Check PACS SPU EEPROM memory area (checksum calculation)
File: H_FCP_OBS_4260.xls
Author: Liviu Stefanov

Procedure Summary

Objectives

This Herschel OBSM nominal procedure is used to perform a memory check of one or several PACS SPU EEPROM 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

OFCP426A
OFCP426B

Referenced Displays

ANDs **GRDs** **SLDs**
PA029380

Configuration Control Information

Status : Version 2 - Unchanged
Last Checkin: 05/09/08

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DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
30/01/08	1	1	Created	lstefanov-hp	
05/09/08	2	2	1. updated initial conditions on cover page and in step 1 2. added current steps 3.1 and 3.2 to separate checksum stack load for PACS Nom and Red 3. added current steps 6.1 and 6.2 to separate checksum stack load for PACS Nom and Red	lstefanov-hp	

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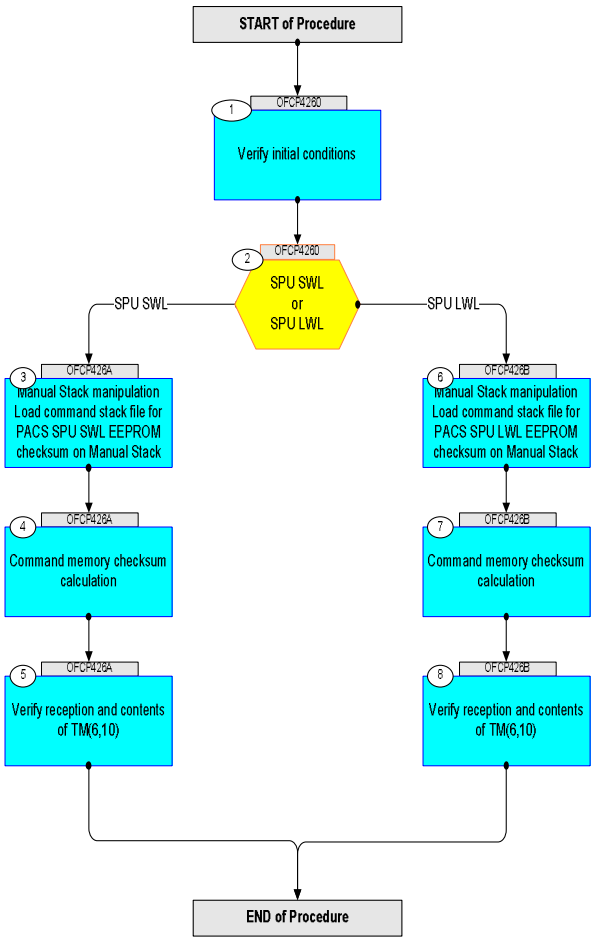
Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Beginning of Procedure			
	OFCP4260	*TC Seq. Name :* OFCP4260 ( ) PACS SPU EEPROM checksum *TimeTag Type: B* *Sub Schedule ID:* □			
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			
	OFCP426A	*TC Seq. Name :* OFCP426A ( ) PACS SPU SWL EEPROM checksum *TimeTag Type: B* *Sub Schedule ID:* □			
3		Manual Stack manipulation Load command stack file for PACS SPU SWL EEPROM 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 **PASPEPSW_CI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/pmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASPEPSW as indicated by the OBSM engineer			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		IMPORTANT: XXXXYYYY = 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: PASPEPSW_CI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT PASPEPSW1, ID 0003, Version 001 associated to the memory image: PASPEPSW_CI_0002001_C_PASPEPSW1_0003001_2007_337T093320.sun043			
3.2		ELSE PACS Redundant			
		Select file **PASEPSWR_CI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/pmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASEPSWR as indicated by the OBSM engineer			
		IMPORTANT: XXXXYYYY = 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: PASEPSWR_CI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT PASEPSWR1, ID 0003, Version 001 associated to the memory image: PASEPSWR_CI_0002001_C_PASEPSWR1_0003001_2007_337T093320.sun043			
3.3		Check command stack loaded			
		Check that loaded stack contains one or several TCs **PC029380**			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the PC029380 command(s) is set to **43 hex**: **Memory ID = 43 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 **DPU_MEMORY_CHECK** **PC029380** *Command Parameter(s) :* **DPU_MEMORY_BLOCK_ID PP009380** **43xx hex** **DPU_MEMORY_ADDR PP003380** **<hex>** (Def) **DPU_DATA_LENGTH PP008380** **<dec>** (Def) *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 90* Det. descr. : REQUEST FOR A CHECKSUM OF A SPECIFIED MEMORY AREA This Telecommand will not be included in the export		**TC**	
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	
		Note: A TM(6,10) packet will be received for each memory check command uplinked.			
5.1		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** **= 43xx <hex>**		AND=PA029380	

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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**	**= 43xx <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			
	OFCP426B	*TC Seq. Name :*OFCP426B ( ) PACS SPU LWL EEPROM checksum *TimeTag Type: B* *Sub Schedule ID:* □			
6		Manual Stack manipulation Load command stack file for PACS SPU LWL EEPROM checksum on Manual Stack		Next Step: 7	

Check PACS SPU EEPROM memory area (checksum calculation)
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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 **PASPEPLW_CI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/pmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASPEPLW as indicated by the OBSM engineer			
		IMPORTANT: XXXXYYYY = 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: PASPEPLW_CI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT PASPEPLW1, ID 0003, Version 001 associated to the memory image: PASPEPLW_CI_0002001_C_PASPEPLW1_0003001_2007_337T093320.sun043			
6.2		ELSE PACS Redundant			
		Select file **PASEPLWR_CI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/pmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASEPLWR as indicated by the OBSM engineer			
		IMPORTANT: XXXXYYYY = 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: PASEPLWR_CI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT PASEPLWR1, ID 0003, Version 001 associated to the memory image: PASEPLWR_CI_0002001_C_PASEPLWR1_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 **63 hex**: **Memory ID = 63 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 **DPU_MEMORY_CHECK** *Command Parameter(s) :* **DPU_MEMORY_BLOCK_ID** **PP009380** **DPU_MEMORY_ADDR** **PP003380** **DPU_DATA_LENGTH** **PP008380** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 90* Det. descr. : REQUEST FOR A CHECKSUM OF A SPECIFIED MEMORY AREA This Telecommand will not be included in the export	**PC029380** **63xx hex** **<hex>** (Def) **<dec>** (Def)	**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**	**= 63xx <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**	**= 63xx <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			