

FPU functional test
 File: H_COP_HIF_NFF5.xls
 Author: R. Biggins



Procedure Summary

Objectives

The objective of this procedure is to execute a functional test on band 5a of the FPU

- Initialise FPU
- Execute FPU heater test

Based on procedure:
 HIFI-COP-1.2-FPU_FT (v6)

Summary of Constraints

Real-time science packets should be enabled for downlink for HIFI analysis

Spacecraft Configuration

Start of Procedure

n/a

End of Procedure

n/a

Reference File(s)

Input Command Sequences

Output Command Sequences

HCHNFF5

Referenced Displays

ANDs	GRDs	SLDs
ZAZ9C999		
HA038289		
HA039289		

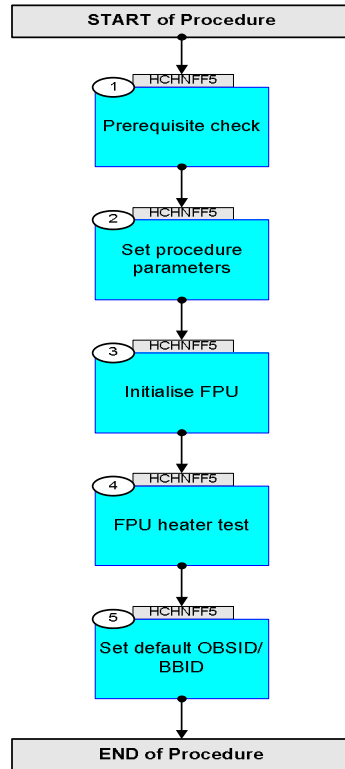
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
27/10/08	2	1	Created	R. Biggins	
			Updates due to SVT-2/SOVT-2 testing <input type="checkbox"/>		
			<input type="checkbox"/>		
24/02/09	2.1	2	- Summary updated <input type="checkbox"/> - TCs Set_OBS_ID and HIFI_non_periodic_hk_FCU removed from step 4	R. Biggins	
			Changes based on updates from D. Teyssier <input type="checkbox"/>		
07/04/09	2.3	3	- TC flags updated <input type="checkbox"/> - Parameter values in step 4 updated	R. Biggins	

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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 : HCHNFF5 (FPU functional test)				
TimeTag Type: B Sub Schedule ID: □				
1		Prerequisite check		Next Step: 2
1.1		HSC/ICC input		□
		Verify that the HSC/ICC has supplied a valid OBSID value: OBS_ID = 0xnnnn nnnn		
2		Set procedure parameters		Next Step: 3
	ET=+00.00.01 UT=+00.00.01	HIFI_Set_OBS_ID Command Parameter(s) : HIFI_BB_ID HP001197 HIFI_OBS_ID HP000197 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Set Observation-ID and Building-Block-ID	HIFI_Set_OBS_ID HC014289 17700001 <hex> OBS_ID	
		Verify Telemetry BB_ID_per_hk HM004190	= 17700001 <hex>	AND=ZAZ9C999
		Verify Telemetry OBS_ID_per_hk HM003190	OBS_ID	AND=ZAZ9C999
	ET=+00.00.00 UT=+00.00.00	HIFI_Housekeeping_on Command Parameter(s) : HIF_HK_rate HP012197 HIF_FCU_S HP006197 HIF_LCU_S HP007197 HIF_WBSV_S HP009197 HIF_WBSH_S HP008197 HIF_HRSV_S HP011197 HIF_HRSH_S HP010197 TC Control Flags : GBM IL DSE --Y -- ---	HIFI_Housekeeping_on HC016289 1_pkt_per_s ON (Def) ON (Def) ON (Def) ON (Def) ON (Def) ON (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Subsch. ID : 70 Det. descr. : Sets periodic housekeeping packet generation period		
		Verify: The following TM(3,25) packets should be produced once every second: HIFI_essential_HK (APID 1024) HIFI_HK_rev_7 (APID 1026)		
3		Initialise FPU		Next Step: 4
	ET+=00.00.01 UT+=00.00.01	HIFI_Configure_FCU_Power HIFI_Configure_FCU_Power Command Parameter(s) : HIFI_BB_ID HP001197 HF_CPR_Mixer_H_S HP203191 HF_CPR_Mixer_V_S HP204191 HF_CPR_Chopper_S HP205191 HF_CPR_UCH_S HP206191 HF_CPR_UCV_S HP207191 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70	HC027289	
		Det. descr. : Switch ON or OFF the five FCU-boards (mixer H/V, chopper, IF HV)		
		Verify Telemetry BB_ID_per_hk HM004190	= 1C200001 <hex>	AND=ZAZ9C999
	ET+=00.00.00 UT+=00.00.00	HIFI_P_Configure_FCU HIFI_P_Configure_FCU Command Parameter(s) : HIFI_BB_ID HP001197 HF_CPR_MX BAND HP202191 HF_CH1_DPFP P1 HP176191 HF_CH2_FIF1_Drain_V HP177191 HF_CH2_FIF1_Drain_C HP178191 HF_CH2_FIF2_Drain_V HP179191 HF_CH2_FIF2_Drain_C HP180191 HF_CH2_SIF1_Drain_V HP181191 HF_CH2_SIF1_Drain_C HP182191 HF_CH2_SIF2_Drain_V HP183191 HF_CH2_SIF2_Drain_C HP184191	HC182289	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		HF_CH2_SIF3_Drain_V HP185191 HF_CH2_SIF3_Drain_C HP186191 HF_CV1_DPFPF1 HP191191 HF_CV2_FIF1_Drain_V HP192191 HF_CV2_FIF1_Drain_C HP193191 HF_CV2_FIF2_Drain_V HP194191 HF_CV2_FIF2_Drain_C HP195191 HF_CV2_SIF1_Drain_V HP196191 HF_CV2_SIF1_Drain_C HP197191 HF_CV2_SIF2_Drain_V HP198191 HF_CV2_SIF2_Drain_C HP199191 HF_CV2_SIF3_Drain_V HP200191 HF_CV2_SIF3_Drain_C HP201191 HF_CPR_CH_SINE_S HP211191 HF_CPR_CH_LOOP_S HP210191	0.7 V 2.8 mA 0 <dec> 0.75 V 4.0 mA 0.65 V 3.0 mA 0.8 V 2.5 mA 0.8 V 2.5 mA 0.8 V 2.5 mA 2.5 mA ON (Def) CLOSE (Def)	
		HF_CPR_CHFPG1 HP212191 HF_CPR_CHFPG2 HP213191 HF_CPR_CHFPZ1 HP214191 HF_CPR_CHFPZ2 HP215191 HF_CPR_CHFPP2 HP216191 HF_CPR_Cal_Heater_C HP217191 HF_CH1_MXBIAS_V HP172191 HF_CH1_MX_MG_C HP173191 HF_CV1_MXBIAS_V HP187191 HF_CV1_MX_MG_C HP188191 HF_P_Chopper_Rot HP454191 HF_CH1_DFACT_C HP174191 HF_CV1_DFACT_C HP189191	17 <dec> 201 <dec> 1010 <dec> 885 <dec> 149 <dec> 1.1 mA 2.015 mV 15.0 mA 2.015 mV 15.0 mA -1.07 V 0.0 mA 0.0 mA	
		GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Configure the FCU-subsystem (prime)		
	ET=+00.00.03 UT=+00.00.03	HIFI_CH1_MX_MG_C Command Parameter(s) : HIFI_BB_ID HP001197 HF_CH1_MX_MG_C HP173191 Subsch. ID : 70 Det. descr. : Send single command to set H mixer magnet current	HIFI_CH1_MX_MG_C HC096289 1C200001 <hex> 5.5 mA	
	ET=+00.00.00 UT=+00.00.00	HIFI_CV1_MX_MG_C Command Parameter(s) : HIFI_BB_ID HP001197 HF_CV1_MX_MG_C HP188191 Subsch. ID : 70 Det. descr. : Send single command to set V mixer magnet current	HIFI_CV1_MX_MG_C HC099289 1C200001 <hex> 10.8 mA	
		Verify: Verify the content of the following ANDs with the HIFI representative:		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch								
		HA038289 FCU_H_device HA039289 FCU_V_device HA042289 FCU_PR_power HA044289 FCU_common										
4		FPU heater test		Next Step: 5								
	ET=+00.00.01 UT=+00.00.01	HIFI_CH1_MX_MG_C HIFI_CH1_MX_MG_C Command Parameter(s) : <table style="margin-left: 40px;"> <tr> <td>HIFI_BB_ID</td> <td>HP001197</td> <td>CA80001 <hex></td> </tr> <tr> <td>HF_CH1_MX_MG_C</td> <td>HP173191</td> <td>0.0 mA (Def)</td> </tr> </table> TC Control Flags : <table style="margin-left: 40px;"> <tr> <td>GBM IL DSE</td> </tr> <tr> <td>--Y -- ---</td> </tr> </table> Subsch. ID : 70 Det. descr. : Send single command to set H mixer magnet current	HIFI_BB_ID	HP001197	CA80001 <hex>	HF_CH1_MX_MG_C	HP173191	0.0 mA (Def)	GBM IL DSE	--Y -- ---	HC096289	
HIFI_BB_ID	HP001197	CA80001 <hex>										
HF_CH1_MX_MG_C	HP173191	0.0 mA (Def)										
GBM IL DSE												
--Y -- ---												
	ET=+00.00.00 UT=+00.00.00	HIFI_CV1_MX_MG_C HIFI_CV1_MX_MG_C Command Parameter(s) : <table style="margin-left: 40px;"> <tr> <td>HIFI_BB_ID</td> <td>HP001197</td> <td>CA80001 <hex></td> </tr> <tr> <td>HF_CV1_MX_MG_C</td> <td>HP188191</td> <td>0.0 mA (Def)</td> </tr> </table> Subsch. ID : 70 Det. descr. : Send single command to set V mixer magnet current	HIFI_BB_ID	HP001197	CA80001 <hex>	HF_CV1_MX_MG_C	HP188191	0.0 mA (Def)	HC099289			
HIFI_BB_ID	HP001197	CA80001 <hex>										
HF_CV1_MX_MG_C	HP188191	0.0 mA (Def)										
		Verify: In the 2 seconds following the upcoming TC, the following parameter (HF_AH1_DHTR_C) should increase in the vicinity of 17mA, then drop to its initial value.										
	ET=+00.00.01 UT=+00.00.01	HIFI_HF_CH1_DHTR_C HIFI_HF_CH1_DHTR_C Command Parameter(s) : <table style="margin-left: 40px;"> <tr> <td>HIFI_BB_ID</td> <td>HP001197</td> <td>CA80001 <hex></td> </tr> <tr> <td>HF_CH1_DHTR_P</td> <td>HP218191</td> <td>3000.0 ms</td> </tr> </table> TC Control Flags : <table style="margin-left: 40px;"> <tr> <td>GBM IL DSE</td> </tr> <tr> <td>--Y -- ---</td> </tr> </table> Subsch. ID : 70 Det. descr. : Send single command to generate a H deflux heater pulse	HIFI_BB_ID	HP001197	CA80001 <hex>	HF_CH1_DHTR_P	HP218191	3000.0 ms	GBM IL DSE	--Y -- ---	HC093289	
HIFI_BB_ID	HP001197	CA80001 <hex>										
HF_CH1_DHTR_P	HP218191	3000.0 ms										
GBM IL DSE												
--Y -- ---												
		Verify Telemetry <table style="margin-left: 40px;"> <tr> <td>HF_AH1_DHTR_C</td> <td>HM042191</td> <td>see above</td> </tr> </table>	HF_AH1_DHTR_C	HM042191	see above		AND=HA038289					
HF_AH1_DHTR_C	HM042191	see above										
		Verify: In the 2 seconds following the upcoming TC, the following parameter (HF_AV1_DHTR_C) should increase in the vicinity of 17mA, then drop to its initial value.										

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+00.00.04 UT=+00.00.04	HIFI_HF_CV1_DHTR_C HIFI_HF_CV1_DHTR_C Command Parameter(s) : HIFI_BB_ID HP001197 HF_CV1_DHTR_P HP219191 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Send single command to generate a V deflux heater pulse	HC094289 CA80001 <hex> 3000.0 ms	
		Verify Telemetry HF_AV1_DHTR_C HM133191	see above	AND=HA039289
	ET=+00.02.04 UT=+00.02.04	HIFI_CH1_MX_MG_C HIFI_CH1_MX_MG_C Command Parameter(s) : HIFI_BB_ID HP001197 HF_CH1_MX_MG_C HP173191 Subsch. ID : 70 Det. descr. : Send single command to set H mixer magnet current	HC096289 CA80001 <hex> 15.0 mA	
	ET=+00.00.00 UT=+00.00.00	HIFI_CV1_MX_MG_C HIFI_CV1_MX_MG_C Command Parameter(s) : HIFI_BB_ID HP001197 HF_CV1_MX_MG_C HP188191 Subsch. ID : 70 Det. descr. : Send single command to set V mixer magnet current	HC099289 CA80001 <hex> 15.0 mA	
	ET=+00.00.01 UT=+00.00.01	HIFI_CH1_MX_MG_C HIFI_CH1_MX_MG_C Command Parameter(s) : HIFI_BB_ID HP001197 HF_CH1_MX_MG_C HP173191 Subsch. ID : 70 Det. descr. : Send single command to set H mixer magnet current	HC096289 CA80001 <hex> 5.5 mA	
	ET=+00.00.00 UT=+00.00.00	HIFI_CV1_MX_MG_C HIFI_CV1_MX_MG_C Command Parameter(s) : HIFI_BB_ID HP001197 HF_CV1_MX_MG_C HP188191 Subsch. ID : 70 Det. descr. : Send single command to set V mixer magnet current	HC099289 CA80001 <hex> 10.48 mA	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+00.00.01 UT=+00.00.01	HIFI_Housekeeping_on HIFI_Housekeeping_on Command Parameter(s) : HIF_HK_rate HP012197 HIF_FCU_S HP006197 HIF_LCU_S HP007197 HIF_WBSV_S HP009197 HIF_WBSH_S HP008197 HIF_HRSV_S HP011197 HIF_HRSH_S HP010197 Subsch. ID : 70 Det. descr. : Sets periodic housekeeping packet generation period	HC016289 1_pkt_per_4_s ON (Def) ON (Def) ON (Def) ON (Def) ON (Def) ON (Def)	
		Verify: The following TM(3,25) packets should be produced once every 4 seconds: HIFI_essential_HK (APID 1024) HIFI_HK_rev_7 (APID 1026)		
5		Set default OBSID/BBID		Next Step: END
	ET=+00.00.01 UT=+00.00.01	HIFI_Set_OBS_ID HIFI_Set_OBS_ID Command Parameter(s) : HIFI_BB_ID HP001197 HIFI_OBS_ID HP000197 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Set Observation-ID and Building-Block-ID	HC014289 0 <hex> (Def) 0 <hex> (Def)	
		Verify Telemetry BB_ID_per_hk HM004190	= 0 <hex>	AND=ZAZ9C999
		Verify Telemetry OBS_ID_per_hk HM003190	= 0 <hex>	AND=ZAZ9C999
End of Procedure				