SCSI passive interconnect performance working group (SPIP) 00-145r1
February 29, 2000

Subject: Approved minutes for the SCSI passive interconnect performance working group, SPIP in Huntington Beach, CA on February 07,2000

Zane Daggett of Hitachi, chair, led the meeting. Dave Chapman of Amphenol is the vice chair, Bill Ham of Compaq, secretary, took these minutes. There was a good attendance from a broad spectrum of the industry. Skip Jones of Qlogic hosted the meeting.

Previous approved minutes: 00-110r1

1. Introduction

Zane opened the meeting, conducted the introductions, and reviewed the meeting purpose.

2. Attendance

The following folks were present:

Name	Company	E-Mail
Paul Aloisi	TI	Paul_Aloisi@TI.com
Larry Barnes	LSI	larry.barnes@lsil.com
Dave Chapman	Amphenol	dave.chapman@aipc.fabrik.com
Zane Daggett	Hitachi	zdaggett@hcm.hitachi.com
Jie Fan	Madison Cable	jfan@madisoncable.com
Don Getty	TI	Donald_Getty@TI.com
Bill Gintz	Seus	wcgintz@ix.netcom.com
Bill Ham	Compaq	bill_ham@ix.netcom.com
Skip Jones	Q-Logic	s_jones@qlc.com
Thom Kreusel	HP	Thom_Kreusel@hp.com
Jay Neer	Molex	jneer@molex.com
Vit Novak	Sun	vit.novak@sun.com
Martin Ogbuokiri	Molex	mogbuokiri@molex.com
Dean Wallace	Q-Logic	d_wallace@qlc.com
Mason Wong	Amp	mason.wong@amp.com

3. Agenda development

The agenda shown was that used.

4. Approval of previous minutes

Bill Ham moved and Zane Daggett seconded that the draft minutes from the previous meeting be approved as modified. Motion passed unanimously.

The methodology for minutes uses the draft/approved minutes scheme with posting to the t10 web site of the minutes as the vehicle for publication. Postings are announced to the SCSI reflector after the posting is verified to be on the web site.

Minutes will be in .pdf format.

5. Administrative structure:

The present administrative structure is:

Chair: Zane Daggett, Hitachi
Vice Chair: Dave Chapman, Amphenol
Secretary: Bill Ham, Compaq

6. SPI-3 topics

SPI-3 is now done – yea!!

7. Review of industry activities

Bill Ham led a review of activities relating to SPIP. The jist follows:

- modeling is key to effective specs - adding connectors and stubs severely complicates the problem
- we may need to restrict some parameters to make the SPIP components viable: lower xtalk connectors, avoiding comb filter conditions produced by regular spacing of loads at certain frequencies, and low cross talk transition regions in the cable assemblies
- swept frequency and swept repetition rates may be necessary to detect cooperative interference and resonance conditions

7.1 Topics for consideration for SPI-4 passive interconnect

The following topics were identified for consideration for SPI-4 passive interconnect

Construction

- Non uniform media issues (e.g. twisted flat)
- Connector performance specifications
- Connector variations
- Assembly construction variations
- EMC - reference SFF for CMPT and EMR for emissions - applies to shielded versions only
    - Susceptibility issue for backplanes?

Instrumentation / measurement methods:

- Baluns
- Eye diagram / signal degradation testing (including cross talk noise)
- Filtering schemes for eye pattern generation

These topics are in addition to other issues already identified for media.

The following physical constructions are part of SPIP:

Point to point:
   two connector shielded
   two connector unshielded

Multidrop:
   multi connector shielded (e.g. Y cables)
   multi connector unshielded
   multi connector backplanes

Stubs:
   backplane stubs
   unshielded cable stubs
   shielded cable stubs

In general the passive interconnects for SCSI are complex multiport circuits whose performance must be considered from every connector in the interconnect.

8. Goals for SPIP

The following is a list of goals for SPIP generated:

- Focused on the cable assembly/backplane as a finished component including all connectors and transition regions.

- May be either internal or external.

- Define how to specify the output signal from a cable assembly in light of the possible use of adaptive filtering (called equalization by some) in receivers.

- Allow for the following schemes that are presently being considered for SPI-4: transmitter compensation, adaptive filtering, compensation of skew

- Define how to specify cable assembly construction in terms of performance rather than only in mechanical terms. For example, connector to connector spacing in terms of propagation time rather than length, transition regions in terms of cross talk contribution rather than physical extent, discontinuities in impedance due to connectors rather than nothing, etc.

- Preserve the present testing methodologies for media if possible.

- For example, the attenuation test can be generalized to two port amplitude transfer function (which will include resonance caused by connectors etc). The cross talk test can be generalized by using repeated pulses and varying the rep rate while observing the response of on the victim line.

- Recognize that the effects of data pattern and placement of cable assembly features may produce complex interference patterns and recommend how to minimize the impact of these features on the delivered signal.

- Use the same test specification methodology as used for SPI-3 cable media.

- Add common mode requirements to the cable assembly tests (both shielded and unshielded)

9. Next meetings

Approved schedule:
Feb 29, 2000 9AM to 5PM, Manchester, NH (Hitachi)
April 11, 2000 9AM to 5PM, Monterey, CA (Adaptec)

It was proposed that SPIP go to a one working group meeting between T10 plenaries after the April meeting (i.e. skip May do June skip July do August etc). Extending the meeting to a 1.5 day format every two months seemed to meet with agreement. This does not preclude synchronizing with SPI-4 schedules but does not guarantee it either.

For background info: SPI-4 working group is meeting Milpitas 3/27 1PM + 3/28 Embassy Suites, Colorado Spgs 4/27 1PM (may move to earlier)+ 4/28 location TBD,

Next meeting proposed for June 12 9AM to June 13 12 noon. (SSM will be June 13 1:30 PM to June 14.)

10. Action Items:

10.1 Old action items from previous meetings

Larry Barnes to provide a proposal for dielectric constant measurements for SPI-3.
Status: done

Larry Barnes to acquire data from the polished coax probe method for dielectric constant frequency variations.
Status: waiting for cable to test, expected 02/14

Zane (and possibly Greg V.) to provide data from the HP slab method for dielectric constant frequency variations
Status: carried over

Bill Ham to ensure that the meeting schedules for SPIP and SSM are consistent with T10 schedules.
Status: done

Bill Ham to post the minutes to the T10 web site
Status: done

10.2 New actions from this meeting

Bill Ham to post the minutes to the T10 web site