

FPU functional test
 File: H_COP_HIF_RFF2.xls
 Author: R. Biggins



Procedure Summary

Objectives

The objective of this procedure is to execute a functional test on band 2a 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

End of Procedure

Reference File(s)

Input Command Sequences

Output Command Sequences
 HCHRFF2

Referenced Displays

ANDs	GRDs	SLDs
ZAZ9C999		
HA038289		
HA039289		

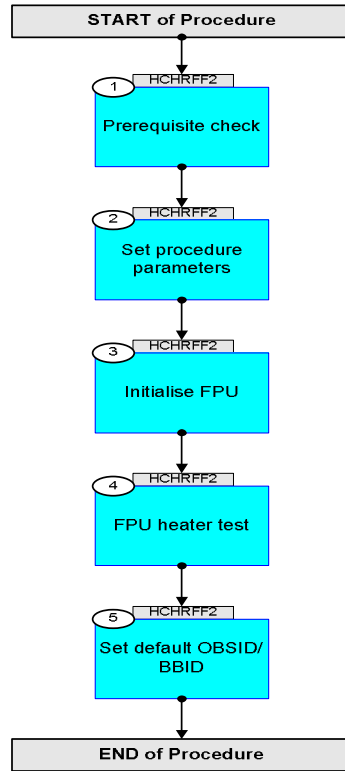
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
27/08/09	2.5	1	Created	R. Biggins	
26/11/09	3	2	Updates due to Prime unit failure resulting in new operation scheme - Execution times removed - TM APIDs 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 : HCHRFF2 (FPU functional test)				
TimeTag Type: B Sub Schedule ID: □				
1		Prerequisite check		Next Step: 2
1.1		HSC/ICC input		□
		Verify that the HSC has supplied a valid OBSID value: OBS_ID = 0xnnnn nnnn		
2		Set procedure parameters		Next Step: 3
	ET=+ 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=+ 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
		<i>Subsch. ID : 70</i> 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 1025) HIFI_HK_rev_7 (APID 1027)		
3		<i>Initialise FPU</i>		Next Step: 4
	ET=+ UT=+00.00.01	HIFI_Configure_FCU_Power HIFI_Configure_FCU_Power <i>Command Parameter(s) :</i> 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 <i>TC Control Flags :</i> GBM IL DSE --Y -- --- <i>Subsch. ID : 70</i> Det. descr. : Switch ON or OFF the five FCU-boards (mixer H/V, chopper, IF HV)	HC027289 1C200001 <hex> ON (Def) ON (Def) ON (Def) ON (Def) ON (Def) ON (Def)	
		Verify Telemetry BB_ID_per_hk HM004190	= 1C200001 <hex>	AND=ZAZ9C999
	ET=+ UT=+00.00.00	HIFI_R_Configure_FCU HIFI_R_Configure_FCU <i>Command Parameter(s) :</i> 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	HC183289 1C200001 <hex> 2 <dec> 0 <dec> 0.75 V 4.0 mA 0.65 V 3.0 mA 0.8 V 2.5 mA 0.75 V 2.5 mA	

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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_DPFP1 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 HF_CPR_CHFP1 HP212191 HF_CPR_CHFP2 HP213191 HF_CPR_CHFPZ1 HP214191 HF_CPR_CHFPZ2 HP215191 HF_CPR_CHFPZ3 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_R_Chopper_Rot HP455191 HF_CH1_DFACT_C HP174191 HF_CV1_DFACT_C HP189191 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Configure the FCU-subsystem (redundant)	0.7 V 2.5 mA 0 <dec> 0.75 V 4.0 mA 0.65 V 3.0 mA 0.8 V 2.5 mA 0.8 V 2.1 mA 0.8 V 2.5 mA ON (Def) CLOSE (Def) 17 <dec> 201 <dec> (Def) 1010 <dec> 885 <dec> (Def) 149 <dec> (Def) 1.1 mA 2.1 mV 15.0 mA 2.1 mV 15.0 mA -2.33 V 0.0 mA 0.0 mA	
	ET=+ UT=+00.00.03	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 1C200001 <hex> 8.5 mA	
	ET=+ 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 1C200001 <hex> 8.0 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=+ 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 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Send single command to set H mixer magnet current	HC096289 CA80001 <hex> 0.0 mA (Def)	
	ET=+ 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> 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=+ UT=+00.00.01	HIFI_HF_CH1_DHTR_C HIFI_HF_CH1_DHTR_C Command Parameter(s) : HIFI_BB_ID HP001197 HF_CH1_DHTR_P HP218191 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Send single command to generate a H deflux heater pulse	HC093289 CA80001 <hex> 2500.0 ms	
		Verify Telemetry HF_AH1_DHTR_C HM042191	see above	AND=HA038289
		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=+ 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> 2500.0 ms	
		Verify Telemetry HF_AV1_DHTR_C HM133191	see above	AND=HA039289
	ET=+ 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=+ 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=+ 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> 8.5 mA	
	ET=+ 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> 8.0 mA	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.01	HIFI_Housekeeping_on HIFI_Housekeeping_on <i>Command Parameter(s) :</i> 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 <i>Subsch. ID : 70</i> 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 1025) HIFI_HK_rev_7 (APID 1027)		
5		Set default OBSID/BBID		Next Step: END
	ET=+ UT=+00.00.01	HIFI_Set_OBS_ID HIFI_Set_OBS_ID <i>Command Parameter(s) :</i> HIFI_BB_ID HP001197 HIFI_OBS_ID HP000197 <i>TC Control Flags :</i> GBM IL DSE --Y -- --- <i>Subsch. ID : 70</i> 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				