

Check PACS SPU PRAM memory area (checksum calculation)
File: H_FCP_OBS_4262.xls
Author: lstefanov-hp



Procedure Summary

Objectives

This Herschel OBSM nominal procedure is used to perform a memory check of one or several PACS SPU PRAM memory areas. It is used for both SPU SWL and SPU LWL subsystems. The memory ckeck is commanded using TC(6,9) and the checksum calculated on-board is received on ground in TM(6,10) packets.

The procedure assumes that the command stack has already been generated using the OBSM system and is ready for loading on the Manual Stack. The command stack generation activity is not covered by this procedure.

Summary of Constraints

CDMU in Operational Mode

- PACS instrument in INIT mode (DPU ASW running)
- SPU ON
- DPU-SPU connection established

Memory areas are Checked through TC(6,9); 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

- PACS instrument in INIT mode (DPU ASW running)
- SPU ON
- DPU-SPU connection established

End of Procedure

Same as start

Reference File(s)

Input Command Sequences

Output Command Sequences

OFCP426C
OFCP426D

Referenced Displays

ANDs	GRDs	SLDs
PA029380		

Configuration Control Information

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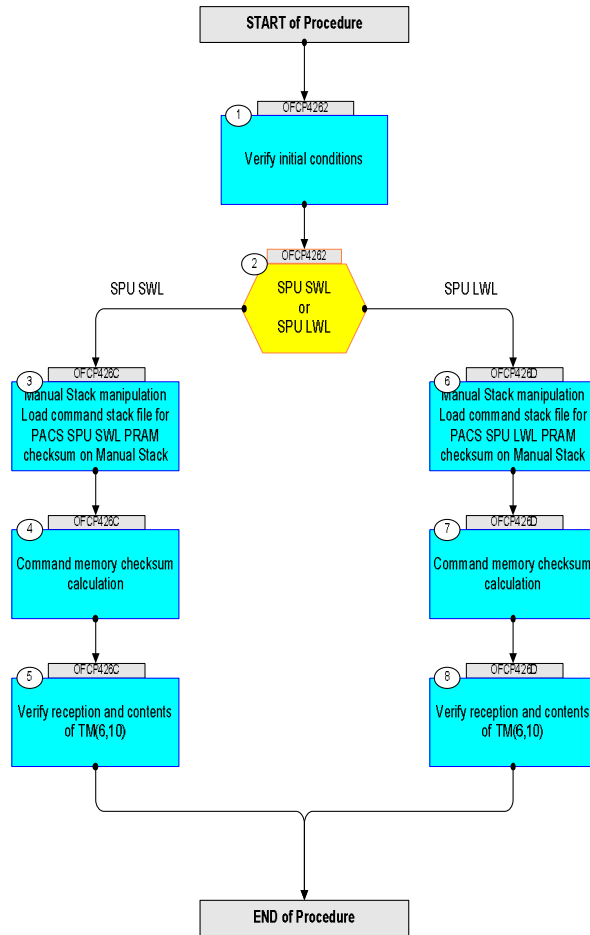


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Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
Beginning of Procedure					
OFCP4262		TC Seq. Name : OFCP4262 () PACS SPU PRAM checksum TimeTag Type: B Sub Schedule ID: <input type="checkbox"/>			
1		Verify initial conditions		Next Step: 2	
		Check: - PACS instrument in INIT mode (DPU ASW running) - SPU ON - DPU-SPU connection established			
		Instrument SOE to confirm PACS instrument mode and SPU status.			
2		SPU SWL or SPU LWL type: [Switch]		Next Step: SPU SWL 3 SPU LWL 6	
End of Sequence					
OFCP426C		TC Seq. Name : OFCP426C () PACS SPU SWL PRAM checksum TimeTag Type: B Sub Schedule ID: <input type="checkbox"/>			
3		Manual Stack manipulation Load command stack file for PACS SPU SWL PRAM checksum on Manual Stack		Next Step: 4	
		Select the File -> LoadStack option from the main menu of the Manual Stack window			
3.1		IF PACS Nominal			
		Select file PASPRMSW_CI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmss.machine from directory /home/pmsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASPRMSW as indicated by the OBSM engineer			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		<p>IMPORTANT:</p> <p>XXXXYYYY = Image ID(X) and Version(Y) - depend on image used for stack generation</p> <p>YYYY_DDD hhmmss - depend on stack generation time</p> <p>machine - depends on the name of the machine used for stack generation</p>			
		<p>File name examples</p> <p>- No model associated to the memory image:</p> <p>PASPRMSW_CI_0002001_N_NoModel_NoModel_2007_254T123300.sun043</p> <p>- CT PASPRMSW1, ID 0003, Version 001 associated to the memory image:</p> <p>PASPRMSW_CI_0002001_C_PASPRMSW1_0003001_2007_337T093320.sun043</p>			
3.2		<p>ELSE</p> <p>PACS Redundant</p>			
		<p>Select file</p> <p>PASRMSWR_CI_XXXXYYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine</p> <p>from directory</p> <p>/home/pmcops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASRMSWR</p> <p>as indicated by the OBSM engineer</p>			
		<p>IMPORTANT:</p> <p>XXXXYYYY = Image ID(X) and Version(Y) - depend on image used for stack generation</p> <p>YYYY_DDD hhmmss - depend on stack generation time</p> <p>machine - depends on the name of the machine used for stack generation</p>			
		<p>File name examples</p> <p>- No model associated to the memory image:</p> <p>PASRMSWR_CI_0002001_N_NoModel_NoModel_2007_254T123300.sun043</p> <p>- CT PASRMSWR1, ID 0003, Version 001 associated to the memory image:</p> <p>PASRMSWR_CI_0002001_C_PASRMSWR1_0003001_2007_337T093320.sun043</p>			
3.3		<p>Check command stack loaded</p>			
		<p>Check that loaded stack contains one or several TCs</p> <p>PC029380</p>			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment															
		<p>Display the Manual Stack in 'Full mode' and check that the Memory ID parameter in the PC029380 command(s) is set to 41 hex:</p> <p>Memory ID = 41 hex</p> <p>Note: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TM parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.</p>																		
		<p>Execute Telecommand</p> <p style="text-align: center;">DPU_MEMORY_CHECK</p> <p>PC029380</p> <p>Command Parameter(s) :</p> <table style="width: 100%; border: none;"> <tr> <td style="padding-left: 40px;">DPU_MEMORY_BLOCK_ID</td> <td style="padding-left: 40px;">PP009380</td> <td style="padding-left: 40px;">41xx hex</td> </tr> <tr> <td style="padding-left: 40px;">DPU_MEMORY_ADDR</td> <td style="padding-left: 40px;">PP003380</td> <td style="padding-left: 40px;"><hex> (Def)</td> </tr> <tr> <td style="padding-left: 40px;">DPU_DATA_LENGTH</td> <td style="padding-left: 40px;">PP008380</td> <td style="padding-left: 40px;"><dec> (Def)</td> </tr> </table> <p>TC Control Flags :</p> <table style="width: 100%; border: none;"> <tr> <td style="padding-left: 40px;">GBM</td> <td style="padding-left: 40px;">IL</td> <td style="padding-left: 40px;">DSE</td> </tr> <tr> <td style="padding-left: 40px;">--Y</td> <td style="padding-left: 40px;">--</td> <td style="padding-left: 40px;">---</td> </tr> </table> <p>Subsch. ID : 90 Det. descr. : REQUEST FOR A CHECKSUM OF A SPECIFIED MEMORY AREA This Telecommand will not be included in the export</p>	DPU_MEMORY_BLOCK_ID	PP009380	41xx hex	DPU_MEMORY_ADDR	PP003380	<hex> (Def)	DPU_DATA_LENGTH	PP008380	<dec> (Def)	GBM	IL	DSE	--Y	--	---		TC	
DPU_MEMORY_BLOCK_ID	PP009380	41xx hex																		
DPU_MEMORY_ADDR	PP003380	<hex> (Def)																		
DPU_DATA_LENGTH	PP008380	<dec> (Def)																		
GBM	IL	DSE																		
--Y	--	---																		
4		Command memory checksum calculation		Next Step: 5																
		Uplink the PC029380 memory check command(s) with ARM-GO																		
		For each command, a TM(6,10) packet must be received on ground.																		
5		Verify reception and contents of TM(6,10)		Next Step: END																
		<p>Note: A TM(6,10) packet will be received for each memory check command uplinked.</p>																		
5.1		IF PACS Prime																		
		<p>Verify Packet Reception</p> <p>MEMORY_CRC Packet Mnemonic : MEMORY_CRC APID : 1152 Type : 6 Subtype : 10 PI1 : PI2 :</p> <p>Note: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TM parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.</p>																		
		<p>Verify Telemetry</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">MEMORY_ID</td> <td style="text-align: center;">PM129380</td> <td style="text-align: center;">= 41xx <hex></td> </tr> </table>	MEMORY_ID	PM129380	= 41xx <hex>		AND=PA029380													
MEMORY_ID	PM129380	= 41xx <hex>																		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Verify Telemetry START_ADDRESS PM130380		AND=PA029380	
		Verify Telemetry LENGTH PM131380		AND=PA029380	
		Verify Telemetry CHECKSUM PM132380		AND=PA029380	
5.2		ELSE PACS Redundant			
		Verify Packet Reception MEMORY_CRC Packet Mnemonic : MEMORY_CRC APID : 1153 Type : 6 Subtype : 10 PI1 : PI2 :			
		Note: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TM parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.			
		Verify Telemetry MEMORY_ID PM129380	= 41xx <hex>	AND=PA029380	
		Verify Telemetry START_ADDRESS PM130380		AND=PA029380	
		Verify Telemetry LENGTH PM131380		AND=PA029380	
		Verify Telemetry CHECKSUM PM132380		AND=PA029380	
5.3		Verify checksum value(s)			
		Check the received checksum(s) against the expected value(s)			
		Verify Telemetry CHECKSUM PM132380	= expected value	AND=PA029380	
End of Sequence					
OFCP426D TC Seq. Name :OFCP426D () PACS SPU LWL PRAM checksum TimeTag Type: B Sub Schedule ID: <input type="checkbox"/>					
6		Manual Stack manipulation Load command stack file for PACS SPU LWL PRAM checksum on Manual Stack		Next Step: 7	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Select the File -> LoadStack option from the main menu of the Manual Stack window			
6.1		IF PACS Nominal			
		Select file PASPRMLW_CI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine from directory /home/pmcops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASPRMLW as indicated by the OBSM engineer			
		IMPORTANT: XXXXYYY = Image ID(X) and Version(Y) - depend on image used for stack generation YYYY_DDD hhmmss - depend on stack generation time machine - depends on the name of the machine used for stack generation			
		File name examples - No model associated to the memory image: PASPRMLW_CI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT PASPRMLW1, ID 0003, Version 001 associated to the memory image: PASPRMLW_CI_0002001_C_PASPRMLW1_0003001_2007_337T093320.sun043			
6.2		ELSE PACS Redundant			
		Select file PASRMLWR_CI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine from directory /home/pmcops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASRMLWR as indicated by the OBSM engineer			
		IMPORTANT: XXXXYYY = Image ID(X) and Version(Y) - depend on image used for stack generation YYYY_DDD hhmmss - depend on stack generation time machine - depends on the name of the machine used for stack generation			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		File name examples - No model associated to the memory image: PASRMLWR_CI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT PASRMLWR1, ID 0003, Version 001 associated to the memory image: PASRMLWR_CI_0002001_C_PASRMLWR1_0003001_2007_337T093320.sun043			
6.3		Check command stack loaded			
		Check that loaded stack contains one or several TCs PC029380			
		Display the Manual Stack in 'Full mode' and check that the Memory ID parameter in the PC029380 command(s) is set to 61 hex : Memory ID = 61 hex Note: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TM parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.			
		Execute Telecommand <div style="text-align: right; margin-right: 100px;">DPU_MEMORY_CHECK</div> <div style="text-align: right; margin-right: 100px;">PC029380</div> <i>Command Parameter(s) :</i> <div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> DPU_MEMORY_BLOCK_ID DPU_MEMORY_ADDR DPU_DATA_LENGTH </div> <div style="width: 30%;"> PP009380 PP003380 PP008380 </div> <div style="width: 25%;"> 61xx hex <hex> (Def) <dec> (Def) </div> </div> <i>TC Control Flags :</i> <div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> GBM IL DSE --Y -- --- </div> </div> <i>Subsch. ID : 90</i> <i>Det. descr. : REQUEST FOR A CHECKSUM OF A SPECIFIED MEMORY AREA</i> This Telecommand will not be included in the export		TC	
7		Command memory checksum calculation		Next Step: 8	
		Uplink the PC029380 memory check command(s) with ARM-GO			
		For each command, a TM(6,10) packet must be received on ground.			
8		Verify reception and contents of TM(6,10)		Next Step: END	
		Note: A TM(6,10) packet will be received for each memory check command uplinked.			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
8.1		IF PACS Prime			
		Verify Packet Reception MEMORY_CRC Packet Mnemonic : MEMORY_CRC APID : 1152 Type : 6 Subtype : 10 PI1 : PI2 :			
		Note: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TM parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.			
		Verify Telemetry MEMORY_ID PM129380	= 61xx <hex>	AND=PA029380	
		Verify Telemetry START_ADDRESS PM130380		AND=PA029380	
		Verify Telemetry LENGTH PM131380		AND=PA029380	
		Verify Telemetry CHECKSUM PM132380		AND=PA029380	
8.2		ELSE PACS Redundant			
		Verify Packet Reception MEMORY_CRC Packet Mnemonic : MEMORY_CRC APID : 1153 Type : 6 Subtype : 10 PI1 : PI2 :			
		Note: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TM parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.			
		Verify Telemetry MEMORY_ID PM129380	= 61xx <hex>	AND=PA029380	
		Verify Telemetry START_ADDRESS PM130380		AND=PA029380	
		Verify Telemetry LENGTH PM131380		AND=PA029380	
		Verify Telemetry CHECKSUM PM132380		AND=PA029380	
8.3		Verify checksum value(s)			
		Check the received checksum(s) against the expected value(s)			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Verify Telemetry CHECKSUM PM132380	= expected value	AND=PA029380	
End of Sequence					
End of Procedure					