MMC Working Group – 9, 10 & 11 January 2006

T10 Meeting Week at:
Embassy Suites Hotel Phoenix - Scottsdale
4415 East Paradise Village Parkway South
Phoenix, Arizona 85032

Hosted by: Intel

1.0 Opening Remarks

The MMC meeting has been authorized by INCITS T10 and will be conducted under the NCITS rules. Ad hoc meetings take no final actions, but prepare recommendations for approval by the NCITS task group. The voting rules for the meeting are those of the parent committee, INCITS T10. For the ad hoc, other than straw votes, the voting rules are: one vote per participating company.

The minutes of the MMC meeting will be posted to the T10 Reflector and will be included in the next T10 committee mailing. Attendance at a working group meeting does not count toward minimum attendance requirements for T10 membership. Working group meetings are open to any person or company to attend and to express their opinion on the subjects being discussed.

2.0 Introductions

Those attending the MMC-WG are listed below:

David Hanes	Hewlett Packard Co
Dan Colegrove	Hitachi Global Storage Tech
Kenji Tokumitsu	Hitachi-LG Data Storage
Robert Payne	Iomega Corp
John Geldman	Lexar Media, Inc
Avraham Shimor	M-Systems
Henry Gabrijelski	Microsoft Corp
Terence J. Nelson	Panasonic Technologies, Inc
Bill McFerrin	Philips Electronics, NV
Keiji Katata	Pioneer Electronics Corp
Masaetsu Takahashi	Ricoh Corporation
Shunsuke Kimura	Toshiba
Curtis Stevens	Western Digital

3.0 Document Distribution

Bill McFerrin distributed the following documents:

MMC5R02A.PDF	Most recent MMC-5 draft on the T10 website
FUJI6100DRAFT.PDF	Most recent draft of Mt Fuji 6

Meeting agenda

Kimura, Toshiba, provided HD DVD ECC block detail for MMC-5.

4.0 Call for Patents

Called. None answered.

5.0 Approval of Agenda

Henry Gabrijelski, Microsoft requested a discussion of the revision levels of the Core and Microcode Upgrade Features. Henry also requested a discussion of the use of the START STOP UNIT command for the Hybrid Disc Feature. These were added to the agenda.

6.0 Old Business

6.1 Core and Microcode Upgrade Features discussion

Henry Gabryjelski, Microsoft, has concerns about recent changes to other standards (SPC-3) as it applies to MMC devices:

Henry's concerns:

-Should the CORE feature version be advanced to 2 in order to reflect MMC drive support for additional requirements in SPC-2 and SPC-3? Although the support of certain VPD pages is mandatory in SPC-2, some drives claiming compliance with MMC-4 (and consequently SPC-2) ignore the EVPD bit and the Page Code field and return no VPD. Further, SPC-3 changes the INQUIRY allocation length field from 8 bits to 16 bits. Drive makers must be made aware of these requirements that are not present in the MMC documents (4 and 5).

Resolution: Add a bit in the CORE feature descriptor to indicate the following:

-The Drive validates the 16-bit data Allocation Length, and

- The Drive supports EVPD=1 and the mandatory VPD pages (00h and 83h).

-Should the MICROCODE UPGRADE feature version be advanced to 1 in order to reflect support for the 5-bit Mode field in READ BUFFER and WRITE BUFFER commands?

Resolution: Update the MICROCODE UPGRADE feature version to 1 to have the drive specify that it validates the 5-bit Mode field in the READ BUFFER and WRITE BUFFER commands.

-In the MODE SENSE (10) command, do MMC drives check LLBAA and Sub-page bits for validity?

Resolution: Typically, MMC drives are to follow SPC-3, however, LLBAA (new in SPC-2) has no meaning since MMC drives do not support Block Descriptors. This is stated in clause 7. The editor will also add the clarification to the sub-clause that describes the MODE SENSE (10) command. The editor will also add that MMC devices do not define sub-pages and do not support sub-pages.

6.2 READ CAPACITY command discussion

-In the READ CAPACITY command, do MMC drives check the LBA field?

Resolution: MMC-5 defines READ CAPACITY and is not dependent upon external references with respect to that command. No change is needed.

6.3 Hybrid disc commands discussion -

The Model section and the command section were not in agreement about the Drive's action when FL = 1 and hybrid media is not present. The editor will change the model section to correct the problem.

6.4 Definition of "Write-Verify"

Bill McFerrin requested the addition of a general definition - Write-Verify :

As a part of a writing process, any method that verifies that it is possible to recover written data is a Write-Verify process. Typically, a Drive performs Write-Verify on a writable unit as a part of the writing process by reading the writable unit after it has been written. The

Write-Verify scheduling of writing and reading is vendor specific and is transparent to the Host.

For certain media types, it is possible to verify the written data during the write process. In such cases, a separate read pass is not required.

The Write-Verify method employed for each media type is vendor specific.

There was no discussion; the definition will be added.

6.5 Continue the review of commands clause in MMC-5 rev 2a.

During the November editorial and MMC WG meetings, the draft was reviewed until the GET CONFIGURATION command. This meeting began at that point using rev 2a as the reference. Changes will be entered into rev 2b and posted on the T10 website.

GET CONFIGURATION	No changes indicated
GET EVENT STATUS NOTIFICATION	No changes indicated
GET PERFORMANCE	Editorial changes: 6.8.3.4, paragraph 3 – the sense key was not specified. Third paragraph after table 305 – "or Cluster was added to the end of the last sentence. After table 307, there is a list of default rotational control. BD was missing. BD has a default rotational control of CLV.
INQUIRY	No changes indicated.
LOAD/UNLOAD MEDIUM	No changes indicated.
MECHANISM STATUS	Mechanism state field (Table 325): values 1, 2, and 3 have been clarified as Legacy. A sentence was appended to the description of the Current LBA field: The field is Legacy.
MODE SELECT (10)	No changes indicated.
MODE SENSE (10)	The following notes were added: Note 1. Since MM Drives do not support sub-pages of mode pages, the Sub-Page field of the MODE SENSE (10) command is ignored by the Drive. Note 2. Since MM Drives do not support Block Descriptors (see **Error! Reference source not found.**), the LLBAA bit in the MODE SENSE (10) CDB has no meaning and is ignored by the Drive.
PREVENT ALLOW MEDIUM REMOVAL	No changes indicated.
READ (10)	The Reladr bit in the CDB was changed to "obsolete" and the corresponding description was removed.
READ (12)	The Reladr bit in the CDB was changed to "obsolete" and the corresponding description was removed.
READ BUFFER	The MICROCODE UPGRADE feature requires one form of this command.
READ BUFFER CAPACITY	No changes indicated.
READ CAPACITY	The Reladr bit in the CDB was changed to "obsolete" and the corresponding description was removed. The text: "and the Drive may ignore this field" was added to the description of the Logical Block Address field (6.19.2.2).

READ CD	The Reladr bit in the CDB was changed to “obsolete” and the corresponding description was removed.
READ CD MSF	No changes indicated.
READ DISC INFORMATION	No changes indicated.
READ DISC STRUCTURE	The command description was largely incomplete. Table 378 was corrected to include missing features. Table 385 was corrected to include missing format code values. Sub-clause 6.23.3.2 was corrected to include missing descriptions.
READ FORMAT CAPACITIES	No changes indicated
READ TOC/PMA/ATIP	6.25.3.2.4 It was noted that several disc types and formats use the same data fabrication for TOC format 1. Those were merged. 6.25.3.3.3 It was noted that all non-CD cases use the same data fabrication for TOC form 2. Those were merged. 6.25.3.4.3 All non-CD disc types respond in the same way since TOC form 2 is supported only for CD. 6.25.3.5.3 All non-CD disc types respond in the same way since TOC form 3 is supported only for CD. 6.25.3.6.3 All non-CD disc types respond in the same way since TOC form 4 is supported only for CD. 6.25.3.7.3 All non-CD disc types respond in the same way since TOC form 5 is supported only for CD.
READ TRACK INFORMATION	6.26.2.2 The phrase “not less than” was changed to “greater than or equal to” for readability. Table 486 In the description of LTN, it was noted that when the media is not CD, LTN = 0 is an error. The error condition was added. 6.26.2.5 This discussion is complex and some clarification was added. 6.26.2.5 When Open = 1 and there are no open tracks, specific data is returned. The description of this case was added. 6.26.3.3 The non-CD case was clarified. 6.26.3.5 The non-CD case was clarified. 6.26.3.9 The description for RT=1 and BD-R was corrected.
REPAIR TRACK	No changes indicated
REPORT KEY	Table 503 “ReWritable Security Service – A” was corrected to “ReWritable Security Service – AS-MO”. Additionally typographical errors were corrected.
REQUEST SENSE	No changes indicated
RESERVE TRACK	6.30.3.3.4 The introductory statement to the formula was not quite correct. 6.30.3.4.1 The original description of track numbering was unclear. A clarification was added. 6.30.3.4.3 HD DVD-R was added to the list of disc ypes in whih only the incomplete/invisible track may be split.
SEEK (10)	6.31.2.2 The description of the Logical Block Address field was clarified.
SEND CUE SHEET	No changes indicated
SEND DISC STRUCTURE	Table 570 Corrected a copy/paste error.
SEND KEY	Table 581 “ReWritable Security Service – A” was corrected to “ReWritable Security Service – AS-MO”. 6.34.3.1.5, 6.34.3.2.3 In each case, a clarifying sentence was added about

the no-op case.

SEND OPC INFORMATION	No changes indicated
SET CD SPEED	No changes indicated
SET READ AHEAD	The descriptions of purely sequential behavior are wrong. There is a "play" sequence defined specifically the Host. The command must follow that sequence.
SET STREAMING	No changes indicated
START STOP UNIT	6.39.2.6 The descriptions of LoEj and Start depend upon FL = 0.
SYNCHRONIZE CACHE	6.40.1 The introductory sentence stated a requirement when it should have been describing a purpose. The Reladr bit in the CDB was changed to "obsolete" and the corresponding description was removed.
TEST UNIT READY	No changes indicated
VERIFY (10)	The Reladr bit in the CDB was changed to "obsolete" and the corresponding description was removed.
WRITE (10)	6.43.3.1 The second paragraph is correct only when the POW feature is not current.
WRITE (12)	No changes indicated
WRITE AND VERIFY (10)	No changes indicated
WRITE BUFFER	Table 639 The mode requirement is now a 5-bit field.

An additional correction was made based upon general observations about the RelAdr bit.

ERASE (10)	The Reladr bit in the CDB was changed to "obsolete" and the corresponding description was removed.

7.0 New Business

7.1 Discussion with Curtis Stevens and Dan Colegrove about T13 Issues

7.1.1 World Wide Number

World Wide Number is a 64 or 128 bit identifier that is unique for a device. The intent is to identify specific devices on a network. The EUI-64 standard defines the format of the WWN. IEEE is an official naming authority.

SAT defines an INQUIRY VPD that contains the WWN.

In ATA-8 WWN is an optional field in IDENTIFY DEVICE data.

Questions to MMC:

Should T13 define WWN in IDENTIFY PACKET DEVICE data?

If yes, should the field be mandatory?

7.1.2 IDENTIFY DEVICE and IDENTIFY PACKET DEVICE

T13 wants to make IDENTIFY DEVICE data and IDENTIFY PACKET DEVICE data consistent. MMC is requested to review and make recommendations to T13.

T13 Editor's meeting is January 25 – 26 (see www.t13.org) in Orange County. Next T13 plenary is February 21 – 24 in Orange County.

7.2 Discussion of MMC-6 project.

Some of the new work items are: DVD-RW Dual Layer, HD DVD-RW, HD DVD-R Dual Layer

Other material is under discussion.

A project Proposal will be sent to T10 for approval during March T10 plenary.

Project work can begin at May meeting.

7.3 CAP Meeting Results

Bill McFerrin and Keiji Katata joined the T10 CAP (Commands and Protocols) meeting after the MMC WG meeting was adjourned. The purpose was to determine how MM devices should use the WWN. The results are as follows:

It is possible to report up to 3 WWNs for a single MM drive: The SCSI port WWN, the SCSI Target WWN, and the SCSI Logical Unit WWN. Only one number is required for a single ATAPI drive: The SCSI Logical Unit WWN. An MM drive should report this number via the INQUIRY Vital Product Data page 83h. If it is decided that WWN should be supported in the ATA IDENTIFY PACKET DEVICE data, this same WWN should be supported.

CAP recommends NAA naming through IEEE.

8.0 Review of Action Items

New Action Items:

a. Editor will request information via T10 and Mt Fuji reflectors about Key Class 1: ReWritable Security Service – AS-MO. There are no descriptions of how the commands should be implemented.
b. Editor will translate Excel document on HD DVD ECC block for MMC-5.
c. Editor will complete all changes determined during the meeting.
d. Editor will post 2b to the T10 website before 16 January.
e. Editor will update meeting minutes and post before end of day, 11 January.
f. Editor shall request any additional review comments from the T10 reflector.
g. Chair will prepare an agenda item for another T13 joint session.
h. Chair will check status of SPC-4 and report to MMC WG.
i. Chair will send an e-mail to the T10 and Fuji reflectors with recommendations about WWN usage.

9.0 Future Meeting Schedule

The next MMC WG meeting will be March 7 & 8 (Tuesday and Wednesday) during T10 week at:

Hilton Ocean Front Resort

23 Ocean Lane

Hilton Head Island, South Carolina, 29928

Phone: (843) 341-8013 Fax: (843) 341-8036

Reservations: (800) Hiltons

HOSTED BY: SCSI Trade Association (STA).

10.0 Adjournment

The meeting was adjourned at 4:00PM on 10 January.