

Attendance:

| | |
|-----------------------|------------------------------|
| Ms. Pat Thaler | Agilent Technologies |
| Mr. Paul von Stamwitz | AMCC |
| Mr. Doug Cole | Dallas Semiconductor |
| Mr. Ralph O. Weber | ENDL Texas |
| Mr. Mike Fitzpatrick | Fujitsu |
| Mr. Rob Elliott | Hewlett Packard Co. |
| Mr. Barry Olawsky | Hewlett Packard Co. |
| Mr. Dan Colegrove | Hitachi Global Storage Tech. |
| Mr. George O. Penokie | IBM / Tivoli Systems |
| Mr. Tim Hوجلund | LSI Logic Corp. |
| Mr. Martin Czekalski | Maxtor Corp. |
| Mr. Mark Evans | Maxtor Corp. |
| Mr. Dick Uber | Maxtor Corp. |
| Mr. Bill Lye | PMC-Sierra |
| Mr. Henry Kuo | QLogic Corp. |
| Mr. John A. Fobel | Rancho Technology, Inc. |
| Mr. Alvin Cox | Seagate Technology |
| Mr. William Martin | Sierra Logic, Inc. |
| Mr. Vit Novak | Sun Microsystems, Inc. |
| Mr. Robert Kando | Texas Instruments |
| Mr. Dan Gorenc | TycoElectronics |
| Mr. Jeff Williams | Xiotech Corp. |

22 People Present

The meeting opened at 8:02 am on January 18, 2005.

Agenda:

1) 04-222r2 SAS-1.1 More phy test patterns[Elliott]
<http://www.t10.org/ftp/t10/document.04/04-222r2.pdf>

Editorial: Phy compliance and characterization function was changed to Phy characterization function.

Dual K character pattern was opposed by many. Proposal changed to allow K as only the first dword. Still requires k characters other than k28.5.

Need to review changes.

This proposal will be delayed and targeted for consideration for SAS 2 rather than SAS 1.1

2) 05-019r1 SAS 1.1 OOB For SAS/SATA Support -- Proposed Changes
<http://www.t10.org/ftp/t10/document.05/05-019r1.pdf>

Withdrawn by originator prior to the meeting. Discussed how to approach this issue. The general belief is that SATA PHY's will not be hurt by a SAS level OOB but it is not expected that SATA device suppliers will sign up for such a statement. Alternately, the SATA level for OOB should be sufficient but the rise time may need to be addressed. The proposal will be back as a recommended behavior for expanders/initiators that support SATA and SAS targets with possible additional details concerning rise time of the OOB signal. Incorporation of OOB signal measurement update (05-009r1) will help the issue regarding detection of the signal level.

3) 05-023r0 SAS-1.1 Connector figures [Kachlic and Elliott]
<http://www.t10.org/ftp/t10/document.05/05-023r0.pdf>

Rob will update with a single port version of the SAS internal cable. External cable plug and receptacle pictures are in the wrong places (Figures 4 and 5) and will move the locations to the

correct places. These illustrations may also be updated to shaded versions to be consistent with others.

The PHY WG unanimously recommends the plenary approve this proposal for inclusion in SAS 1.1 with changes agreed to during the meeting today.

4) 04-370r2 SAS-1.1 Merge IT and IR with XT and XR
<ftp://ftp.t10.org/t10/document.04/04-370r2.pdf>

Add $Z_{1\text{tol}}$ calculated values to Table 6.
Correct headings (IR, CR instead of IT, CT) in Table 6
Add "as specified in MJSQ" following level 1 references.
In Table 8, change "5 Mhz or highest frequency trackable by the receiver device" to "5 MHz min with an equation to cover SSC for generation 2 and higher."
Receive device characteristics add "nominal" to 100 ohm source.
Correct transmitter and receiver references in clock tracking section.

The PHY WG unanimously recommends the plenary approve this proposal for inclusion in SAS 1.1 with changes agreed to during the meeting today.

5) 04-378r0 SAS-1.1 Clarification of SATA Signaling Level Specification [Olawsky]
<http://www.t10.org/ftp/t10/document.04/04-378r0.pdf>

SATA shows a 1% amplitude reduction where the SAS method (eye diagram) shows a 26% amplitude reduction. SAS 2 should look at updating test methodology to be more like SATA as eye diagram method is outdated for 6 Gbps.

r1 adds note to clarify minimum amplitude requirement. Background given regarding differences in SAS and SATA test methodology. Wordsmithing of note still required. To be discussed on future SAS PHY WG calls. Note needs to use a SAS perspective but not imply that SATA devices should be tested per SAS methodology.

6) 04-337r2 SAS-1.1 TCTF Editorial Changes[Olawsky]
<http://www.t10.org/ftp/t10/document.04/04-337r2.pdf>

Editorial comments:
Use "where" instead of "note" for defining dB
Remove quotes and call out specific figures affected.

The PHY WG unanimously recommends the plenary approve this proposal for inclusion in SAS 1.1 with changes agreed to during the meeting today.

7) 05-009r1 SAS-1.1 OOB AMPLITUDE MEASUREMENT METHOD [Bissonette]
<http://www.t10.org/ftp/t10/document.05/05-009r1.pdf>

The PHY WG unanimously recommends the plenary approve this proposal for inclusion in SAS 1.1.

8) 05-007r1 SAS-1.1 external cable electrical specification
<http://www.t10.org/ftp/t10/document.05/05-007r1.pdf>

The PHY WG unanimously recommends the plenary approve this proposal for inclusion in SAS 1.1.

9) 05-029r0 SAS-1.1 transmitter and receiver transients subsection
<http://www.t10.org/ftp/t10/document.05/05-029r0.pdf>

Will look at SAS and SATA methods when doing SAS 2 specification. Input prior to SAS 1.1 encouraged.

Alvin to make proposal for protocol group to add note concerning transient that may occur when voltage levels transition after negotiation of COMSAS.

Revised with editorial changes to sentence concerning power supply on/off ramp rate. (Removed "system" reference.)

The PHY WG unanimously recommends the plenary approve this proposal for inclusion in SAS 1.1 with changes agreed to during the meeting today.

10) New item:

3G SATA numbers in SAS 1.1 PHY tables: Letter ballot of SAS 1.1 targeted for March. The PHY WG will attempt to include numbers in the PHY section rather than TBD's, possibly with the understanding of nominal levels rather than worst-case characteristics.

Recommendations to plenary:

The PHY WG unanimously recommends the plenary approve the following proposals for inclusion in SAS 1.1

| Proposal | Title | Changes |
|----------|--|---------|
| 04-337r2 | SAS-1.1 TCTF Editorial Changes | Yes |
| 04-370r2 | SAS-1.1 Merge IT and IR with XT and XR | Yes |
| 05-007r1 | SAS-1.1 external cable electrical specification | No |
| 05-009r1 | SAS-1.1 OOB amplitude measurement method | No |
| 05-023r0 | SAS-1.1 Connector figures | Yes |
| 05-029r0 | SAS-1.1 transmitter and receiver transients subsection | Yes |

Meeting schedule:

The SAS PHY WG will continue to have weekly teleconferences on Thursdays

Next call: January 27, 2004

Thursday, 10 am CST.

Same webex and call number for all calls:

Webex:

seagate.webex.com (no www)

Topic: SAS PHY WG

Date: Every 1 week on Thursday, from Thursday, January 27, 2005 to Monday, March 21, 2005

Time: 10:00 am, Central Standard Time (GMT -06:00, Chicago)

Meeting number: 825 549 498

Meeting password: section5

Toll Free Dial in Number: (866) 279-4742

International Access/Caller Paid Dial In Number: (309) 229-0118

PARTICIPANT CODE: 3243413

Adjournment:

The meeting adjourned at 3:55 pm.