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To: Membership of X3T13
From: Lawrence J. Lamers, Secretary X3T13
Gene Milligan, Chair X3T13 (acting)
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Subject: Minutes of X3T13 Working Group
April 24-25, 1996 : Milpitas, CA

Agenda

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 - 11.11 X3T13 Reflector, ftp, and Web Site Setup [Hanan]
 - 11.12 Get Features

*Operating under the procedures of The American National Standards Institute.

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12. New Business

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12.2 Letter Ballot Resolution [Milligan] (D96003)

12.3 Letter Ballot Resolution [Milligan] (D96004, D96132, D96133)

12.4 Letter Ballot Resolution [Milligan] (D96005)

12.5 Letter Ballot Resolution [Milligan] (D96006)

12.6 Letter Ballot Resolution [Milligan] (D96007)

13. Call for Patents

14. Open Issues List Summary

15. Review of New Action Items

16. Meeting Schedule

17. Adjournment

Results of Meeting

1. Opening Remarks

Gene Milligan called the meeting to order at 9:00 a.m., Wednesday April 24, 1996. He thanked Mark Evans of Quantum Corp. for hosting the meeting.

The Chair requested that Larry Lamers take the minutes for this meeting and thanked him for agreeing to the request.

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

It was stated that the meeting had been authorized by X3T13 and would be conducted under the X3 rules. Ad hoc meetings take no final actions, but prepare recommendations for approval by the X3T13 technical committee. The voting rules for the meeting are those of the parent committee, X3T13. For the ad hoc, other than straw votes, the voting rules are: one vote per participating company.

The minutes of this meeting will be posted to the X3T13 and the ATA Reflector and will be included in the next X3T13 committee mailing.

2. Approval of Agenda

The agenda was approved as presented within these minutes.

3. Attendance

Attendance at working group meetings does not count toward minimum attendance requirements for X3T13 membership. Working group meetings are open to any person or company to attend and to express their opinion on the subjects being discussed. This meeting was attended by:

Kent	Manabe	AKEI (Panasonic)	G
Charles	Brill	AMP, Inc.	
Richard	Kalish	Adaptec, Inc.	P
Tony	Kwan	Adaptec, Inc.	G
Lawrence	Lamers	Adaptec, Inc.	A1
Ron	Roberts	Apple Computer	A
Florey	Lin	Cirrus Logic	

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Joe	Chen	Cirrus Logic Inc.	P
Hale	Landis	Consultant	P
Paul	Raikunen	Digital	P
I. Dal	Allan	ENDL	P
Tony	Goodfellow	GSI	P
J. R.	Sims	Hewlett Packard Co.	P
Anthony	Yang	Hitachi America Ltd	P
Dan	Colegrove	IBM Corp.	P
Duncan	Penman	IIX Consulting	P
Jeff	Kishida	JVC	
Pete	McLean	Maxtor Corp.	P
Darrin	Bulik	Micro House Int.	P
Neil	Sugie	Mitsumi	
Robert	Griffith	Oak Technology	A
Anthony	Pione	Oak Technology	
Robin	Freeze	Oak Technology, Inc	A1
Charles	Yang	Panasonic Industrial Co.	
Bill	McFerrin	Philips KMG	P
Mike	Christensen	Phoenix Technologies	
Curtis	Stevens	Phoenix Technologies	P
Mark	Evans	Quantum Corp.	P
Ichiro	Moritomo	Ricoh	
Kenichi	Kojima	Sanyo Electric Co Ltd	P
Gene	Milligan	Seagate Technology	P
Bill	Gintz	Seagate Technology Inc.	
Mike	Yokoyama	Sony Electronics, Inc.	
Patrick	Mercer	SyQuest Technology Corp	A
Tokuyuki	Totani	Toshiba America Info.	P
Tom	Hanan	Western Digital Corp.	P
Jonathan	Hanmann	Western Digital Corp.	
Kazushi	Tamai	Yamaha	

4. Document Distribution

The following documents were distributed:

- Proposal for X3T13 1153D ATA/ATAPI-4 [McLean]
- Strong Command Overlap and Command Queuing [McLean] (96D104r3)
- Two Giga-Byte Barrier [Stevens] (D96127R2)
- Vendor Specific & Optional Command Zero Budgeting [Evans] (D96125r2)
- SMART Proposal document (96131r0)
- ATA Protected Area Proposal [Colegrove] (D96137)

5. Review of Old Action Items

51) Each participant to research clause 9.8 of ATA/ATAPI-4 and determine what their devices implement. .
In a device 0 only, what happens if a command is issued to device 1? What do you do with the registers when device 1 is selected but not present? In a device 1 only configuration, if device 0 is selected is the response is to float the bus? Completed.

Joe Chen showed test data taken on drives from different manufacturers. Very interesting failures.

Mark Evans moved and Rick Kalish seconded that method one of 9.8.1 be adopted with cleaned up wording to require the return of a zero value. The motion carried 16:1.

6. ATA-2 - Project 0948D [Larry Lamers]

Larry Lamers noted that the dpANS has been recovered from the Word crash, review by Pete McLean and sent to Gene Milligan to process with X3.

7. ATAPI - Project 1120D Status

This item was remanded to the plenary.

8. Other ATAPI items

The topics under this agenda item were discussed as a part of a joint MMC/ATA working group.

8.1 Review of Commands in SFF 8020

Items discussed:

Change command name to IDENTIFY PACKET DEVICE

SFF 8020 Soft Reset needs resolution vis-à-vis ATA/ATAPI -4. MMC participants are requested to review ATA/ATAPI-4 for correctness.

ATA IDENTIFY DEVICE command - SFF 8020 behavior needs to be defined - Pete McLean agreed to add a definition.

ATA READ command (four flavors) - SFF 8020 behavior needs to be defined - Pete McLean agreed to add a definition.

SFF 8020 specifies 12 or 16 byte packets - padding algorithm needs to be defined - Pete McLean & Ron Roberts agreed to add a definition.

An annex will be added to MMC to profile the recommended ATAPI command implementation.

8.2 Disposition of Commands

Ron Roberts went through the list of packet commands in SFF 8020 and noted in which SCSI-3 draft standard they are covered. Ron will add a paragraph to define SFF 8020 usage of the command descriptor block.

Curtis Stevens raised a question on priority of packet commands vs. ATA commands that have similar functionality.

The following areas need attention: SMART, security, and power management,

The group recommended to expand words 82 and 83 to define the command set supported. They also recommended that an annex be added to list the document wherein the various command sets reside. This also may affect word 0 bits 8-12.

The preferred implementation for ATAPI devices is to use packet commands for SMART rather than the ATA version. The consensus was to make a statement that it be done only one way.

Rick Kalish moved and Dan Colegrove seconded that working draft 1153 include a statement that packet devices use packet SMART. The motion carried 17:0.

8.3 SAM discussion

Relative to SAM, no changes were recommended for MMC.

8.4 Treatment of Removable Media Devices

Definitions are included in the standards, however removable devices may need additional work. The ad hoc requested that the X3T13 acting chair contact Microsoft regarding Media Status Notification (MSN). Information concerning MSN can be found at <http://www.microsoft.com/hwdev/storage1.htm>.

8.5 New Commands to be added

Upon completing the review of MMC treatment of ATAPI the ad hoc concluded that no new commands were needed.

8.6 Future joint ad hocs

The ad hoc recommended a joint ad hoc meeting in June 96.

9. ATA-3 - Project 2008D

9.1 ATA-3 Status

There was no business for the ad hoc to conduct and this item was remanded to the plenary.

10. ATA/ATAPI-4 - Project 1153D

10.1 Project 1153D proposed draft

The ad hoc reviewed the flow chart on non-overlapped PACKET command PIO data in to host. An issue was identified on the handling of the 01h case when the device generates DRQ and INTRQ. A markup was made of a modified flow chart to show the correct protocol. Do INTRQ and DRQ change at same time? This needs investigation, but answer is tending towards yes. This issue will be put on the next agenda.

Devices that delay generating interrupt after setting DRQ may cause data corruption on fast processors.

Should we document old behavior as an implementor's note on the RELEASE command?

A recommendation was made to delete figure 16, by adding conditional statements to prior figures.

The next meeting should revisit the discussion on release interrupt and whether it will remain in the document.

The DMA ready bit is missing from the flow chart. It is similar in function to DRQ, but intended for bus master automation.

10.2 Strong Command Overlap and Command Queuing [McLean] (96D104r3)

Pete McLean reviewed revision 3 of the proposal. He pointed out that queue depth needs to be added to the IDENTIFY DEVICE information.

Tom Hanan and Pete McLean had a long discussion about how to handle the queue full situation. There is a problem of duplicate tags when using auto-read operations. Pete argued that detection of a duplicate queue tag should terminate all enqueued I/O processes. Tom stated that since overlap is only allowed for the DMA process and they all report status at the end of the transfer, that it would not be necessary to clear the queue.

Should we add a mechanism to do split DMA transfers for the AV folks? Well sort of yes, for the SFF 8020 device only, but not the ATA device.

Should we encode the error register to allow reporting additional error conditions? The consensus was to follow SFF 8020 and encode the upper four bits.

11. Old Business

11.1 ATA Device Segmentation Proposal [Stevens] (D96107r2)

See 12.1.

11.2 Items from the Open Issues List [] ()

11.2.1 Removable Device Feature Set

Patrick Mercer agreed to have SyQuest provide a recommended feature set. See 8.4

11.3 ATA Mode X Analog Issues [] ()

Joe Chen requested that this item be put off until the future when possibly others may bring things to the committee regarding faster transfer rates. Unanimous agreement.

11.4 ATA Cable Issues and Definitions [McGrath] ()

There had not been any new work on this item since the prior ad hoc.

11.5 Cache Flush [Schnell] (D96106r0)

There were no new inputs on this item.

11.6 Status for Failing Soft Reset

Really, Soft Reset status for failing to flush the cache during a soft reset. No action at this time. There are two issues related to this. Many systems will time out regardless of the potential for data loss. Tom Hanan illustrated how mobile applications may have writes inhibited for an extended period of time with shock sensing combined with turbulence.

11.7 Pins A-D on 44-pin Connector [] (D96102R2)

Totani-san completed an internal review and agreed to the version presented by Pete McLean at the Boulder meeting and Pete wants to place it in the ATA/ATAPI-4. There was unanimous consent to add the definition to 1153.

11.8 Two Giga-Byte Barrier [Stevens] (D96127R2)

Since the group had not agreed to pursue endorsing specific proposals, Curtis Stevens updated his recommendation and made the revised document available for interested parties. This item will be removed from the next agenda.

11.9 Eight Giga-Byte Barrier [Stevens]

.Curtis had prepared an updated project proposal but it was lost in a notebook computer failure. Consequently this item was remanded to the plenary.

11.10 Interrupt Glitches (Determination) [Stevens] ()

Curtis would like to solicit proposals to correct this problem. Glitches occur all the time, and he needs to know how to correct this problem. The problem being how to tell which host bus adapter passed on an interrupt.

11.11 400 nSec delay between reading data and status register

Hale referred to note 7 on page 37 of 1153r2 and wants the definition of “command” and “data cycle” changed to be more reflective of what is trying to be said. It was suggested that silicon providers look at their present implementations and see if the 400 nS issue can now be removed since the timing is difficult to handle in the host software drivers.

11.12 Vendor Specific & Optional Command Zero Budgeting [Evans] (D96125r2)

Mark Evans led a review which resulted in the following:

- Third paragraph of page 2 changed last sentence to: ...have been reclassified as “retired” based on the definitions for “obsolete” and “retired” in the standard.
- item 24 - Removed the note
- Item 34 - Removed the last two words in Inputs: and replaced them with “a subsequent command” . Big discussion about Description and the DSC bit. Last sentence changed to: DSC shall be set by the device concurrent with or after setting the DRDY bit.
- Item 10 - Accept Marks suggested change.
- Items 18-20 - Change to optional feature set, of which , all commands need to be implemented if any used. Section 6.6 needs to be modified to explain this better
- Item 22 - Curtis would like to have code 01 mean that device 0 passed and device 1 passed; code 81 mean that device 0 passed, and device 1 either not present or fails. All other codes should be retired.
- Item 24 - Bits not used by PCMCIA. To be marked as retired.
- Items 55 - 59 - Accepted as suggested in Mark’s document with the exception of marking Word 49 bits 8 & 9 should be “set to 1”.

All closed items will be marked with appropriate changes and moved to a closed items list in rev 3, and open items will be listed in another portion. These items will not be voted on at the plenary this month.

11.13 SMART Proposal document (96131r0)

Mark Evans provided a document for review.

11.14 X3T13 Reflector, ftp, and Web Site Setup [Hanan]

This item was remanded to the plenary.

11.15 Get Features

This item was remanded to the plenary.

11.16 Letter Ballots on Procedures - Resolution

This item was remanded to the plenary.

12. New Business**12.1 ATA Protected Area Proposal [Colegrove] (D96137)**

Dan Colegrove presented a proposal for ATA protected areas. This is a simpler approach than offered in the prior proposal from Stevens. This solution is currently in use by at least one system manufacturer. Participants requested and were given time to digest the proposal which will be considered for ATA/ATAPI-4 at the next meeting.

13. Call for Patents

This is a regular agenda item to identify any potential patent issues with developing standards.

A document is available from ANSI, "Procedures for the Development and Coordination of American National Standards", at no charge. Annex I contains the ANSI patent policy.

The Chair requested that any participant aware of patents or patent disclosures that may be required to comply with any publications resulting from X3T13 projects provide an early disclosure of such patent(s) and offer to license such patent(s) under reasonable and non-discriminatory conditions in accordance with the ANSI Patent Policy. No additional patents were identified by the attendees in response to this call.

14. Open Issues List Summary

The following items were added to the list at this meeting:

- 1) Have silicon providers see if the 40 nS delay before reading the status register is still needed.
- 2) Mark's item 36 in D96125r2 still needs to be researched because of portable cache flushing situations.

15. Review of New Action Items

- 51) X3T13 acting chair contact Microsoft regarding MSN.

16. Meeting Schedule

This item was remanded to the plenary.

17. Adjournment

The meeting was adjourned upon completion of all agenda items.