both ideas between now and the November meeting and send him ideas for better ways of accomplishing the same results.

5.11 Setting Extended Addresses (99-273) [Milligan]

Gene Milligan asked the group to consider different ways to assign extended addresses. The group agreed to reclaim the 3.3 V pins for setting extended addresses, and requested changes in the details of the proposal for doing that.

5.12 Flow Control & Continue I/O Process Flag (99-142r0) [Lamers]

Larry Lamers presented a request that the target provide the initiator with an indication when data transfers are about to be paused. He noted that the presentation was informative only and a full discussion would have to deferred to the November meeting. A second request was to add a Continue I/O Process Task Management Flag. The group discussed the specific requirements that a device would be asked to perform in response to the flag. Larry asked the group to think about both ideas between now and the November meeting and send him ideas for better ways of accomplishing the same results.

6.   Domain Validation Technical Report Topics

Larry Lamers reported that Tariq Abou-Juyab has volunteered to edit the document. He asked the chair to consider accepting the editor candidate.

7.   New Business

7.1   Project Proposal for SCSI Signal Modeling (SSM) (99-243) [Ham]

Dean Wallace presented a project proposal for a document covering modeling of SCSI systems. He noted that the group developing the proposal could not decide whether the proper vehicle would be a standard or technical report. Gene Milligan recommended that a technical report would be more appropriate.

In a straw poll, the unanimous opinion of the group was that the project proposal be for a technical report. In the absence of any objections the group unanimously recommended that T10 forward 99-243r1 (r0 as revised to be a technical report) to NCITS for further processing to initiate a technical report project.

8.   Meeting Schedule

The next meeting of the SCSI Physical Working Group will be Monday, November 1, 1999 commencing at 1 p.m. recessing on Monday evening and continuing until 6 p.m. on Tuesday, November 2, 1999 at the Embassy Suites on Monterey Bay (831-393-1115) in Monterey, CA hosted by Adaptec, Inc.

The group recommended scheduling a SPI-4 meeting in Colorado Springs on October 13 starting at 1:00 pm and continuing through October 14.

9.   Adjournment

The meeting was adjourned at 5:30 p.m. on Tuesday September 14, 1999.