

1. Opening Remarks

2. Attendance

Mr. Paul von Stamwitz	AMCC
Mr. Kevin Marks	Dell, Inc.
Mr. Jonathan Buck	FCI
Mr. Douglas Wagner	FCI
Mr. David Freeman	Finisar Corp.
Mr. Elwood Parsons	Foxconn Electronics
Mr. Mike Fitzpatrick	Fujitsu
Mr. Rob Elliott	Hewlett Packard Co.
Mr. Barry Olawsky	Hewlett Packard Co.
Dr. Mark Seidel	Intel Corp.
Mr. Joel Silverman	Kawasaki Microelectronics Am
Mr. Brian Day	LSI Corp.
Mr. Michael Jenkins	LSI Corp.
Mr. George Penokie	LSI Corp.
Mr. Jason Stuhlsatz	LSI Corp.
Mr. Tom Palkert	Luxtera
Mr. Kevin Witt	Maxim Integrated Products
Mr. Michael Forney	Microsoft Corp.
Mr. Galen Fromm	Molex Inc.
Mr. Jay Neer	Molex Inc.
Mr. Guillaume Fortin	PMC-Sierra
Mr. Alvin Cox	Seagate Technology
Mr. Benoit Mercier	STMicroelectronics
Mr. Bent Hessen-Schmidt	Synthesys Research, Inc.
Dr. Sanjay Sethi	Toshiba
Ms. Ashlie Fan	TycoElectronics
Mr. Michael Fogg	TycoElectronics
Mr. Dan Gorenc	TycoElectronics
Mr. Scott Shuey	TycoElectronics
Mr. Mark Evans	Western Digital
Mr. Larry McMillan	Western Digital
Mr. Curtis Stevens	Western Digital

32 People Present

3. Review of documents and proposals

4. New Business

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

<http://www.t10.org/ftp/t10/document.08/08-121r0.pdf>

Suggests that SSC profile restriction should be informative rather than normative. Also suggests changing window from 0.3 uS to 0.27 uS. Issues will be covered in letter ballot comments.

4.2 SAS-2 StatEye v5.080111 results (08-073) [Elliott]

<http://www.t10.org/ftp/t10/document.08/08-073r0.pdf>

Not covered. Discussed during conference call.

4.3 SAS-2 Mini SAS 8i connectors and cable assemblies (07-449) [Elliott]

<http://www.t10.org/ftp/t10/document.07/07-449r0.pdf>

No update.

4.4 Active Copper Cables for SAS-2.x (supporting presentation for 08-052r2 proposal) (08-103)  
[Oganessyan]

<http://www.t10.org/ftp/t10/document.08/08-103r2.pdf>

Uses existing connectors.

Uses only 3.3V

Eye diagrams: Input amplitude is 800mV, no crosstalk sources.

COMWAKE timing is the most challenging OOB signal to achieve. Is relief possible?

Suggested that crosstalk influence e shown in eye diagrams. Does crosstalk get amplified?

Possible to key such that active cable does not plug into passive port. Need to add illustrations as to why the existing key structure does not support unique keying.

Host has to detect if voltage is required before turning it on.

4.5 Proposal for SAS 2.x Specification to Enable Support for Active Cables (08-052)

[Oganessyan]

<http://www.t10.org/ftp/t10/document.08/08-052r2.pdf>

Add active cble section to specification.

2W at 3.3V for optical support.

Key?

STA to provide a hard value on how long the cable needs to be so the scope can be limited.

Current connectors have no provision for cable intelligence. May need to add pins for cable identification and intelligence.

4.6 12G SAS Strawman Proposal for Reference TX & RX (08-109) [Jenkins]

<http://www.t10.org/ftp/t10/document.08/08-109r0.pdf>

Quick overview. No new details since reviewed on the 2/14 conference call.

4.7 Comments on SAS2r14 Physical Layer (08-144) [Witt]

<http://www.t10.org/ftp/t10/document.08/08-144r0.pdf>

4.8 Proposed Changes to Receiver Device Physical Testing Section in SAS 2 Draft (08-146)  
[Jenkins]

<http://www.t10.org/ftp/t10/document.08/08-146r0.pdf>

4.7 and 4.8 contain comments about the balloted SAS 2 specification with regards to PHY concerns and how we might resolve some of the items that are coming up in the ballot comments. Although we cannot resolve the issues prior to the ballot being closed, the discussion laid a good foundation for resolution when the time comes. Check for updates to be posted.

4.9 Optical issues with OOB

Along with the active cable discussion, the concerns about OOB and optical transmission was discussed. Before the working group spends too much time considering optical cables, the OOB issue needs to be resolved as the first step. It was stated that there are actual implementations of OOB over optical links. The working group is asking for verification that the technology does exist and asks that optical experts provide help in identifying what the issues are and that they can be overcome. The short list we compiled is listed below. These will be posted in a separate proposal to be addressed by the optical experts in future working group meetings.

A. Optical issues with OOB.

How to deal with idle?

Small caps with pull up?

Detect "gap period"?

Rising edge to rising edge?

B. Optical may not support multiple-generation bandwidths.

C. General availability of speeds equal to SAS.

D. General Timing and Length issues

Round trip delay limits length to <100 meters (depends on media and is a non-calculated number).

SATA flow control timing of 20 dWords.

Latency of conversion?

5. Review of Recommendations

None.

6. Meeting Schedule

Conference calls:

4/3, 4/10, 4/24, and 5/1

Toll Free Dial in Number: (877)810-9442

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 Standard Time

Meeting number: 826 515 680

Meeting password: 6gbpsSAS

6G functional plugfest week of June 16 at UNH.

7. Adjournment

The meeting adjourned at 3:38 pm.