Write, dump and check MM addresses
File: H_CRP_DHS_3025.xls
Author: S. Manganelli

Procedure Summary

Objectives

This procedure describes the steps needed to write, dump and check the selected addresses of the Mass Memory.

Summary of Constraints

Mass Memory is:
loaded through TC(8,4,2,1);
dumped through TC(8,4,2,2);
checked through TC(8,4,2,3).

The test performed through TC(8,4,2,3) (Check Mass Memory) is destructive (ASW buffers and packet stores will be deallocated).

If a bank of the MM is OFF, the address range will be treated as illegal addresses.

TCs(8,4,2,1/2) will fail if there is, on the same MM board, an ongoing:
- TC(8,4,2,3) Check Mass Memory;
- TC(8,4,2,4) Map Mass Memory;
- TC(8,4,2,5) Turn Bank ON/OFF;
- TC(8,4,2,6) Initialise Mass Memory.

TC(8,4,2,3) will fail if there is one of the previous TCs ongoing.

Moreover TCs(8,4,2,1/2) will be delayed when there is an ongoing:
- TC(8,4,1,1) Copy Memory;
- TC(8,4,2,1) Load Mass Memory;
- TC(8,4,2,2) Dump Mass Memory.

Spacecraft Configuration

Start of Procedure

n/a

End of Procedure

n/a

Reference File(s)

Input Command Sequences

Output Command Sequences

HRD3025A
HRD3025C
HRD3025D
HRD3025E

Referenced Displays

ANDs **GRDs** **SLDs**

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ZAZAB999 (None)
ZAD22999

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
10/12/07		1	Created	cmevi-hp	
15/02/08		2	TC flags updated.	cmevi-hp	
15/02/08	1	3	TC flags updated.	cmevi-hp	
14/11/08		4	Updated following Industry inputs 16 sep 08	S. Manganelli	
11/01/09	2	5	Updated following OBSW 3_8	S. Manganelli	
19/03/09	2.2	6	DB changed due to OBSW 3_8_2	S. Manganelli	

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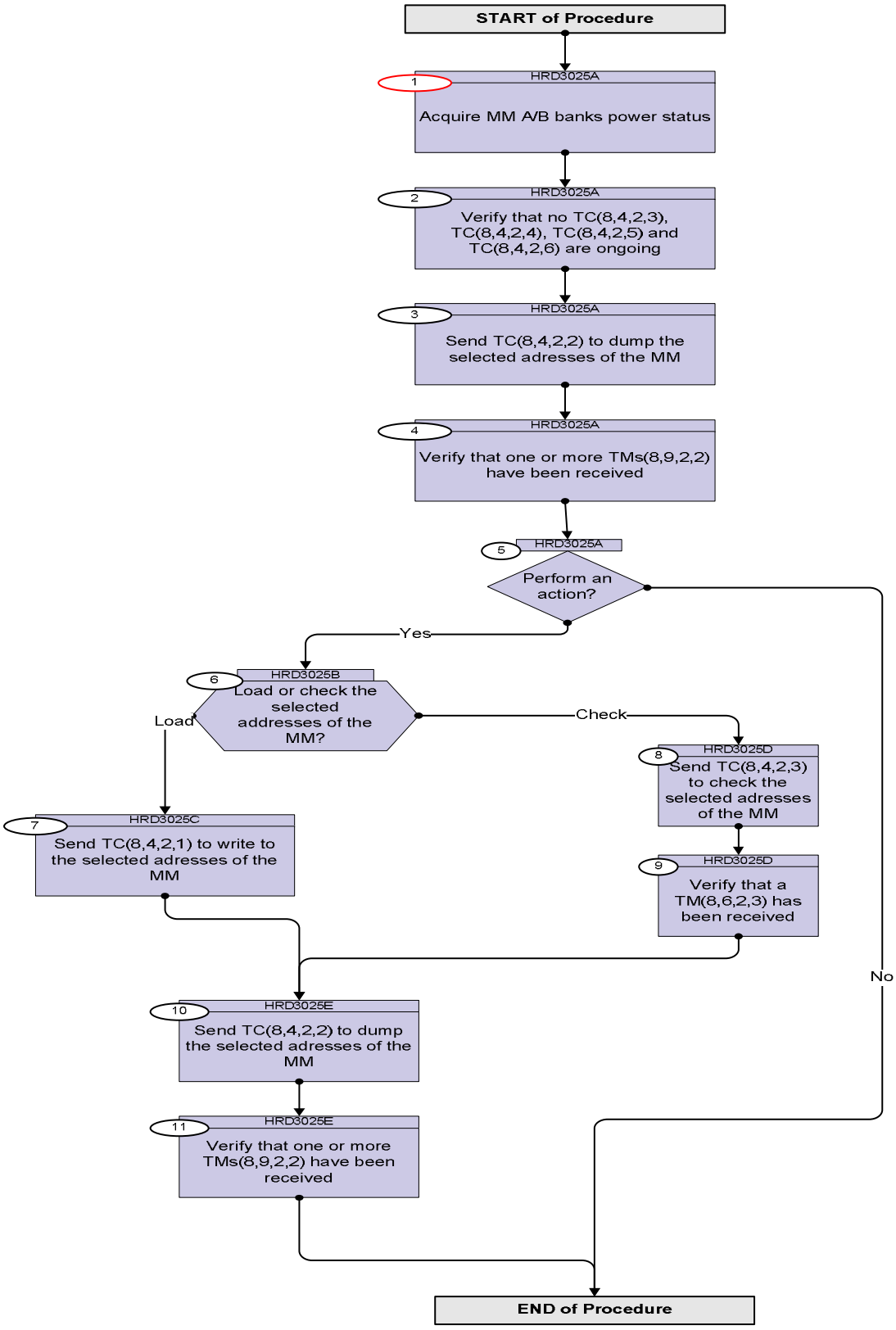
Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
Beginning of Procedure				
		TC Seq. Name :HRD3025A (MM area dump) *TimeTag Type: B* *Sub Schedule ID:*		
1		*Acquire MM A/B banks power status*		Next Step: 2
		Verify Telemetry **PWR_Sts_BankA0 DEECG160**		AND=ZAZAB999
		Verify Telemetry **PWR_Sts_BankA1 DEECH160**		AND=ZAZAB999
		Verify Telemetry **PWR_Sts_BankA2 DEECZ160**		AND=ZAZAB999
		Verify Telemetry **PWR_Sts_BankA3 DEECJ160**		AND=ZAZAB999
		Verify Telemetry **PWR_Sts_BankB0 DEECK160**		AND=ZAZAB999
		Verify Telemetry **PWR_Sts_BankB1 DEECL160**		AND=ZAZAB999
		Verify Telemetry **PWR_Sts_BankB2 DEECM160**		AND=ZAZAB999
		Verify Telemetry **PWR_Sts_BankB3 DEECN160**		AND=ZAZAB999
2		*Verify that no TC(8,4,2,3), TC(8,4,2,4), TC(8,4,2,5) and TC(8,4,2,6) are ongoing*		Next Step: 3
		Verify Telemetry **TC_8-4-2-3_x DEE0J161**	**= FALSE**	AND=ZAD22999
		Verify Telemetry **TC_8-4-2-4_x DEE0K161**	**= FALSE**	AND=ZAD22999
		Verify Telemetry **TC_8-4-2-5_x DEE0L161**	**= FALSE**	AND=ZAD22999
		Verify Telemetry **TC_8-4-2-6_x DEE0M161**	**= FALSE**	AND=ZAD22999
3		*Send TC(8,4,2,2) to dump the selected adresses of the MM*		Next Step: 4

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		This TC will dump the selected addresses of the MM. **If a bank of the MM has been turned OFF, the related address range will be treated as illegal addresses.** **The dump will result in as many TM (8,9,2,2) as needed. All TM will be of maximum length except for the last one.**		
		In the TC(8,4,2,2) it is necessary to set the following parameters: **- Start Address: logical address (see MM allocation).** **- Length: number of bytes to be dumped (0...65535).** **Warning: Accesses to MM A Pos 0 HwReg and MM B Pos 0 Hw Reg areas must be single-word 32-bit transfers, aligned to 32-bit boundaries.**		
		Execute Telecommand **DumpMassMem** *Command Parameter(s) :* **SRC DH023160** **LEN DH006160** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : Dump Mass Memory This Telecommand will not be included in the export	**DC802160** **Start_logic_addr** **Number_of_bytes**	
4		*Verify that one or more TMs(8,9,2,2) have been received*		Next Step: 5
		Verify Packet Reception **Mass Memory Dump** *Packet Details:* **APID:** **Type:** **Subtype:** **PI1:** **PI2:**	**MassMemDmp** **16** **8** **9**	
		Verify Packet Telemetry (Pkt = MassMemDmp) **FUN DE016160**		
		Verify Packet Telemetry (Pkt = MassMemDmp) **ACT DE017160**		
		Verify Packet Telemetry (Pkt = MassMemDmp) **SID DE018160**		
		Verify Packet Telemetry (Pkt = MassMemDmp) **SAD DE019160**		
		Verify Packet Telemetry (Pkt = MassMemDmp) **N DE041160**		

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Telemetry (Pkt = MassMemDmp) **Data8 DE012160**		
5		*Perform an action?*		Next Step: No END Yes 6
		TC Seq. Name :HRD3025B (Dummy sequence) *TimeTag Type:* *Sub Schedule ID:*		
6		*Load or check the selected addresses of the MM?*		Next Step: Load 7 Check 8
		TC Seq. Name :HRD3025C (Load bytes) *TimeTag Type: B* *Sub Schedule ID:*		
7		*Send TC(8,4,2,1) to write to the selected adresses of the MM*		Next Step: 10
		This TC will load the selected addresses of the MM with the provided data. **If a bank of the MM has been turned OFF, the related address range will be treated as illegal addresses.**		
		In the TC(8,4,2,1) it is necessary to set the following parameters: **- Start Address: logical address (see MM allocation).** **- Length: number of bytes to be loaded (0...224).** **- Data byte: data to be loaded.**		
		Warning: Accesses to MM A Pos 0 HwReg and MM B Pos 0 Hw Reg areas must be single-word 32-bit transfers, aligned to 32-bit boundaries.		
		WARNING: the following TC is a variable length TC therefore does not allow the definition of a generic procedure and it is intended to be just an example.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand **LoadMassMemEven** *Command Parameter(s) :* **SRC DH023160** **LEN DH064160** **Data DH024160** **Data DH024160** **Data DH024160** **Data DH024160** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : Load Mass Memory, even number of bytes This Telecommand will not be included in the export	**DC800160** **Start_logic_addr** **4 <dec>** **1st data byte** **2nd data byte** **3rd data byte** **4th data byte**	
		TC Seq. Name :HRD3025D (Check area) *TimeTag Type: B* *Sub Schedule ID:*		
8		*Send TC(8,4,2,3) to check the selected adresses of the MM*		Next Step: 9
		This TC will check the selected addresses of the MM. The test is destructive (ASW buffers and packet stores will be deallocated). **If a bank of the MM has been turned OFF, the related address range will be treated as illegal addresses.** **The check will result in a TM (8,6,2,3).**		
		In the TC(8,4,2,3) it is necessary to set the following parameters: **- Start Address: logical address** **within address ranges Pos 0..3 User, i.e.** **# MMA 0x1 0002 8000 - 0x1 FFFE FFFF** **# MMB 0x3 0002 8000 - 0x3 FFFE FFFF** **and 32-bit aligned (see MM allocation).** **- Length: number of bytes to check (0...65532);** **it shall be a multiple of 4.**		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand **ChkMassMem** *Command Parameter(s) :* **SRC DH023160** **LEN DH006160** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : Check Mass Memory This Telecommand will not be included in the export	**DC803160** **Start_logical_address** **Number_of_bytes**	
9		*Verify that a TM(8,6,2,3) has been received*		Next Step: 10
		The total number of errors found in the area to check is always reported. But only as many erroneous cells that will fit into one packet is reported.		
		Verify Packet Reception **Mass Memory Check Report** *Packet Details:* **APID:** **Type:** **Subtype:** **PI1:** **PI2:**	**MemChkRep** **16** **8** **6** **515** **21**	
		The TM packet contains the following parameters:		
		Verify Telemetry **FUN DE016160**	**= MM**	(None)
		Verify Telemetry **ACT DE017160**	**= 3 <dec>**	(None)
		Verify Telemetry **SID DE018160**	**= 21 <dec>**	(None)
		Verify Telemetry **SAD DE019160**	**Start address (logical address)**	(None)
		The total number of errors found during the check **TNE DE020160**	**The total number of errors found during the check**	(None)
		The number of error addresses that are reported in this packet **N DE021160**	**0..165**	(None)
		The following parameter is repeated N times		
		Error Address **ERA DE022160**	**Any Logical address**	(None)

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		TC Seq. Name :HRD3025E (Dump area) *TimeTag Type: B* *Sub Schedule ID:*		
10		*Send TC(8,4,2,2) to dump the selected adresses of the MM*		Next Step: 11
		This TC will dump the selected addresses of the MM. **If a bank of the MM has been turned OFF, the related address range will be treated as illegal addresses.** **The dump will result in as many TM (8,9,2,2) as needed. All TM will be of maximum length except for the last one.**		
		In the TC(8,4,2,2) it is necessary to set the following parameters: **- Start Address: logical address (see MM allocation).** **- Length: number of bytes to be dumped (0...65535).** **Warning: Accesses to MM A Pos 0 HwReg and MM B Pos 0 Hw Reg areas must be single-word 32-bit transfers, aligned to 32-bit boundaries.**		
		Execute Telecommand **DumpMassMem** *Command Parameter(s) :* **SRC DH023160** **LEN DH006160** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : Dump Mass Memory This Telecommand will not be included in the export	**DC802160** **Start_logical_address** **Number_of_bytes**	
11		*Verify that one or more TMs(8,9,2,2) have been received*		Next Step: END
		Verify Packet Reception **Mass Memory Dump** *Packet Details:* **APID:** **Type:** **Subtype:** **PI1:** **PI2:**	**MassMemDmp** **16** **8** **9**	
		Verify Packet Telemetry (Pkt = MassMemDmp) **FUN DE016160**		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Telemetry (Pkt = MassMemDmp) **ACT DE017160**		
		Verify Packet Telemetry (Pkt = MassMemDmp) **SID DE018160**		
		Verify Packet Telemetry (Pkt = MassMemDmp) **SAD DE019160**		
		Verify Packet Telemetry (Pkt = MassMemDmp) **N DE041160**		
		Verify Packet Telemetry (Pkt = MassMemDmp) **Data8 DE012160**		
		End of Procedure		