SAS PHY Working Group meeting minutes September 2002 T10 Meeting 02-365r0

Monday 9/9 1pm - 5 pm
Tuesday 9/10 9am - 5 pm

Agenda

1. Opening Remarks

2. Approval of Agenda

3. Attendance

Richard McMillan	Adaptec, Inc.
James Lott, Jr.	Dallas Semiconductor
Bill Ham	HP
Terumi Takashi	Hitachi Ltd.
Mark Seidel	Intel Corp.
Russ Brown	Maxtor Corp.
Alvin Cox	Seagate
Allen Kramer	Seagate
Mike Jenson	ST Microelectronics
Vit Novak	Sun Microsystems
Paul Aloisi	Texas Instruments

11 people in attendance

4. Old Business

4.1 LED driver

SAS Output characteristics of the READY LED signal (02-353) [Alvin Cox]

Barry Olawsky to make presentation showing whether data supports lower current provides sufficient brightness for system use.

4.2 Test Patterns

Bernhard Laschinsky to determine test pattern set for CRPAT and CJTPAT per FCAL specifications. Since FCAL always starts with negative running disparity, the CJTPAT will need compensation so that if the pattern starts with positive running disparity, that the intent of the pattern on the wire will be achieved. CRPAT needs to be checked fror the same issue.

Normative to describe pattern on wire, informative to supply coding algorithm and example data pattern to achieve test requirements.

CJTPAT description provided with translation showing data pattern to produce the desired signal on the wire. Problem identified by protocol group that the address is included in the scrmbling which means that a unique pattern would be needed for each address if some “secret test mode” which eliminates scrambling is not used.

4.3 Common mode specification

Review SAS driver and receiver electrical characteristics (02-349) [Russ Brown]

After discussion and inputs received from Mike Jenkins, there are two areas that the common mode specification can address. Russ will look again at the time constants for hot plug based on loading. Also may be able to eliminate the skew requirements in the transmit and receive tables.

4.4 Test loads

Review figures supplied by Kramer at T10 meeting. [Alvin Cox/Al Kramer]

Result: Update figure 30 to include two figures - one for zero length and one for compliance channel. Also include a graph to show compliance channel characteristics.
Graph will show the different cut-off points for 1.5 Gb/s and 3.0 Gb/s. Connector will be identified as internal or external, depending on parameter tested. Cox to post on reflector by 9/20.
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5. New Business

5.1 Skew definition

SAS definition/note for skew (02-354) [Alvin Cox]

Looked at the skew measurement definition. Values specified in the transmit and receive tables may be too low. Definite issue with optional compliance point 3.0 value on transmitted signal table. Possible elimination of this item with the addition of common mode requirements. Need to go ahead and add notes to tables per T10/02-354r0. Kramer, Brown, Seidel, and McMillan to look at skew numbers to determine realistic values. Test pattern issue related to scrambling and running disparity affects the ability to test this parameter and deterministic jitter.

5.2 What errors does the PHY group want to count? [Rob Elliott]

At the last SAS protocol WG, the group lost confidence that the SMP REPORT PHY ERROR LOG page counts the items that the PHY group would feel are worth counting.

Please review the fields and advise if the group has any suggested changes.

PHY group suggested error report items in order of significance:

* Loss of signal
* OOB signal detected but can’t negotiate OOB (expander log)
* Speed negotiation at each speed (count of successes for G1, G2, …)
* Disparity error count
* Illegal character count
* CRC error count
* Loss of synchronization

One specific issue:
* Should invalid characters and disparity errors be lumped together? **No.**

Protocol group has asked that PHY group define conditions for “loss of signal”. Also requested that the PHY group (Cox) make a new proposal to identify the extra errors and conditions to increment count due to inter-relationships.

5.3 Keying of 4x external connector

Should SAS require a key to differentiate its connector from Infiniband, FCAL, 10Gb Ethernet, etc. **No.**

5.4 Area of impedance dip (02-352) [Alvin Cox]

Discussed changes and unanimously recommended incorporation of 02-352 as-is.

6. Review of Recommendations to the Plenary

Incorporate T10/02-354r0 to define skew values.
Incorporate T10/02-352r0 to update “area of impedance dip”.

7. Meeting Schedule

Resume Monday afternoon calls starting September 16.

PARTICIPANT INFORMATION:

All Participants should use the following information to reach the conference call:

Toll Free Dial in Number: (866)279-4742
International Access/Caller Paid Dial In Number: (309)229-0118

PARTICIPANT CODE: 3243413

Webex information and agenda will be posted on the T10 reflector.

8. Adjournment

Meeting adjourned at 3:14 pm 9/10, 2002