

Update CDMU CPU System Registers ground image from memory dump  
File: H\_FCP\_OBS\_1249.xls  
Author: lstefanov-hp



## Procedure Summary

### Objectives

This Herschel OBSM nominal procedure is used to conduct the dump of the readable CDMU CPU System Registers. The procedure covers all CDMU CPU System Registers with Read Access.

The CDMU CPU System Registers dump is commanded using TC(6,5) and the memory locations content is received on ground in TM(6,6) packets.

To be noted that for register read activities the access can be done at Word/Hword/Byte level, as opposed to register write, which has to be done at Word level, with 32-bit address alignment. In this procedure, all registers are accessed at Word level (i.e. only 32-bit word dumps).

The procedure uses a MOIS generated command sequence and not a command stack generated by OBSM.

### Summary of Constraints

CDMU in Operational Mode

- Only one register may be accessed per dump command
- Write-only registers shall NOT be dumped

Memory areas are dumped through TC(6,5); this TC will be delayed when there is an ongoing:

- TC(6,2) Load Memory Using Absolute Addresses
- TC(6,5) Dump Memory Using Absolute Addresses
- TC(6,9) Check Memory Using Absolute Addresses
- TC(8,4,1,1) Copy Memory

### Spacecraft Configuration

#### Start of Procedure

CDMU in Operational Mode

#### End of Procedure

- Same as start, except:
- CDMU CPU System Registers dump executed

### Reference File(s)

#### Input Command Sequences

#### Output Command Sequences

OFCP1249

### Referenced Displays

ANDs      GRDs      SLDs

### Configuration Control Information

Status : Version 2 - Unchanged  
Last Checkin: 10/04/09

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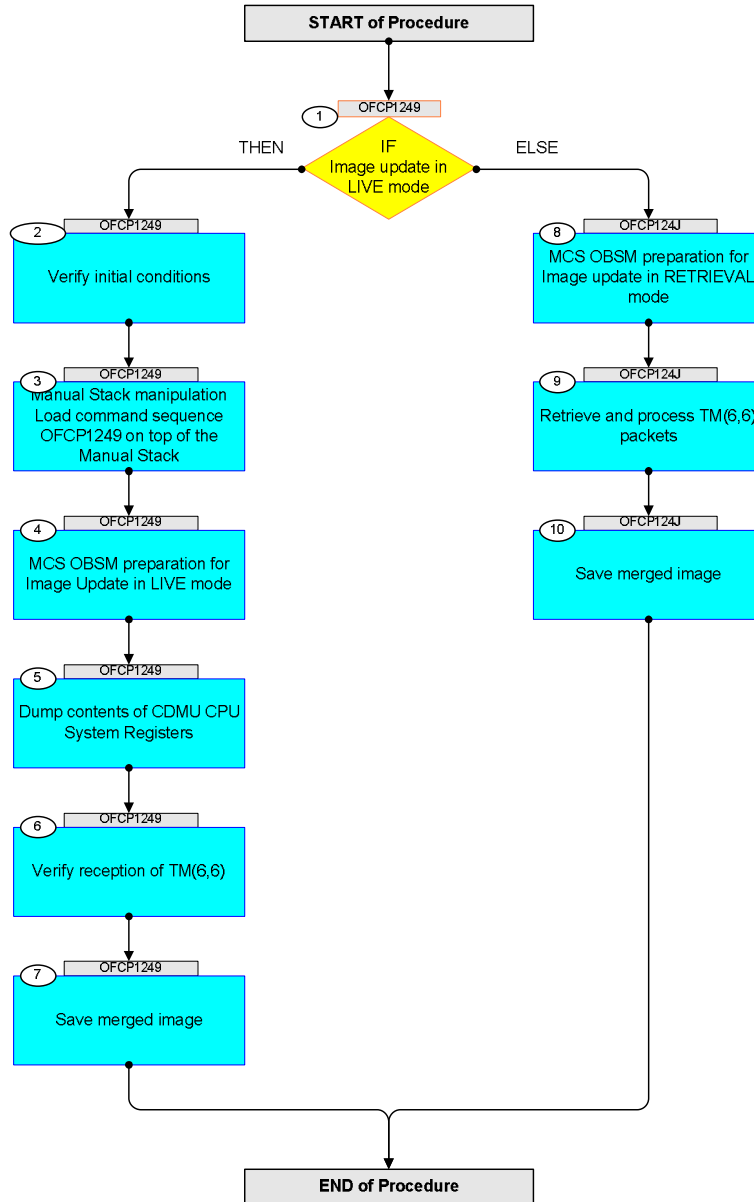
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DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
12/01/09	2	1	Created	lstefanov-hp	
10/04/09	2.3	2	1. Removed 'Manual Dispatch' on all commands except the first one in the sequence	lstefanov-hp	

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 File: H\_FCP\_OBS\_1249.xls  
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## Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
<b>Beginning of Procedure</b>					
	<b>OFCP1249</b>	TC Seq. Name :OFCP1249 ( CDMU CpuSysReg Dmp ) CDMU CPU System Registers Gnd image update in LIVE mode  TimeTag Type: N Sub Schedule ID:  <input type="checkbox"/>			
1		IF Image update in LIVE mode  type: [If]		Next Step: THEN 2 ELSE 8	
2		Verify initial conditions		Next Step: 3	
		Check: - CDMU in Operational mode			
		CDMS SOE to confirm CDMU mode			
3		Manual Stack manipulation Load command sequence OFCP1249 on top of the Manual Stack		Next Step: 4	
3.1		Sequence data  FP: N/A TT: N/A			
4		MCS OBSM preparation for Image Update in LIVE mode		Next Step: 5	
		<b>Note:</b> It is assumed that the OBSM application is already running and the OBSM Desktop is displayed on the MCS client. Starting the OBSM application is not covered by the current procedure.			
4.1		Select 'Image UPDATE' from the menu			
		Select the <b>Image</b> menu of the <i>OBSM Desktop</i> .  From the Image menu, select <b>Update</b> .  The 'Image Catalog' window opens.			

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 File: H\_FCP\_OBS\_1249.xls  
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
4.2		Select image to be updated			
4.2.1		IF CDMU PM A			
		Select the image to be updated for the memory device <b>CDMSYRGR.</b>  The 'Image UPDATE' window opens.			
4.2.2		ELSE CDMU PM B			
		Select the image to be updated for the memory device <b>CDMSYRGB.</b>  The 'Image UPDATE' window opens.			
4.3		Start dump TM processing			
		In <b>LIVE</b> mode, processing of incoming real-time telemetry starts automatically after the image selection.			
5		Dump contents of CDMU CPU System Registers		Next Step: 6	
		<b>Uplink</b> the <b>DC602180</b> memory dump commands with <b>ARM-GO</b>			
		Note: The commands have Delta Release time. All TCs will be dispatched by <b>ARM-GO</b> .			
		For each command, a TM(6,6) packets must be received on ground.			
5.1		System Control Register			
		System Control Register [SYSCTR]:			

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 File: H\_FCP\_OBS\_1249.xls  
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID        DH003180 Start_Address    DH004180 N          DH105180 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.2		Memory Configuration Register			
		Memory Configuration Register [MCNFR]:			
	ET+= UT+=00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID        DH003180 Start_Address    DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.3		I/O Configuration Register			
		I/O Configuration Register [IOCNR]:			
	ET+= UT+=00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID        DH003180 Start_Address    DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.4		Waitstate Configuration Register			
		Waitstate Configuration Register [WSCNFR]:			
	ET+= UT+=00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID        DH003180 Start_Address    DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	

Update CDMU CPU System Registers ground image from memory dump  
 File: H\_FCP\_OBS\_1249.xls  
 Author: lstefanov-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
5.5		Access Protection Segment 1 Base Register			
		Access Protection Segment 1 Base Register [APS1BR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID          DH003180 Start_Address      DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.6		Access Protection Segment 1 End Register			
		Access Protection Segment 1 End Register [APS1ER]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID          DH003180 Start_Address      DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.7		Access Protection Segment 2 Base Register			
		Access Protection Segment 2 Base Register [APS2BR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID          DH003180 Start_Address      DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.8		Access Protection Segment 2 End Register			
		Access Protection Segment 2 End Register [APS2ER]:			


Update CDMU CPU System Registers ground image from memory dump  
 File: H\_FCP\_OBS\_1249.xls  
 Author: lstefanov-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr  Command Parameter(s) : Memory_ID DH003180 Start_Address DH004180 N DH105180  Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.9		Interrupt Shape Register			
		Interrupt Shape Register [INTSHR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr  Command Parameter(s) : Memory_ID DH003180 Start_Address DH004180 N DH105180  Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.10		Interrupt Pending Register			
		Interrupt Pending Register [INTPDR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr  Command Parameter(s) : Memory_ID DH003180 Start_Address DH004180 N DH105180  Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.11		Interrupt Mask Register			
		Interrupt Mask Register [INTMKR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr  Command Parameter(s) : Memory_ID DH003180 Start_Address DH004180 N DH105180  Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.12		Interrupt Force Register			




Update CDMU CPU System Registers ground image from memory dump  
 File: H\_FCP\_OBS\_1249.xls  
 Author: lstefanov-hp




Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Interrupt Force Register [INTFCR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID        DH003180 Start_Address    DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.13		Watchdog Timer Register			
		Watchdog Timer Register [WDOGTR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID        DH003180 Start_Address    DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.14		Real Time Clock Timer Counter Register			
		Real Time Clock Timer Counter Register [RTCCR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID        DH003180 Start_Address    DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.15		Real Time Clock Timer Scaler Register			
		Real Time Clock Timer Scaler Register [RTCSR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID        DH003180 Start_Address    DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	

Update CDMU CPU System Registers ground image from memory dump  
 File: H\_FCP\_OBS\_1249.xls  
 Author: lstefanov-hp




Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
5.16		General Purpose Timer Counter Register			
		General Purpose Timer Counter Register [GPTCR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID        DH003180 Start_Address    DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.17		General Purpose Timer Scaler Register			
		General Purpose Timer Scaler Register [GPTSR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID        DH003180 Start_Address    DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.18		Timers Control Register			
		Timers Control Register [TIMCTR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID        DH003180 Start_Address    DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.19		System Fault Status Register			
		System Fault Status Register [SYSFSR]:			

Update CDMU CPU System Registers ground image from memory dump  
 File: H\_FCP\_OBS\_1249.xls  
 Author: lstefanov-hp




Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID          DH003180 Start_Address      DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.20		Failing Address Register			
		Failing Address Register [FAILAR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID          DH003180 Start_Address      DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.21		General Purpose Interface Configuration Register			
		General Purpose Interface Configuration Register [GPICNFR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID          DH003180 Start_Address      DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.22		General Purpose Interface Data Register			
		General Purpose Interface Data Register [GPIDATR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID          DH003180 Start_Address      DH004180 N          DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.23		Error & Reset Status Register			

Update CDMU CPU System Registers ground image from memory dump  
 File: H\_FCP\_OBS\_1249.xls  
 Author: lstefanov-hp




Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Error & Reset Status Register [ERRRSR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID            DH003180 Start_Address       DH004180 N                     DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.24		Test Control Register			
		Test Control Register [TESCTR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID            DH003180 Start_Address       DH004180 N                     DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
5.25		UART Status Register			
		UART Status Register [UARTSR]:			
	ET=+ UT=+00.00.04	Execute Telecommand DumpMem_AbsAddr Command Parameter(s) : Memory_ID            DH003180 Start_Address       DH004180 N                     DH105180 Subsch. ID : 10 Det. descr. : Dump Memory Using Absolute Addresses	DC602180	TC	
6		Verify reception of TM(6,6)		Next Step: 7	
		<b>Note:</b> A TM(6,6) packets will be received for each memory dump command uplinked.			
		Verify Packet Reception Memory Dump - Absolute Addresses - SAU 8 Packet Mnemonic :       MemDmpAbsAdd APID :                    16 Type :                    6 Subtype :                6 PI1 : PI2 :			

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 File: H\_FCP\_OBS\_1249.xls  
 Author: lstefanov-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
6.1		Check OBSM dump packet processing			
		Check that the OBSM is processing the incoming memory dump packets.			
7		Save merged image		Next Step: END	
		Save merged image with <b>new ID</b> .			
End of Sequence					
<b>OFCP124J</b> <i>TC Seq. Name :OFCP124J ( CDMU CpuSysReg Dmp J )</i> CDMU CPU System Registers Gnd image update in Retrieval mode  <i>TimeTag Type:</i> <i>Sub Schedule ID:</i>  <input type="checkbox"/>					
8		MCS OBSM preparation for Image update in RETRIEVAL mode		Next Step: 9	
		<b>Note:</b> It is assumed that the OBSM application is already running and the OBSM Desktop is displayed on the MCS client. Starting the OBSM application is not covered by the current procedure.			
8.1		Select 'Image UPDATE' from the menu			
		Select the <b>Image</b> menu of the <b>OBSM Desktop</b> .  From the Image menu, select <b>Update</b> .  The 'Image Catalog' window opens.			
8.2		Select image to be updated			
8.2.1		IF CDMU PM A			
		Select the image to be updated for the memory device <b>CDMSYRGR</b> .  The 'Image UPDATE' window opens.			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
8.2.2		ELSE CDMU PM B			
		Select the image to be updated for the memory device <b>CDMSYRGB</b> .  The 'Image UPDATE' window opens.			
8.3		Start dump TM packets processing			
		Set <b>retrieval start</b> and <b>stop time</b> and start retrieval of TM packets using the <b>PLAY buttons</b> .			
9		Retrieve and process TM(6,6) packets		Next Step: 10	
		Use the <b>STEP</b> button to retrieve and process the TM(6,6) packets, packet by packet and starting from the time shown in the packet time field.			
		OR			
		Use the <b>PLAY</b> button to retrieve and process the TM(6,6) packets in automated mode.  Pressing the PLAY button, the display will start to retrieve and process packets, starting from the time shown in the packet time field. This processing will stop automatically when a packet is received which creation time is greater than the one contained in the end time field.			
10		Save merged image		Next Step: END	
		Save merged image with <b>new ID</b> .			
End of Sequence					
<b>End of Procedure</b>					