To: Membership of X3T10
From: RK Roberts
Subject: Minutes of X3T10 MMC Working Group - Aug 2 & 3, 1995

The meetings were held in Sunnyvale, CA hosted by Philips Semiconductor.

1.   Opening Remarks
Ron Roberts convened the meeting at 9:45 AM on Aug 2, 1995. He thanked our
host, Kevin Ross and Philips Semiconductor, for hosting the meeting. It was stated that the meeting was
authorized by X3T10 and will be conducted under the X3 rules. Ad hoc meetings take no final actions, but
prepare recommendations for approval by the X3T10 technical group. The voting rules for the meeting
are those of the parent committee, X3T10. For the ad hoc, other than straw votes, the voting rules are:
one vote per participating company.
It was also stated that the minutes of this meeting will be posted to the X3T10 BBS, the SCSI Reflector,
the MMC Reflector, the ATAPI Reflector, and will be included in the next X3T10 committee mailing.
Attendance at working group meetings does not count toward minimum attendance requirements for
X3T10 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 & Attendance
As is customary, the people attending introduced themselves. An attendance list was circulated for
attendance and corrections to addresses and e-mail. The list of attendees is attached.

3.0   Document Distribution
The minutes from July meeting was handed out. Also a copy of the current Functional Requirements (Rev
2) was made available.

95-223R2   MMC Functional Requirements
95-286R0   MMC Working Group minutes July 1995

4.   Call for Patents
Ron requested that any patents known to the working group be identified.

5. Approval of Agenda
The agenda was approved with two additions. Added 6.2.2. SMC command review and 7.2 CD-E
Technology

6.0   Meeting Agenda
6.1   Functional Requirements Doc
Coverred the remaining action items from the two meetings ago. See open action lists..
1.) Mike Yokoyama of SONY ... Presented Track at Once, in response to action item of June WG session,
requirements. His presentation follows:
1. Track Status
     The following tracks accept TAO recording:
     1) invisible Track (Blank Area)
     2) Empty Reserved Track indicated vby the PMA item of CONTROL 3D 0x4 (TAO)

2. Required Parameteres
Case 1: Blank disc (invisible Track & the 1st track in the disc)

Disc Type
First Track Number
Data Format (mode-1, mode-2,mode-2 form-1, mode-2 form-2,audio)
Copy bit (Copy Inhibited, Copy Permitted, Replica)
TDB Type
Block Length
Track Length

Case 2: Invisible Track & not the 1st track
Track Number
Data Format (mode-1, mode-2,mode-2 form-1, mode-2 form-2,audio)
Copy bit (Copy Inhibited, Copy Permitted, Replica)
TDB Type
Block Length

Case 3: Empty Reserved Track
Track Number
Data Format (mode-1, mode-2,mode-2 form-1, mode-2 form-2,audio)
Copy bit (Copy Inhibited, Copy Permitted, Replica)
TDB Type
Block Length

Case 4: Empty Reserved Track & not the 1st track in the program
Track Number
Data Format (mode-1, mode-2,mode-2 form-1, mode-2 form-2,audio)
Copy bit (Copy Inhibited, Copy Permitted, Replica)
Block Length

TDB Type-1 =3D all previous track information included
TDB Type-2 =3D only current track information
3. Drive Action
   Case 1: Blank disc (invisible Track & the 1st track in the disc)
         * Drive checks Data Format is appropriate to Disc Type
         * Drive checks Block Length is appropriate to Data Format.
         * Drive prepares and writes Track Descriptor blocks (pre-gap) with
           the format specified by the Data Format and Copy Bit.
         * Drive receives and encodes the data of the track.
         * After writing the data of the length specified by Track Length, Drive ends writing.
         * Drive writes the item of the track in PMA.
   Case 2: Invisible Track & not the 1st track
         * Drive checks the status of the track specified by Track Number
         * Drive checks Data Format is appropriate to Disc Type
         * Drive checks Block Length is appropriate to Data Format.
         * Drive prepares and writes Track Descriptor blocks (pre-gap) with
           the format specified by the Data Format and Copy Bit.
         * Drive receives and encodes the data of the track.
         * After writing the data of the length specified by Track Length, Drive ends writing.
         * Drive writes the item of the track in PMA.

   Case 3: Empty Reserved Track
         * Drive checks the status of the track specified by Track Number
         * Drive checks Data Format is appropriate to Disc Type
         * Drive checks Block Length is appropriate to Data Format.
         * Drive prepares and writes Track Descriptor blocks (pre-gap) with
           the format specified by the Data Format and Copy Bit.
         * Drive receives and encodes the data of the track.

* After writing the data of the length specified by Track Length, Drive ends writing.
* When writing reaches the end of the track, Drive ends writing.

Case 4: Empty Reserved Track & not the 1st track in the program
* Drive checks the status of the track specified by Track Number
* Drive checks the item of the track in PMA.
* Drive checks Block Length is appropriate to Data Format.
* Drive prepares and writes Track Descriptor blocks (pre-gap) with
  the format that is the same as the previous track=92s except the Copy bit.
* Drive receives and encodes the data of the track.
* When writing reaches the end of the track, Drive ends writing.

2.) Ron led discussion on Complete packet Track primitives. Flows were modified, see new Figure 9 in document 95-223-R3. Primitives developed are attached below 2E
1) PARAMETERS
   a) Track Number
   b) Track Variables
   c) Last Link Position
   d) What is the =93Pad Data=94
2) PRIMITIVE ASSUMPTIONS
   a) NOT Track at Once
   b) NOT Session at Once
3) QUERY PRIMITIVES
   a) Is track entry in PMA?
      yes - track is reserved
       no - incomplete or invisible
   b) If reserved
       what is last link position?
       Is track filled?

4) PRIMITIVES:
- Reading PMA looking for track number
- Read TDB to get Track Varibles
- Get Last Link Position
- Write to PMA
- Write Packet (Fixed or Variable) using PAD data
- Write TAO using PAD data

During discussions, the group determined the need for a =91Disc Information=92 function with the following:

Information Required	How toget it
Disc Style uninterrupted ROM	test PMA/TOC/0:0:0
interrupted	CD-R
Disc State (empty)	created from sec 5.5 in Funct. Req. Doc.
Disc Type Audio/ROM/XA/CD-I.	Read TOC
Appendable	Read TOC, B0 pointer
First Track Number	Read PMA/TOC
Last Track number incomplete track	PMA or PMA+1 if Read PMA/TOC unless track includes appendable
Number of Sessions	PMA and TOC(s)
Disc Application Code	Read TOC comes from ATIP Restricted/unrestricted

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Recording Power                    Read ATIP
Start of LI - USER AREA- LO    Read ATIP
Last Session Status            (empty - partially Read pre-gap of last Track on last session written)
UPC                            TOC or new
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The WG then determined that a =93Track Information=94 function was also required.

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          TRACK INFORMATION
Information Required            How to get it
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Starting address                          read PMA
Ending address                 read PMA or ATIP( to end)
NRA for this track             scan for unrecorded
Write method unknown           TAO PMA
Packet  Fixed + size            TDB
                variable
Audio Data Format                          (this & previous track/LI)
                unknown
                Audio
                mode 1
                mode 2
                mode 2 form 1/2
Track is Complete              Last block written
Copy bit
```

Three commands were identified from the above information.
GET DISC INFO
GET TRACK INFO
READ SPECIAL   -   TOC
                -   PMA
                -   ATIP
                -   SESSION INFO
Bit layout for these will be in future revs of MMC doc.

Other flows modified were =93Blank Disc=94 now called =91 Empty Disc=94,= Type of Blankness is now called ' Session Status',

6.2   Command Layout

6.2.1. Review Op-code assignments   -   deferred to next meeting

6.3. SMC Commands. It was requested that the MMC WG co-ordinate commands, that overlap between SMC and MMC, or define the differences.   Editor to confer with editors of SMC to co-ordinate commands. Report due next meeting.

7.0   New Business
7.1.   Review any Technology proposals (please provide copies of docs, if any)
7.2.   CD-E Technology. Editor requested a proposal to add this technology to the document

8.0   Review of Action Items
Action Item 1) Rob R. Take ATAPI error codes and incorporate CD-R error codes(make them up)

9.0   Future Meeting Schedule

Next meeting will be held in Manchester NH   Wednesday September 13, 1995 1-6 PM (see meeting map at hotel) October meeting will be held in Irvine, CA hosted by Western Digital.   Time and location to be published at September meeting.

10.0   Adjournment
The two day session was adjourned on Thursday 8-3 at 3:30PM.
Attendence List

Name	Company	E-mail
Mr. Chris Brown	APPLE COMPUTER, Inc	brown.c@applelink.apple.com
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Mr. Charles Yang	Panasonic	yang@got.net
Mr. Kent Manabe	Panasonic/AKEI	
Mr. Ted Fujioka	Panasonic/MKE	00207.2272@compuserve.com
Mr. Dave Pohm	Philips	ave-p@lms.com
Mr. Kevin Ross	Philips Semiconductor	ossk@scs.philips.com
Mr. Hiroshi Horii	Sanyo North America	9horii@hr155.a1.sanyo.co.jp
Mr. Masahiko Watabe	Sanyo Semiconductor Corp	
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