Load HIFI DPU OBS in instrument Intermediate mode
File: H_FCP_OBS_3110.xls
Author: Liviu Stefanov

Procedure Summary

Objectives

This Herschel OBSM nominal procedure is used to execute the HIFI OBS full image upload in instrument Intermediate mode (OBS upload from Application SW). It is called by the FOP HIFI procedure H_FCP_HIF_CLOM.
The OBS image is loaded into the HIFI DPU PM-High memory and the image integrity after upload is checked via checksum calculation and verification.

The copying of the OBS image from PM-High to PM-Low and OBS restart is executed in the calling procedure H_FCP_HIF_CLOM. The calling procedure also includes the PM-High OBS image checksum verification and updated OBS release numbers verification.

This procedure assumes that the memory load and memory check command stacks have already been generated using the OBSM system and are ready for loading on the Manual Stack. The command stack generation activity is not covered by this procedure.

Note: Patching (as alternative to full image upload) of the HIFI DPU OBS in instrument Intermediate mode can be conducted via procedure H_FCP_OBS_3111.

Summary of Constraints

CDMU in Operational Mode
- HIFI in Intermediate mode (ASW running)

Memory areas are Loaded through TC(6,2) and Checked through TC(6,9); this TCs 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
- HIFI in Intermediate mode (ASW running)

End of Procedure

Same as start except:
- New HIFI OBS image loaded in DPU PM-High memory

Reference File(s)

Input Command Sequences

Output Command Sequences

OFCP3110

Referenced Displays

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ANDs GRDs SLDs

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
30/01/2008	1	1	Created	lstefanov-hp	
06/01/2009	2	2	1. added current steps 2 and 3 and sub-steps for OBS image dump before new image load 2. current step 4 and sub-steps updated to cover only OBS upload command stack load (separated manipulation of patch and check command stacks) 3. current step 4.1 updated: created current sub-steps 4.1 and 4.2 to separate patch stack load for Prime and Redundant units 4. added current step 6 and sub-steps for OBS image check command stack load (separated manipulation of patch and check command stacks)	lstefanov-hp	
10/06/2009		3	1. steps 2.3, 4.3, 6.3, 7.1, 7.2 and sub-steps updated for address and length values compatible with HIFI OBS v.6.2.1 2. step 8 updated: call to proc. H_FCP_OBS_3142 replaced by call to H_FCP_OBS_3142 (image monitor replaced by image update)	lstefanov-hp	
16/06/2009		4	1. steps 6 and 7 and sub-steps updated for verification via checksums of the whole OBS image in PM-High, as advised by Luc Dubbeldam in e-mail from 11/06/2009	lstefanov-hp	
08/09/2009	2.5	5	1. step 3.5 updated for "Image UPDATE" instead of "Image MONITOR"	lstefanov-hp	
03/12/2009		6	Updated for sw version 6.3.1	m.baker-hp	
10/02/2010		7	Updated in line with OBSW 6.4.1	m.baker-hp	
10/02/2010		8	Corrected typo in OBS ID from 6.4.1 to 6.3.4	m.baker-hp	
23/03/2010	3	9	Updated for ICU software 6.4	m.baker-hp	
20/04/2010		10	Update for Version 6.4.1 For Upload to S/C on 21/04/2010	n.krusenstiern-hp	
20/04/2010		11	Updated minor typos steps 2.2, 4.2, 7.1	m.baker-hp	
26/10/2010		12	Update for Version 6.4.2 For Upload to S/C on 03/11/2010	n.krusenstiern-hp	
27/01/2011		13	Updated for OBSW 6.5.2	n.krusenstiern-hp	
27/01/2011		14	Check Memory ID changed from 0x0000 to 0x0003 in 4.2.2 and to 0x004 in 6.2.2.	n.krusenstiern-hp	
13/04/2011	3.1	15	Update for Version 6.5.3 Removed unused FCT CRC checks (Old Steps 5 & 6) For Upload to S/C on 14/04/2011	n.krusenstiern-hp	

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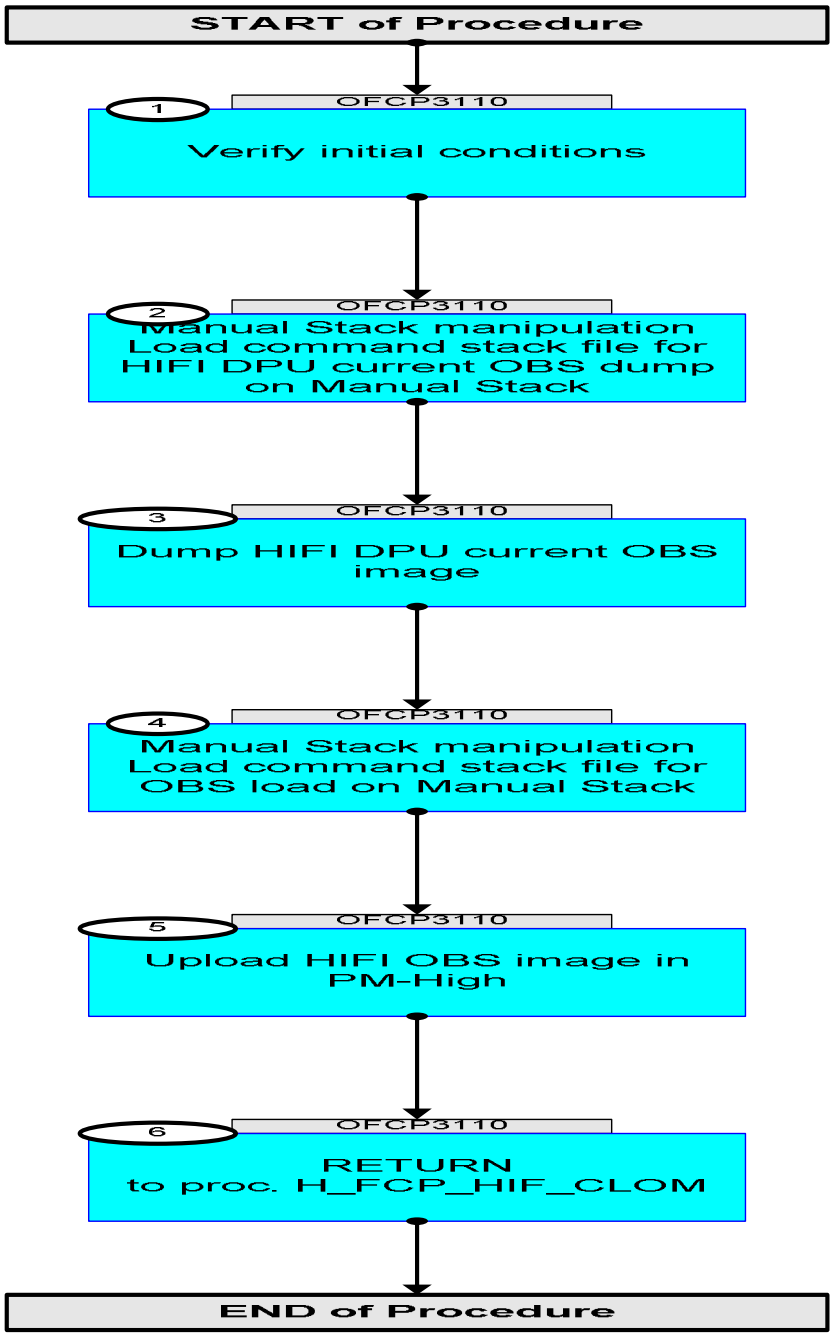
Procedure Flowchart Overview



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Author: n.krusenstiern-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Beginning of Procedure			
	OFCP3110	*TC Seq. Name :* OFCP3110 (HIFI OBS load ASW) Load HIFI OBS from ASW and check image *TimeTag Type: B* *Sub Schedule ID:*			
1		Verify initial conditions		Next Step: 2	
		Check HIFI instrument in **Intermediate mode** (ASW running)			
		Instrument SOE to confirm HIFI instrument mode			
		Note: Initial conditions are verified in calling procedure H_FCP_HIF_CLOM.			
2		Manual Stack manipulation Load command stack file for HIFI DPU current OBS dump on Manual Stack		Next Step: 3	
		NOTE: The current procedure assumes that the memory dump in Live mode is performed using commands with immediate execution.			
		Select the File -> **LoadStack** option from the main menu of the Manual Stack window			
2.1		HIFI Redundant			
		Select file **HIDPRMPR_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/HIDPRMPR 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 **example** HIDPRMPR_DI_0014001_N_NoModel_NoModel_2011_101T172257.ws044			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		File name HIFI OBS **v.6.5.3**: HIDPRMPR_DI_0014001_N_NoModel_NoModel_2011_101T172257.ws044			
2.2		Check memory dump command stack loaded			
		Note: The HIFI DPU OBS image is dumped from the **PM-LOW** area			
		For HIFI OBS **v.6.5.3**: **Start Address = 00.0000 hex** **End Address = 01.8E1E hex** **Length = 01.8E1E hex**			
		IMPORTANT: **# of TCs**, **Address** and **Length** values in the following sub-steps are **applicable to** HIFI OBS **v.6.5.3**			
		Note: The '**Length**' parameter of the memory dump command is a 16-bit long parameter. A memory dump TC can cover a number of **65535 dec** (**FFFF hex**) **SAUs**.			
2.2.1		Check number of memory dump commands in the stack			
		Check that loaded stack contains: **2** TCs **XC005998**			
2.2.2		Check Memory ID			
		Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the XC005998 commands is set to **00 hex**: **Memory ID = 00 hex** **Note**: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TC parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.			
		Execute Telecommand **HIFI Memory Dump** *Command Parameter(s) :* **Memory ID** **XH008998** **Start Address** **XH009998** **Length** **XH010998** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 70* Det. descr. : Dump HIFI Memory Using Absolute Addresses This Telecommand will not be included in the export	**XC005998** **00xx <hex>** **<hex>** (Def) **<hex>** (Def)	**TC**	

Load HIFI DPU OBS in instrument Intermediate mode
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
2.2.3		Check start address and length of first command in the stack			
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **first** XC005998 command: **Start Address** = **00.0000 hex** **Length** = **FFFF hex** **Note**: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TC parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.			
		Execute Telecommand **HIFI Memory Dump** **XC005998** *Command Parameter(s) :* **Memory ID XH008998 0000 <hex>** **Start Address XH009998 0000 <hex>** **Length XH010998 FFFF <hex>** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 70* Det. descr. : Dump HIFI Memory Using Absolute Addresses This Telecommand will not be included in the export		**TC**	
2.2.4		Check start address and length of second command in the stack			
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **second** XC005998 command: **Start Address** = **FFFF hex** **Length** = **8E20 hex** **Note**: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TC parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.			
		Execute Telecommand **HIFI Memory Dump** **XC005998** *Command Parameter(s) :* **Memory ID XH008998 0000 <hex>** **Start Address XH009998 FFFF <hex>** **Length XH010998 8E17 <hex>** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 70* Det. descr. : Dump HIFI Memory Using Absolute Addresses This Telecommand will not be included in the export		**TC**	
3		Dump HIFI DPU current OBS image		Next Step: 4	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Note: The HIFI DPU OBS image is dumped from the **PM-Low** area			
3.1		MCS OBSM preparation for Image update in LIVE mode			
		Note: 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.			
3.1.1		Select 'Image UPDATE' from the menu			
		Select the **Image** menu of the ***OBSM Desktop***. From the Image menu, select **Update**. The 'Image Catalog' window opens.			
3.1.2		Select image to be updated HIFI Redundant			
		Select the image to be updated for the memory device **HIDPRMPR.** The 'Image UPDATE' window opens.			
3.1.3		Start dump TM processing			
		In **LIVE** mode, processing of incoming real-time telemetry starts automatically after the image selection.			
3.2		Upload commands to dump the HIFI DPU current OBS image			
		Uplink the **XC005998** memory dump commands with **ARM-GO**			
		For each command, several TM(6,6) packets must be received on ground.			
3.3		Verify reception of TM(6,6)			
		Note: One or more TM(6,6) packets will be received for each memory dump command uplinked. APID = 1025 for HIFI redundant.			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Verify Packet Reception HIFI_R_memory_dump Packet Mnemonic : H_mem_dump APID : 1025 Type : 6 Subtype : 6 PI1 : PI2 :			
3.4		Check OBSM dump packet processing			
		Check that the OBSM is processing the incoming memory dump packets.			
3.5		Save merged image			
		Save merged image with **new ID**.			
4		Manual Stack manipulation Load command stack file for OBS load on Manual Stack		Next Step: 5	
		NOTE: The current procedure assumes that the memory load is performed using commands with immediate execution.			
		Select the File -> **LoadStack** option from the main menu of the Manual Stack window			
4.1		HIFI Redundant			
		Select file **HIDPRMPR_PI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/HIDPRMPR 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 HIFI OBS **v.6.5.3**: HIDPRMPR_PI_0014001_N_NoModel_NoModel_2011_101T172237.ws044			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
4.2		Check memory load command stack loaded			
		For HIFI OBS **v.6.5.3**: The start address of the HIDPRMPR memory image used for memory load command stack generation is **00.000 hex**, and the last address in the image is **01.8E15 hex**. The **offset** applied to the memory image for OBS upload in PM-High is **03.FFFF hex**. Consequently, the first address to be loaded is **03.FFFF hex**, and the last address is **05.8E14 hex**: **Start Address** = **03.FFFF hex** **End Address** = **05.8E1D hex** **Length** = **01.8E1E hex**			
		IMPORTANT: # **of TCs**, **Address** and **Length** values in the following sub-steps are **applicable to** HIFI OBS **v.6.5.3**			
4.2.1		Check number of memory load commands in the stack			
		Check that loaded stack contains: **2683** TCs **XC000998** for OBS **v.6.5.3**			
4.2.2		Check Memory ID			
		Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the XC000998 commands is set to **03 hex**: **Memory ID = 03 hex** **Note**: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TC parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.			
		Execute Telecommand **HIFI Memory Load**	**XC000998**	**TC**	
		Command Parameter(s) : **Memory ID** **XH000998** **03xx hex** **Start Address** **XH001998** **<hex>** (Def) **Length of Block** **XH003998** **<dec>** (Def) **Var length octet string** **XH004998** **<hex>** (Def) **Checksum** **XH005998** **<hex>** (Def) *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 30* Det. descr. : Load HIFI Memory Using Absolute Addresses This Telecommand will not be included in the export			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
4.2.3		Check start address and length of first command in the stack			
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **first** XC000998 command: **Start Address** = **03.FFFF hex** **Length** = **38 dec** **Note**: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TC parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.			
		Execute Telecommand **HIFI Memory Load** **XC000998** *Command Parameter(s) :* **Memory ID** **XH000998** **0003 <hex>** **Start Address** **XH001998** **FFFF <hex>** **Length of Block** **XH003998** **38 <dec>** **Var length octet string** **XH004998** **<hex>** (Def) **Checksum** **XH005998** **792 <hex>** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 30* Det. descr. : Load HIFI Memory Using Absolute Addresses This Telecommand will not be included in the export		**TC**	
4.2.4		Check start address and length of last command in the stack			
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **last** XC000998 command: **Start Address** = **05.8E1B hex** **Length** = **03 dec** **Note**: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TC parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.			
		Execute Telecommand **HIFI Memory Load** **XC000998** *Command Parameter(s) :* **Memory ID** **XH000998** **0005 <hex>** **Start Address** **XH001998** **8DF5 <hex>** **Length of Block** **XH003998** **32 <dec>** **Var length octet string** **XH004998** **<hex>** (Def) **Checksum** **XH005998** **<hex>** (Def) *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 30* Det. descr. : Load HIFI Memory Using Absolute Addresses This Telecommand will not be included in the export		**TC**	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
5		Upload HIFI OBS image in PM-High		Next Step: 6	
		Uplink the **XC000998** memory load commands with **ARM-GO**			
		For each TC XC000998 successfuly executed on-board, a TM(1,1) and TM(1,7) packet shall be received on ground.			
		Verify Packet Reception HIFI_R_TC_acceptance_OK Packet Mnemonic : H_Accepted APID : 1025 Type : 1 Subtype : 1 PI1 : PI2 :			
		Verify Packet Reception HIFI_R_TC_execution_OK Packet Mnemonic : H_Completed APID : 1025 Type : 1 Subtype : 7 PI1 : PI2 :			
6		RETURN to proc. H_FCP_HIF_CLOM		Next Step: END	
		IMPORTANT: After OBS image copy from PM-High to PM-Low executed in H_FCP_HIF_CLOM, you may **dump** the HFI DPU **new OBS image** from **PM-Low** using FOP procedure **H_FCP_OBS_3143**			
		End of Sequence			
		End of Procedure			