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Accredited Standards Committee\*

InterNational Committee for Information Technology Standards (INCITS)

Doc. No.: T10/02-229r0

Date: June 14, 2002

Reply to: Alvin Cox

To: T10 Membership  
From: Alvin Cox  
Subject: Serial Attached SCSI PHY Study Group Meeting -- June 5-7, 2002  
-- Minneapolis, MN

TIMES: June 5: 9:00 a.m. -- 5:00 p.m.  
June 6: 9:00 a.m. - noon  
June 7: No PHY meeting

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. Old Business
- 4.1 LED driver and behavior [Hanan]
  - Voltage level
  - Current driving capability
  - SATA compatibility/similarity
- 4.2 OOB levels
  - Define maximum levels
  - Evaluate minimum levels and window
- 4.3 Retimed Far End Loopback
  - Does SAS really need it with WRT buffer/RD buffer commands?
  - Concerns with SMP requirement (SMP = Serial Management Protocol. It is the mechanism for managing the expander, reading the routing tables, setting port speeds, etc.)
- 4.4 SAS PHY MARGIN CONTROL request ([02-179r0](#)) [Roberts]
- 4.5 Informative Annex
  - Draft of information in PHY specifications that are informative rather than specification
  - Additional informative topics concerning implementation/performance
- 4.6 Cable electrical specification [Daggett]
- 4.7 Review OOB and speed negotiation section
  - Determine if implementation questions belong to the PHY group or Protocol group (Seagate to post issues prior to the meeting)
5. Joint Session with SAS PROTOCOL Group
- 5.1 Do we need far-end loop-back test?
- 5.2 OOB review
6. New Business
7. Review of Recommendations to the Plenary
8. Meeting Schedule
9. Adjournment

Results:

1. Opening Remarks

Alvin Cox opened the meeting at 9:03 am June 5, 2002.

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

2. Approval of Agenda

Agenda order was rearranged to accommodate the joint meeting with the protocol group and to cover "easier" items first.

3. Attendance and Membership

Vince Bastiani	Adaptec Consultant	<a href="mailto:bass.tech@gte.net">bass.tech@gte.net</a>
Richard McMillan	Adaptec, Inc.	<a href="mailto:richard_mcmillan@adapttec.com">richard_mcmillan@adapttec.com</a>
Bernhard Laschinsky	Agere Systems	<a href="mailto:blaschinsky@agere.com">blaschinsky@agere.com</a>
Ronald Stockford	Dell Computer Corp.	<a href="mailto:ron_stockford@dell.com">ron_stockford@dell.com</a>
Barry Olawsky	Hewlett Packard Co.	<a href="mailto:barry.olawsky@hp.com">barry.olawsky@hp.com</a>
Randy Wasylak	Hitachi Cable Manchester	<a href="mailto:rwasylak@hcm.hitachi.com">rwasylak@hcm.hitachi.com</a>
Andrew Cable	Intel	<a href="mailto:andrew.l.cable@intel.com">andrew.l.cable@intel.com</a>
Michael Jenkins	LSI Logic Corp.	<a href="mailto:jenkins@lsil.com">jenkins@lsil.com</a>
Russ Brown	Maxtor Corp.	<a href="mailto:russ_brown@maxtor.com">russ_brown@maxtor.com</a>
Juzer Mogri	NEC Electronics	<a href="mailto:juzer_mogri@el.nec.com">juzer_mogri@el.nec.com</a>
Seow Tan	NEC Electronics	<a href="mailto:seow_tan@el.nec.com">seow_tan@el.nec.com</a>
Ting Chan	Qlogic Corp.	<a href="mailto:ting.chan@qlogic.com">ting.chan@qlogic.com</a>
Alvin Cox	Seagate Technology	<a href="mailto:alvin.cox@seagate.com">alvin.cox@seagate.com</a>
Allen Kramer	Seagate Technology	<a href="mailto:allen.kramer@seagate.com">allen.kramer@seagate.com</a>
Tom Hanan	Western Digital Corporation	<a href="mailto:tom.hanan@wdc.com">tom.hanan@wdc.com</a>

15 people attended all or part of the meeting.

4. Old Business

4.1 LED driver and behavior [Hanan]

After discussion on the topic, Alvin Cox will post possible scenarios to the T10 reflector to reduce the LED drive and voltage to be 3.3V compliant.

Voltage level 3.6V maximum  
Current driving capability: 20mA minimum sink @ .25V maximum?  
10mA minimum sink @ .20V maximum?  
SATA compatibility/similarity N/A

4.2 OOB levels

Define maximum levels  
Evaluate minimum levels and window

Topic not discussed. Will conduct a conference call 6/24 to include this item.

4.3 Retimed Far End Loopback

Does SAS really need it with WRT buffer/RD buffer commands?  
Concerns with SMP requirement (SMP = Serial Management Protocol. It is the mechanism for managing the expander, reading the routing tables, setting port speeds, etc.)

Recommend removing the function description from the standard. WRT buffer/RD buffer commands provide reasonable functionality without requiring SMP management issues.

4.5 SAS PHY MARGIN CONTROL request ([02-179r0](#)) [Roberts]

Bytes 4 and 5 reserved, delete specific tables, bytes 6 and 7 vendor specific. Ron Roberts to update proposal.

4.6 Informative Annex

Draft of information in PHY specifications that are informative rather than specification  
Additional informative topics concerning implementation/performance

Topic not discussed.

4.7 Cable electrical specification [Daggett]

Topic not discussed. Waiting on cable configuration and Table 19 completion.

4.8 Review OOB and speed negotiation section

Determine if implementation questions belong to the PHY group or Protocol group (Seagate to post issues prior to the meeting)

Seagate did not post. "Minor issues"

Major issues discussed during WG and joint session. Drawings need clarification. Statement should be made in text concerning OOB as a "big hammer".

5. Joint Session with SAS PROTOCOL Group Done

5.1 Do we need far-end loop-back test? Use read/write buffer commands.

5.2 OOB review Several issues discussed.

6. New Business

6.1 Review Table 19 input from Maxtor

Russ Brown and Alvin Cox to work table 19. Russ to make rev 1 document.

6.2 Agere specification questions

Correct table 17 Dt from .30 to .35

Al Kramer and Mike Jenkins to review table 18.

6.3 Andrew Cable to submit comments for discussion on hot plug issues.

6.4 Jenkins to develop test load model proposal: Enhancement to define a compliant interconnect by which transmitter compliance can be tested to assure receiver parameters.

Straw poll vote: should he spend the time to document for submission to the specification?

Yes 10, No 0, Abstain 4

7. Review of Recommendations to the Plenary

8. Meeting Schedule

Conference call Monday, June 24 2:00 pm - 4:00 pm CDT

- Toll Free Dial In Number: (888)422-7101
- PARTICIPANT CODE: 862940
- Webex:

<https://seagate.webex.com/join/>

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MEETING SUMMARY  
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Name: SAS PHY WG

Date: 6/24/2002

Time: 1:45PM, (GMT -05:00) Central Time, USA & Canada (DayLight Time)

Meeting Number: 286980103

Meeting Password: T10oob

T10 Face-to-face July

Monday-Tuesday, July 15-16, 2002 commencing at 1:00 p.m. on Monday and ending at 5:00 pm on Tuesday in Colorado Springs, CO at the Wyndham Colorado Springs Hotel (719-260-1800).

The meeting notice (with a link to make reservations on-line) is available at:

<http://www.t10.org/ftp/t10/announce/ann-m050.pdf>

9. Adjournment: 11:50 am, June 6, 2002