Accredited Standards Committee*
X3, Information Technology

To: Membership of X3T10.1

From: Lawrence J. Lamers, Chair X3T10.1 (acting)

Subject: Minutes of X3T10.1 Working Group : February 26-28, 1996
                              February 26-28, 1996 -- Stateline, NV

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Agenda

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10. 2nd Generation Physical Topics
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11. Call for Patents

12. Action Items

13. Meeting Schedule

14. Adjournment
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Opening Remarks

Larry Lamers convened the meeting at 9:00 am. He thanked Chuck Gibson of Samsung for hosting the meeting.
As is customary, the people attending introduced themselves. A copy of the attendance list was circulated for attendance and corrections.

It was stated that the meeting had been authorized by X3T10 and would be conducted under the X3 rules. Ad hoc meetings take no final actions, but prepare recommendations for approval by the X3T10 task group. The voting rules for the meeting are those of the parent committee, X3T10. For the ad hoc, other than straw votes, the voting rules are: one vote per participating company

The minutes of this meeting will be posted to the X3T10 BBS and the SSA Reflector and will be included in the next X3T10.1 committee mailing.

Larry stated that the X3T10.1 mailings are part of the X3T10 mailings. Persons that want to receive documents should subscribe to the X3T10 mailings by sending their request to the secretariat. An electronic option is available.

Attendance and Membership, Introductions

Attendance at working group meetings does not count toward minimum attendance requirements for X3T10 membership.
Working group meetings are open to any person or company to attend and to express their opinion on the subjects being discussed.

The following people attended the meeting.

name	company	telephone	email
Lawrence Lamers	Adaptec	408-957-7817	ljlamers@aol.com
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Approval of Agenda

The agenda was approved with the following additions
> Enclosure services
> Async alert Queue Depth.

Approval of Minutes

The minutes of the last Working Group meeting (see 95a162r0) were approved.

Document Distribution

Larry Lamers stated that the next mailing deadline is Wednesday, March 20, 1996.

Documents are available on the BBS (714) 574-0424 in area 26 and at ftp.symbios.com in /pub/standards/io/x3t10.1

96a110 r0	Clarify when Async Alerts are discarded	J. Scheible
96a111 r1	What goes in rev 0 of 2nd generation docs?	J. Scheible
96a113 r2	Simple speed negotiation proposal	J. Scheible
96a114 r0	ANSI Syle guidelines	J. Scheible
96a115 r0	Editorial comments on rev 9 of SSA-TL1	J. Scheible
96a116 r0	X3T10 comment resolution on SSA-PH1 rev 8	J. Scheible
96a117 r0	X3T10 comment resolution on SSA-TL1 rev 9	J. Scheible
96a118 r0	X3T10 comment resolution on SSA-S2P rev 6	J. Scheible
X3T10.1/1121D r6c	SSA SCSI-2 Protocol	
X3T10.1/0989D r9a	SSA Transport Layer - 1	
X3T10.1/1145D r8a	SSA Physical Layer - 1	

Review of Old Action Items

None.

Review of X3T10 Letter Ballot Comments

Comment Resolution on S2P (1121D) [Monia]

Charles Monia and John Scheible reviewed the proposed comment resolution. Additional changes were made to define data frames as special type of application frame means that they are not allowed to be privileged frames.
There was a discussion on zero length transfers and adding an implementors note to advise folks to beware of zero length transfer lengths. The two sentences deleted on this were deleted and issue will be dealt with in TL1.

The working group recommends that 96a118r2 be accepted as the resolution of X3T10 comments. Recommended unanimously.

Comment Resolution on TL1 (0989D) [Scheible]

John Scheible reviewed the proposed comment resolution. He reported that the comments from FSI there were handled as best as possible though most unintelligible.

The forwarding of UDC characters within a switch needs further clarification. The comment on UDC transmissions resulted in chaning the EUDC definition to: "The EUDC bit (Enable User Defined Characters) specifies how the port handles User Defined characters. If the EUDC bit is cleared, the port shall not transmit any User Defined characters and shall discard received User Defined characters. If the EUDC bit is set, the port may transmit User Defined characters, and shall forward User Defined characters."

The issue regarding an implementors note on zero length data transfers did not reach a consensus and was remanded to the plenary for decision.

The revised wording for item 6, sentence 3, in 11.1.1 is 'A configator node may retry the QUERY NODE if a QUERY NODE REPLY is not received.

To clarify when Async Alerts are discarded and queued John proposed 96a110r0. This was accepted with a change in the name of De-queuing Asynchronous Alert process to Send Asynchronous Alert Process. There was some discussion regarding whether these are processes or procedures in software parlance.

Comment Resolution on PH1 (1145D) [Ham]

Bill Ham reviewed the proposed comment resolution. Additional changes as noted below were made.

Add an implementors note to 7.5.3 regarding responsibility for system integrity.

Need to address the PH1 Rev 8a data regarding the line impedance requirements in 7.5 para 4.
Bill Ham proposed to use 750 picosecond rise time with differential characteristic impedance of 150 +- 10 ohms in 7.5, par 4. This allows the micro-D connector to meet the requirement. Unanimous agreement.

Revise Annex G.1 to incorporate new wording to describe guidelines for board design.
Recommended for resolution of comments on Annex G. Unanimous.

Changes to Annex C:
BP2 change 5000 to 500
BP5 change 5000 to 500
BP5.5 removed
BP4 delta contact resistance change of 15 milliohms
DP3 delta contact resistance change of 15 milliohms
AP5 delta contact resistance change of 15 milliohms
AP6 delta contact resistance change of 15 milliohms
AP13 delta contact resistance change of 15 milliohms
CP3 delta contact resistance change of 15 milliohms
BP3 change 6 to 11

Straw poll 9:1 to change to a delta of 15 milliohm and leave P3 as is.

In table B.5 and B.6 remove the 'RS-' designation as it is no longer used by EIA.

With the added changes the group recommended that the comment resolution be accepted.

2nd Generation Protocol Layer Topics []

Review of scope for S3P

Larry Lamers reviewed the process for generating the 2nd generation of working drafts. The list of deferred proposals was not reviewed. Charles Monia, the project leader stated that he preferred to defer development of a working draft for S3P until he had an opportunity to present a top-down outline of what S3P should look like. One day of the next working group will be devoted to S3P.

Enhanced Status (95-133r0)

Not reviewed.

Alternate Pathing (95-210r0)

Not reviewed.

Restrictions on all Transfers to Single Path (95-204)

Not reviewed.

Loss of Initiator Table Space (95-210)

Not reviewed.

Procedures for Interlocked Protocol Emulation (95-203)

Not reviewed.

Extend Path Definitions to include Sender and Receiver Ports (95-205r0)

Not reviewed.

Hot Swapping (95-206r0)

Not reviewed.

Proposal on Async Alerts (95-213)

Not reviewed.

Protocols for other ULPs

Mark DeWilde was not able to attend due to a family emergency.

2nd Generation Transport Layer Topics

Review of scope for TL2

TL2 needs to have a service interface incorporated as normative material that provides the services for the upper layer protocol

A straw poll of the group favored (11:1) having the technical editor generate a rev 0 TL2 to the best of his ability as the basis for discussion at the next working group. One day of the next working group will be devoted to review of this initial draft and the proposals

Speed Negotiation

Greg Kapraun reviewed the prior proposals.

Simple Speed Negotiation (96a113r0) [Scheible]

John stepped through the simple speed negotiation proposal.
Adge offered several modifications to allow extension beyond 40. The timing tolerance is 10%; guarantees lock up within 1 sec at any number of supported speeds.

The change to 96a113 is to go to 4:2:1:3 ratios so that Adage's extensions can be incorporated. John will incorporate this into 96a113r3.

The consensus is to include this in TL2.

SSA Speed Negotiation (95a225r1) [Kapraun]

Withdrawn.

SSA Speed Negotiation (95a214r0) [Judd]

Withdrawn.

Livelock Proposal (95a192r0) [DeWilde]

Status pending Mark's review of 96a113r3.

Buffer Threshold in 20/40 MB Webs (95a175r0) [Born]

Greg Kapraun reviewed the proposal on buffer threshold. The recommended change is to add a statement to cut-through routing to delay forwarding from a slower port by using buffering to optimize throughput.

The group agreed to incorporate this into TL2.

AST and AET in Data Transfer SMSs (95a114r0) [Scheible]

Deferred until the S3P discussion.

Hot Swap and Fault Recover (95a206ro) [Monia]

Deferred until the S3P discussion.

Async Alert Queue Depth () [Scheible]

John briefed the group on the async alert queue depth. He analyzed the generation of async alerts based on cause. The minimum suggested is an 8 event queue, with the events in the queue analyzed by the rules to not loose important events. John will prepare a written proposal.

2nd Generation Physical Topics

Review on PH Ad Hoc Meeting [Ham]

See X3T10.1/96a101r0 for details.

Review of scope PH2

The following work items for PH2:
> alternate connector
> LRC definition / guidelines
> source termination
> AC coupling
> signal budget for connectors
> signal budget for silicon

The following work items may be considered but are more likely third generation:
> optical transducer specifications (allowed in PH1 with the PCC concept, but not specified)
> jitter model
> greater than 40 MB/sec transfer rates

40 MB/sec Signaling (96a125r0) [Pecone]

Victor Pecone presented test results on the physical layer device. These tests were performed with only far-end termination.

Chris Parker talked to the foils on impedance measurements of the test board. The question of near-end termination needs further study.

Alternative Connector (95a197r1) [Huff]

Lisa Huff presented a proposal for the AMP HSSDC connector to be considered for PH2. The data did illustrate that the current micro-D connector as measured does not meet the 150+-10 ohm requirement at 250 or 500 ps. The eye pattern examined at 40 MB/sec with a 5 meter cable assembly was acceptable with the micro-D.

Lisa showed a set of test data for the HSSDC connector with varying cable lengths at 200 Mb/sec and 400 Mb/sec.

The working group was not prepared to make a recommendation on this connector.

Device Interface to Enclosure (96a127r0) [Judd]

Adge Hawes introduced a proposal from Ian Judd for using the option block pins for a serial connection from the disk drive to the enclosure. Adge plans to develop the proposal and submit it to the working group for consideration.

Connector test results

Three connector companies presented test data on impedance measurements for their connectors.

Test results (96a123r0) [Drichelt]

Wolfgang Drichelt (Canon) showed a foil of impedance tests of the external connector.   A single ended measurement driven differentially showing the impedance at 750, 500, 250 pico-seconds. The connector meets the 150+- 10 ohms at 750 picoseconds. The question is what happens at higher speeds.

Empirical/Analytical Test Results for Internal Connector (96a124) [Bunker]

David Bunker (Molex) showed several foils on analytical connector performance based on a SPICE model. The data indicated that adding resistive elements can reduce reflections at the cost of attenuating the signal.

The conclusion David made was that Impedance mismatch at the connector is not the dominant factor in closing the eye; stubs, vias and reflected voltages are more significant.

The current internal connector meets all the requirements in PH1 as they exist today.

Test results () [Harwath]

Frank Harwath (AMP) an Empirical/Analytical test conditions for the external cable to board connector. Frank noted that the method of attaching the cable to the connector can have significant affects on the signal.

Call for Patents

Larry Lamers requested that anyone aware of any patents required for the proposals be disclosed in accordance with the ANSI patent policy. Refer to the minutes of prior meetings for items already identified.

Action Items

10)   none.

Meeting Schedule

The next working group meeting of X3T10.1 is scheduled for April 29-May 1, 1996, in Burlington, VT at the Ramada Inn & Conference Center, South Burlington, VT, hosted by IBM. Phone: (802) 658-0250. The meeting will begin at 9:00 AM.

The long-term SSA week of meetings are scheduled as follows:
       Week of June 24, 1996 in St. Petersburg Beach, FL hosted by AMP.
       Week of August 26, 1996 in Ft. Collins, CO hosted by Symbios Logic, Inc.
       Week of October 28, 1996 in San Jose hosted by Adaptec *
       Week of December 9, 1996 in Hawaii hosted by IBM. *
       Week of February 24, 1997 in Austin, TX hosted by_____.*
       Week of April 28, 1997 in San Jose, CA hosted by _____.*
* = Tentative locations

Please note that changes to this schedule may occur. All changes to meeting dates, locations, and agendas will be posted to the X3T10-SSA reflector.

Adjournment

The meeting adjourned at 12:30 p.m. on Wednesday