

To: T10 Technical Committee
From: Bill McFerrin (billmc37@ctesc.net)
Date: 14 September 2006

Subject: 06-443r0 Errata Conclusions for MMC-5

MMC-5 Draft Revision 3b represents the letter ballot comment corrected version, but it has imperfections - primarily typographical (i.e. editor error). There are also suggestions for better description and complaints of omitted detail. The MMC WG shall address this list during the September MMC WG meeting and shall decide on severity and propose a list of errata to be published and posted on the T10 website.

The following are descriptions of the errors/shortcomings of MMC-5 draft revision 3b:

1. Mike Berhan (mikeb@bustrace.com):

For the commands READ (10), READ (12), READ CAPACITY, SYNCHRONIZE CACHE, VERIFY (10), WRITE AND VERIFY (10), WRITE (10), and WRITE (12), CDB bit 0 of byte 1 is labeled "Obsolete" in SBC-2. In order to have compatibility with SBC-2, MMC-5 has labeled that bit as Obsolete. Unfortunately, WRITE (10) was missed. The WRITE (10) still has bit 0 of byte 1 marked as "Reserved".

Editor's Proposal: Change as specified.

MMC WG Action: Change as specified.

2. Mike Berhan (mikeb@bustrace.com):

In WRITE (10) and WRITE (12), the DPO bit has been removed and labeled "Restricted for [SBC-2]" in order to have informal compatibility with SBC-2. For the commands READ (10), READ (12), and VERIFY (10) "DPO" (bit 4 of byte 1) is described in such a way that it should be treated as reserved. READ (10), READ (12), and VERIFY (10) should be changed to be like WRITE (10) and WRITE (12).

Editor's Proposal: It is best to keep MMC-5 unchanged. Mt Fuji also states that DPO=0 is mandatory. "Reserved" is not as strong.

MMC WG Action: Host cannot know what drive has done about DPO, so it is unimportant that DPO is fixed at 0 or reserved. Since it is explicitly specified in Fuji, it is best to match Fuji, however, we should include a reference to SBC-2 for a definition.

Conclusion: Only add a reference to SBC-2. Restore to WRITE (10), WRITE (12), and WRITE AND VERIFY (10).

3. Mike Berhan (mikeb@bustrace.com)

There is a typographical error in the CDB for READ (12). MMC-5 describes the "Streaming" bit in 6.16.2.6, but the bit is not specified in the READ (12) CDB.

Editor's Proposal: Change as specified.

MMC WG Action: Change as specified.

4. Jan-Eric Duden, ashampoo Technology GmbH & Co. KG

The CLOSE TRACK SESSION CDB was correct in MMC-5 draft revision 3, but the CDB was changed and is no longer correct in MMC-5 draft revision 3a (and 3b).

Editor's Proposal: Change as specified.

MMC WG Action: Change as specified.

5. Norichika Mine, (norichika.mine@sonynec-optiarc.com)

The version number of the DVD+RW Feature (002Ah) is shown as 0001b. The Feature has not changed from MMC-4 where the version number was set to 0000b.

Editor's Proposal: Mine noted that the DVD+RW MM Commands document that was posted on the T10 website contained proposals that were rejected in the MMC WG. Those proposals were removed in a more recent posting. The editor assumed that there was also a version problem. There actually was none. No action is required.

MMC WG Action: No change necessary.

6. David Burg (davidburg@windows.microsoft.com)

There is a typographical error in the description of Free Blocks in READ TRACK INFORMATION (6.27.3.15.1). The following text is extraneous and appears to be a left-over from when DDCD was made Legacy:

"For the invisible/incomplete track, $ATS = (\text{StartTimeofLastPossibleLead-out}) - NWA + 4$.

For a reserved track, $ATS = (\text{PMAStopTime}) - NWA + 4$."

These 2 lines should be removed.

Editor's Proposal: Change as specified.

MMC WG Action: Change as specified.

7. David Burg (davidburg@windows.microsoft.com) and

Keiji Katata (keiji.katata@post.pioneer.com)

In the CLOSE TRACK SESSION description of closing a CD-R/RW track (6.3.3.1.2) there is no specification for what to do in the case that the host requests to close the invisible track. It is suggested to either treat the case as a no-operation (i.e. do nothing and terminate the command with GOOD status), or terminate with CHECK CONDITION status and set sense to ILLEGAL REQUEST/INVALID FIELD IN CDB.

Editor's Proposal: Specify as a no-operation.

MMC WG Action: For CD, there are 3 possibilities - no-op, 4 second track, error. It is not reasonable to require specific behavior on such an old product. Since it is believed that no-op is the predominant behavior, no-op should be specified as preferred.

8. Takaharu Ai (ai.takaharu@jp.panasonic.com)

In the READ TRACK INFORMATION command, the reporting of RT varies according to media type and situation. It would be better to clearly show the variations as in this table:

Logical Track Type		Media	TIB Data					
			RT	Blank	Inc	LRA_V	NWA_V	Free Blocks
Not Closed	Reserved Blank	DVD-R	1	1	1	0	0	>0
		BD-R	1	1	1	0	0	>0
	Reserved, partially recorded	DVD-R	1	0	1	1	1*	>0
		BD-R	1	0	1	1	1*	>0
	Invisible	DVD-R	0	1	1	0	0	>0
		BD-R	0	1	1	0	0	>0
	Incomplete	DVD-R	0	0	1	1	1*	>0
		BD-R	0	0	1	1	1*	>0
	Reserved, fully recorded, but not closed	DVD-R	1	0	1	1	0	=0
		BD-R	N/A					
Closed	Closed reserved	DVD-R	0	0	1	1	0	=0
		BD-R	1	0	1	1	0	=0
	Closed Incomplete (Invisible track exists next to this track)	DVD-R	0	0	1	1	0	=0
		BD-R	1	0	1	1	0	=0
	Fully recorded Incomplete (Invisible track does not exist)	DVD-R	?	0	1	1	0	=0
		BD-R	1	0	1	1	0	=0

Editor's Proposal: This needs discussion.

First, the row labeled "Reserved, fully recorded, but not closed" is not a special case, because a fully recorded, reserved logical track is - by definition - closed. This row should be removed.

Second, in order that the last 2 rows be consistent, the "?" for RT should be "0".

With these changes, MMC-5 rev 3b is already correct and requires no change. Bill McFerrin proposed that this table be adopted into MMC-6 because it is clearer than what is currently documented in MMC-5. Henry Gabryjelski requested that CD be included in the table.

MMC WG Action: The consensus is that MMC-5 requires no change. The WG wishes to see a proposal for MMC-6.

9. Takaharu Ai (ai.takaharu@jp.panasonic.com)

In CLOSE TRACK SESSION command, close function 010b, seems confusing. Earlier versions (back to MMC-1) describe different behavior for CD when the session to be closed contains an open track. In all cases, the command is terminated with CHECK CONDITION status, but different sense codes are specified.

MMC-1 and MMC-2: Set SK/ASC/ASCQ to 5/72/04 EMPTY OR PARTIALLY WRITTEN RESERVED TRACK

MMC-3: Set SK/ASC/ASCQ to 5/72/04 EMPTY OR PARTIALLY WRITTEN RESERVED TRACK or 5/72/03 SESSION FIXATION ERROR - INCOMPLETE TRACK IN SESSION

MMC-4 and MMC-5: Set SK/ASC/ASCQ to 5/72/03 SESSION FIXATION ERROR - INCOMPLETE TRACK IN SESSION

Mt Fuji 1: Command not described

Mt Fuji 2: Set SK/ASC/ASCQ to 5/72/04 EMPTY OR PARTIALLY WRITTEN RESERVED TRACK

Mt Fuji 3-6: Set SK/ASC/ASCQ to 5/72/04 EMPTY OR PARTIALLY WRITTEN RESERVED TRACK or 5/72/03 SESSION FIXATION ERROR - INCOMPLETE TRACK IN SESSION

It appears that MMC-5 is not correct and MMC-3 is preferred. However, MMC-3 and Mt Fuji 3-6 are still confusing. What conditions are needed for 5/72/03? What conditions are needed for 5/72/04?

Editor's Proposal: Specify both error codes as in MMC-3 and Fuji 3-6.

MMC WG Action: 5/72/04 is specified when some reserved track in the session is not closed (i.e. empty or partially recorded). 5/72/03 is specified when the session contains an incomplete track (i.e. the last track is not reserved and is not empty).

11.David Burg (davidburg@windows.microsoft.com)

There appears to be a conventions problem with the GET EVENT STATUS NOTIFICATION command description of the Operational Change/Request Event.

In older versions of both Mt Fuji and MMC, the In previous Mt Fuji specification, e.g. MMC-3 and Fuji3v100, multiple operation request/report codes were defined beside 00h and 01h.

2h AddChange The Feature list may have added Current Features (no Features became non-Current)

3h Reset The Logical Unit has been reset.

4h Firmware Changed The Logical Unit's microcode may have changed.

5h Inquiry change The Logical Unit's identification information may have changed."

In current Mt Fuji (6) and MMC (5) specification these values are reserved as if for future use:

2h – FFFFh Reserved -"

I believe that instead 2h to 5h need to be marked obsolete to avoid that these values are eventually redefined for a new purpose.

Also, Microsoft would need clarification about the meaning and scope of occurrence (aka condition) of the AddChange. We have observed this in existing drives (during packet writing) and we currently interpret this value in our storage driver as the media behavior may have change thus the file system volume should be checked for change before continuing to write. Notice that verifying that the volume hasn't changed is an expensive check when actually the media hasn't changed: the file system needs to go through all the directory entries to ensure they are still there / intact. Thus we are wondering what are the conditions which caused an AddChange to be triggered and whether we should continue to perform this expensive verification or we can safely continue our reads and writes to this media.

Please clarify when is AddChange report.

Why was this AddChange removed from the specifications?

Editor's Proposal: The original change was requested by H. Gabryjelski (Microsoft). The change first appeared in MMC-4 and the MMC-3 description was listed as legacy. The values should be shown a legacy rather than obsolete.

MMC WG Action: Change as specified.

About the question about AddChange: This cannot be addressed in MMC-5 as it was last described in MMC-3. Host software should either ignore AddChange or treat is as Change.

12. Norichika Mine, (norichika.mine@sonynec-optiarc.com)

In the description of format type 26h there is a statement about adjusting the middle zone start address. "In the case of DVD+RW DL, X may be made smaller by sending the SEND DISC STRUCTURE command with Format Code 20h."

SEND DISC STRUCTURE command with Format Code 20h is only for DVD+R DL and should not be permitted on DVD+RW DL. The middle zone may be shifted only by selecting Number of Blocks during FORMAT UNIT command.

Editor's Proposal: Change as specified.

MMC WG Action: Change as specified.

13. Norichika Mine, (norichika.mine@sonynec-optiarc.com)

There is a typographical error in 6.5.4.2.15.3, Spares Allocation on Dual Layer BD-RE:

MIN[SizeofOSA0 = SizeofOSA1 = 256*....] should be SizeofOSA0 = SizeofOSA1 = MIN[256*....]

Editor's Proposal: Change as specified.

MMC WG Action: Change as specified.

14. Norichika Mine, (norichika.mine@sonynec-optiarc.com)

There is a typographical error between sub-clause "6.23.3.2.4 Format Type 03h" and sub-clause "6.23.3.2.5 Format Type 05h". The heading for the description of Format Type 04h does not have a heading number.

Editor's Proposal: Change as specified.

MMC WG Action: Change as specified.

15. Norichika Mine, (norichika.mine@sonynec-optiarc.com)

In Table 482 - Track Start Addresses for DVD+MRW Discs, the Track 1 Start Address for the DMA when MSF = 1 is not correct. The value should be 01:10:20.

Editor's Proposal: Change as specified.

MMC WG Action: Change as specified.

16. Norichika Mine, (norichika.mine@sonynec-optiarc.com)

In the SEND DISC STRUCTURE command associated features list in Table 571, the command requirements for DVD+R DL and DVD+RW DL are almost correct. DVD+R DL should also require Format 05h. DVD+RW DL should require 30h, but not 20h.

Editor's Proposal: Only 30h should be mandatory.

MMC WG Action: Change as specified.

17. Norichika Mine, (norichika.mine@sonynec-optiarc.com)

In Table 450, the byte 36 offset is labeled PSN of last LSN of user". It should be "Last LSN of user data area."

Editor's Proposal: Change as specified.

MMC WG Action: Change as specified.

18. Norichika Mine, (norichika.mine@sonynec-optiarc.com)

In 6.26.3.2.8 Blank BD-RE, the text is:

"A blank BD-RE disc has no structure to report. If the currently mounted media is an unformatted BD-RE, the command shall be terminated with CHECK CONDITION status and sense bytes SK/ASC/ASCQ shall be set to ILLEGAL REQUEST/INCOMPATIBLE MEDIUM INSTALLED."

It should be:

"An unformatted BD-RE disc has no structure to report. If the currently mounted media is an unformatted BD-RE, the command shall be terminated with CHECK CONDITION status and sense bytes SK/ASC/ASCQ shall be set to ILLEGAL REQUEST/INVALID FIELD IN CDB. Drives that are not capable of reading a BD-RE media should report CHECK CONDITION status, 2/30/02 CANNOT READ MEDIUM - INCOMPATIBLE FORMAT."

Editor's Proposal: Change as specified.

MMC WG Action: Change as specified.

19. Norichika Mine, (norichika.mine@sonynec-optiarc.com)

In 6.26.3.2.10 Blank BD-R, the text is:

"A blank BD-R disc has no structure to report. If the currently mounted media is a blank BD-R, the command shall be terminated with CHECK CONDITION status and sense bytes SK/ASC/ASCQ shall be set to ILLEGAL REQUEST/INCOMPATIBLE MEDIUM INSTALLED."

It should be:

"A blank BD-R disc has no structure to report. If the currently mounted media is a blank BD-R, the command shall be terminated with CHECK CONDITION status and sense bytes SK/ASC/ASCQ shall be set to ILLEGAL REQUEST/INVALID FIELD IN CDB. Drives that are not capable of reading a BD-R media should report CHECK CONDITION status, 2/30/02 CANNOT READ MEDIUM - INCOMPATIBLE FORMAT."

Editor's Proposal: Change as specified.

MMC WG Action: Change as specified.

20. Henry Gabryjelski (henry.gabryjelski@microsoft.com)

The WRITE (10/12) and WRITE AND VERIFY (10/12) should list "Readiness Errors" in their respective "Recommended Error Reporting" tables.

Editor's Proposal: Change as specified.

MMC WG Action: Change as specified.

Kind Regards,
Bill McFerrin