Minutes of SAS Physical Working Group May 6-7, 2008 T10/08-246r0

To: T10 Membership

From: Alvin Cox

Subject: Minutes of SAS Physical Working Group May 6-7, 2008
San Jose, CA

1. Opening

The meeting opened at 9:00 am on May 6 and May 7

2. Attendance

Mr. Mark Lettang	3M
Mr. Charles Staley	3M
Mr. Mickey Felton	EMC Corp.
Mr. Ralph O. Weber	ENDL Texas
Mr. Douglas Wagner	FCI
Mr. David Freeman	Finisar Corp.
Mr. Mike Fitzpatrick	Fujitsu
Mr. Nathan Hastad	General Dynamics
Mr. Rob Elliott	Hewlett Packard Co.
Mr. Barry Olawsky	Hewlett Packard Co.
Mr. Dan Colegrove	Hitachi Global Storage Tech.
Mr. James Rockrohr	IBM
Mr. Harvey Newman	Infineon Technologies
Dr. Mark Seidel	Intel Corp.
Mr. Joel Silverman	Kawasaki Microelectronics Am
Mr. Dennis Moore	KnowledgeTek, Inc.
Mr. Greg Shogan	LSI
Mr. Brian Day	LSI Corp.
Mr. Michael Jenkins	LSI Corp.
Mr. George Penokie	LSI Corp.
Mr. Gregory Tabor	Maxim Integrated Products
Mr. Kevin Witt	Maxim Integrated Products
Mr. Greg Rice	Mindspeed Technologies
Mr. Guillaume Fortin	PMC-Sierra
Mr. Tim Symons	PMC-Sierra
Mr. Gourgen Oganessyan	Quellan
Dr. Edward Chang	Samsung
Mr. Joseph Chen	Samsung
Mr. Schelto vanDoorn	Schelto
Mr. Alvin Cox	Seagate Technology
Mr. Gerald Houlder	Seagate Technology
Mr. Tom Skaar	Seagate Technology
Mr. Greg Alvey	Solution Technology
Mr. Benoit Mercier	STMicroelectronics, Inc.
Mr. Stephen Finch	STMicroelectronics, Inc.
Dr. Sanjay Sethi	Toshiba
Mr. Andrew Nowak	Tyco Electronics
Mr. Michael Fogg	Tyco Electronics
Mr. Dan Gorenc	Tyco Electronics
Mr. Scott Shuey	Tyco Electronics
Mr. Larry McMillan	Western Digital
Mr. Bill Pagano	Xiotech
Mr. Alan Westbury	Xyratex

43 People Present

3. Review of documents and proposals

4. New Business

4.1 SAS-2 StatEye Update April 10, 2008 (08-191r0) [Newman, Sanders]
Latest release was on 5/5. Enhancements include features to incorporate the link dispersion penalty aspects for receiver testing.

4.2 SAS-2: Interconnect Requirements (08-186r0) [Butt]
The content of this proposal is covered within SFF specifications or by purchase specifications and is not within the scope of SAS 2.0.

4.3 SAS-2 S-Parameters of Cable Assemblies and Backplanes (08-187) [Olawsky]
Table 51 changes:
Remove the Scc22 requirement.
Remove the reference to figure from the Scd21 line.
Add figures similar to 125 and 126 in this section to follow table 51.
Barry will update and post. This addresses several comments on Table 51.

4.4 Electrical questions on SAS 2.0 to SAS 1.1 support? (08-188r0) [Felton]
Result of the discussion is that SAS 2.0-compliant transceivers should be capable of operating with a 10-meter cable reference load if both ends of the TxRx connection have SAS 2.0 transceivers present and SNW3 is exchanged. 1.5 and 3.0 Gbps operating speeds include training in this situation and are expected to be capable of operating at an acceptable BER with a SAS 2.0 compliant TxRx connection. To test these speeds and capabilities, the 6Gbps transmitter and receiver tables need to be updated accordingly.

4.5 Comments on SAS2r14 Physical Layer (08-144r2) [Witt]
Provides information to resolve letter ballot comments.

4.6 Proposed Changes to Receiver Device Physical Testing Section in SAS 2 Draft (08-146r1) [Jenkins]
Provides information to resolve letter ballot comments.

4.12 SAS-2 StatEye v5.080111 results at 1.5 and 3 Gbps (08-227r0) [Elliott]
Results indicated that 1.5 Gbps produces an open eye at 1.5 Gbps with the reference transmitter settings applied to 6 Gbps are scaled to 1.5 Gbps (i.e., use the same UI and adjust the calculate time). This supports the approach being taken in item 4.4. The TxRx connection will be tested with the same settings for transmitter and receiver as for 6 Gbps. It needs to be made clear that this testing does not imply receiver equalization of a 3-tap DFE for 1.5 and 3.0 Gbps operation modes.

4.12 Proposal for 6G SAS Rx Converged Tolerance Test (08-232r0) [Jenkins]
Discussed the impact of SSC and how it affects the receiver tolerance testing. Alvin proposed that SSC be a required feature of SAS 2.0 (rather than optional) but still maintain the control in SNW3 and training to disable the mode. Alvin will post a comment on the T10 reflector soliciting feedback on this item. The STA presentation did not include SSC as an optional item in its list of SAS 2.0 features.

4.7 SAS-2 letter ballot comment updates for transmitter and receiver tables (08-202r0) [Cox]
This is a working document to make a clear summary of letter ballot changes to the affected tables. The proposal will be updated as necessary.

4.8 Limitations of df/dt Specification for SSC Profiles (08-121r1) [Fortin]

Based on letter ballot comments and this proposal to resolve them, the df/dt requirement will be changed to informative.

4.9 SAS-2 Mini SAS 8i connectors and cable assemblies (07-449r0) [Elliott]
Not discussed.

4.10 Proposal for SAS 2.x Specification to Enable Support for Active Cables (08-052r3) [Oganessyan]
Minor updates made from the last revision. A quick review of the changes was made plus mention that active cables are planned to be taken to the June Plugfest.

4.11 Optical considerations for OOB
Not discussed.

5. Review of Recommendations
None.

6. Meeting Schedule
Weekly conference calls to resume on May 22, 2008

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International Access/Caller Paid Dial In Number: (636)651-3190
PARTICIPANT CODE: 3243413

Webex information:
https://seagate.webex.com/seagate
Topic: SAS-2 PHY WG
Date: Thursday
Time: 10:00 am, Central Daylight Time
Meeting number: 826 515 680
Meeting password: 6gbpsSAS

7. Adjournment
The meeting adjourned at 5:48 pm on May 6 and 11:40 am on May 7.