

To: Membership of X3T10

From: Bill Ham, SPI-2 Technical Editor  
Larry Lamers, Vicechair X3T10  
John Lohmeyer, Chair X3T10

Subject: Minutes of SPI-2 Working Group - 6/96  
June 6-7, 1996 -- Colorado Springs, CO

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### Agenda

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### Results of Meeting

1. Opening Remarks

John Lohmeyer, the X3T10 Chair, called the meeting to order at 9:00 a.m., Thursday June 6, 1996. He thanked Symbios Logic for allowing him to host the meeting.

As is customary, the people attending introduced themselves and a copy of the attendance list was circulated.

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2. Approval of Agenda

The agenda was approved with the following additions:

3. Attendance and Membership

Attendance at working group meetings does not count toward minimum attendance requirements for X3T10 membership. Working group meetings are open to any person or organization directly and materially affected by X3T10's scope of work. The following people attended the meeting:

Name	S	Organization	Electronic Mail Address
Mr. Lawrence J. Lamers	A	Adaptec, Inc.	ljlamers@aol.com
Mr. Wally Bridgewater	V	Adaptec, Inc.	wally@eng.adaptec.com
Mr. Richard Moore	V	Adaptec, Inc.	richard_moore@corp.adaptec.com
Mr. Louis Grantham	P	Dallas Semiconductor	grantham@dalsemi.com
Mr. Siegfried Schmalz	V	Dallas Semiconductor	schmalz@dalsemi.com
Dr. William Ham	A#	Digital Equipment Corp.	ham@subsys.enet.dec.com
Mr. Dean Wallace	P	Linfinity Micro	75671.3443@compuserve.com
Mr. Wayne E. Werner	O	Lucent Technologies	wew@aluxpo.lucent.com
Mr. Brent Mulholland	V	Maxtor Corp.	bmulholl@maxtor.com
Mr. Edward A. Gardner	P	Ophidian Designs	gardner@acm.org
Mr. Ting Li Chan	A	QLogic Corp.	t_chan@qlc.com
Mr. Richard Uber	V	Quantum Corp.	duber@tdh.qntm.com
Mr. Gene Milligan	P	Seagate Technology	Gene_Milligan@notes.seagate.com
Mr. Dave Guss	P	Silicon Systems, Inc.	dave.guss@tus.ssi1.com
Mr. John Lohmeyer	P	Symbios Logic Inc.	john.lohmeyer@symbios.com
Mr. Kevin Bruno	V	Symbios Logic Inc.	kevin.bruno@symbios.com
Mr. Frank Gasparik	V	Symbios Logic Inc.	frank.gasparik@symbios.com
Mr. Tracy Spitler	V	Symbios Logic Inc.	tracy.spitler@symbios.com
Mr. Kevin Gingerich	V	Texas Instruments	4307725@mcimail.com
Mr. Paul D. Aloisi	P	Unitrode Integrated Circuits	Aloisi@uicc.com

\_\_ People Present

Status Key: P - Principal  
 A,A# - Alternate  
 O - Observer  
 L - Liaison  
 V - Visitor

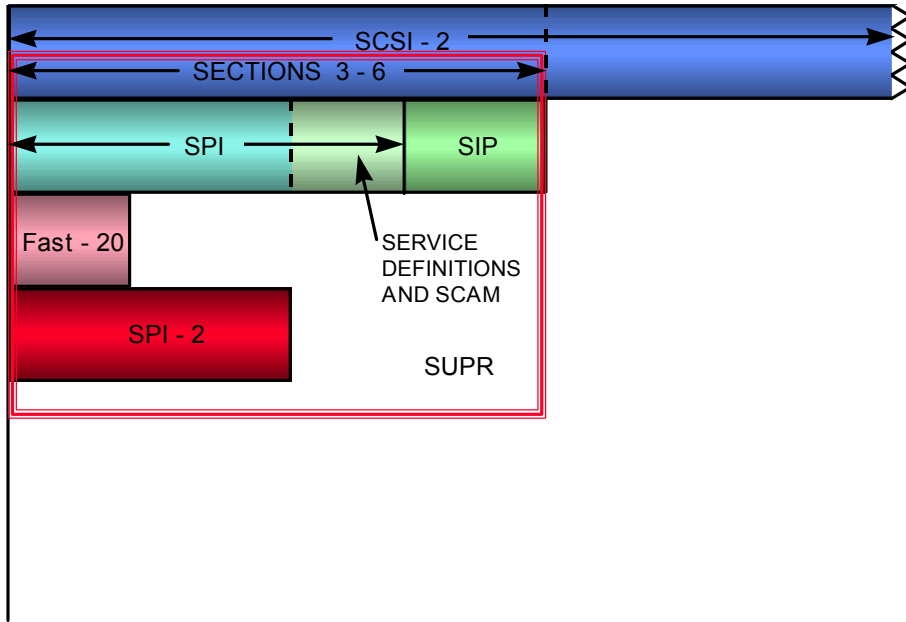
4. SPI-2 Document Strategy [Lamers/Ham]

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Fast-40 is lvd technology, wrestle with non-lvd implementation of Fast-40.

Need to consider the parasitic effects of single-ended transceivers.

John illustrated the document strategy.



Does SPI-2 incorporate all new physical items or define only the LVD technology for SCSI.  
 Bill Ham - LVD + Universal; existing de-facto connectors; term power distribution.  
 Kevin wants to include a high-voltage differential driver option. There was a request to have data on the skew issues when there are separate driver packages.

5. LVD Topics

5.1 Voltage Mode and Slew Rate Test Data (96-187r0) [Ham]

Bill Ham presented data on the voltage mode driver data. The configuration rules do not seem to be dependant on the type of driver. Richard Moore stated that the voltage mode drivers could have a more relaxed test circuit to allow for smaller area drivers. Is the test circuit correctly testing what is needed?

The precision on the symmetry is important to maintain the timing budget. Figure 22 needs to be more clearly labeled to tie to to Table 11. Bill was not sure how Figure 22 defines the symmetry requirements. Add note to indicate that the bias is already built in by virtue of V1 and V2 in the test circuit.

5.2 LVD SCSI Driver Specification Presentation (96-145r0) [Moore]

This item was covered with the material included in rev 8. Richard asked that an item be included on the next agenda for a test circuit considerations for voltage mode drivers.

5.3 Standing Waves [Bridgewater] {July meeting}

Wally requested that the discussion of standing waves be deferred until the July meeting.

5.4 Transmission Line Model (96-\_\_\_r0) [Gingerich]

There is nothing new.

5.5 SPI-2 Document Review (X3T10/1142D) [Ham]

Kevin Gingerich presented a revised scope. Accepted.

No discontinuity in termination is allowed for case 2 and 3.

Paul Aloisi recommended a 2 sec delay after power-on to allow the bus to stabilize. The sequence is: 1) power-on in high impedance state; 2) delay two seconds and look at DIFFSENSE; 3) set bus LVD/SE, disable HVD. If there is an SCA-2 connector and mated-1 and mated-2 signals are connected.

Need to look at SCAM power-on to selection times.

Discussion on 6.2 - terminology (multi-mode vs dual mode vs universal); are the pin requirements for DIFFSENS different for terminators than devices;

Add LVD DIFFSENS parameters to agenda.

Revised LVD DIFFSENS driver specifications.

#### 5.6 Deskew Delay () [Moore]

Richard Moore stated that the deskew delay is not specified for Fast-40. Most events that use this value are asynchronous so the 15 ns value of Fast-20 is acceptable. However, when doing data transfers a shorter time would be useful for initiators running at higher clock speeds. The recommendation is to include a 6 ns deskew delay for Fast-40. The Fast-80 number will be visited at the next meeting.

#### 5.7 Fast-80 () [Milligan]]

Should the scope of the working draft include Fast-80? The configuration rules for Fast-80 need to be devined; the intersymbol interference will cause changes to the rules for Fast-40.

Gene suggested a uniform set of configuration rules and a SPI-3 that would have balanced encoding. Gene stated that the same configuration rules need to apply to Fast-40 and Fast-80 because that is what the marketing folks have requested.

The straw poll was evenly divided on leaving in or removing the Fast-80 specs until Bill Ham has data in July.

#### 5.8 Hot Plugging () [Bridgewater]

Wally Bridgewater requested a re-confirmation that the case 4 hot-plugging will be excluded for LVD transceivers.

The question of the process a device uses to determine if it should use SE or LVD drivers. A wait period of x seconds is needed to make a rational decision. An annex may be needed to deal with the system issues of transitioning the bus during power-on and hot-plug situations. This needs some input from the STA folks.

#### 6. High-Voltage Differential Fast-40 (96-190) [Gingerich]

Gene Milligan stated that hot-plugging is a concern with differential; Bill Ham replied that the glitch is insignificant and HVD is more forgiving than LVD.

There are some evolutionary changes needed; the timing parameters are the same, but an asymmetrical driver is needed.

Consensus to include the HVD specs.

#### 7. Summary of Meeting Results

8. Meeting Schedule

The next meeting of SPI-2 / EPI Working Group will be Monday July 15 in Colorado Springs, CO at the Red Lion Hotel (719-576-8900) hosted by Symbios Logic. Another meeting of this group is scheduled for August 13-14, 1996 in Redwood City, CA hosted by the SCSI Trade Association (STA).

9. Adjournment

The meeting was adjourned at \_:\_ p.m. on Friday June 7, 1996.