

FPU functional test
 File: H_COP_HIF_RFF1.xls
 Author: R. Biggins



Procedure Summary

Objectives

The objective of this procedure is to execute a functional test on band 1a 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

HCHRRF1

Referenced Displays

ANDs	GRDs	SLDs
ZAZ9C999		
HA038289		
HA039289		

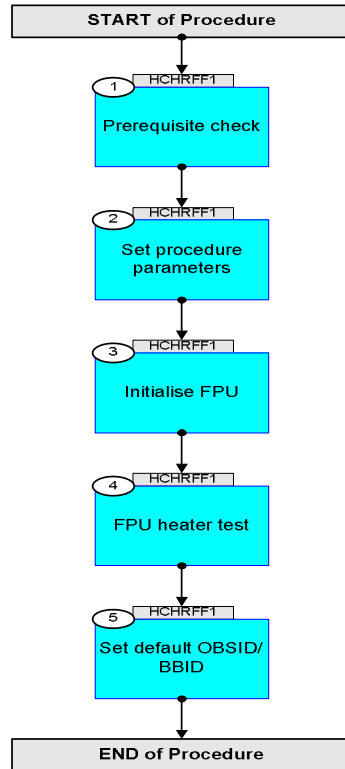
Configuration Control Information

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 :HCHRFF1 (FPU functional test) TimeTag Type: B Sub Schedule ID: <input type="checkbox"/>				
1		Prerequisite check		Next Step: 2
1.1		HSC/ICC input		<input type="checkbox"/>
		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	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 1_pkt_per_s HIF_FCU_S HP006197 ON (Def) HIF_LCU_S HP007197 ON (Def) HIF_WBSV_S HP009197 ON (Def) HIF_WBSH_S HP008197 ON (Def) HIF_HRSV_S HP011197 ON (Def) HIF_HRSH_S HP010197 ON (Def) Subsch. ID : 70 Det. descr. : Sets periodic housekeeping packet generation period	HC016289 ON (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		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		Initialise FPU		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_MXBAND HP202191 HF_CH1_DPFPP1 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> 1 <dec> 0 <dec> 0.75 V 4.0 mA 0.65 V 3.0 mA 0.95 V 2.5 mA 0.75 V 1.25 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 1.2 mA 0.66 V 3.0 mA ON (Def) CLOSE (Def) 17 <dec> 201 <dec> (Def) 1010 <dec> 885 <dec> (Def) 149 <dec> (Def) 1.1 mA 1.937 mV 15.0 mA 1.937 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> 7.5 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> 2000.0 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=+00.00.03	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> 2000.0 ms	
		Verify Telemetry HF_AV1_DHTR_C HM133191	see above	AND=HA039289
	ET=+ UT=+00.02.03	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 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> 7.5 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 Command Parameter(s) : HIF_HK_rate HP012197 1_pkt_per_4_s HIF_FCU_S HP006197 ON (Def) HIF_LCU_S HP007197 ON (Def) HIF_WBSV_S HP009197 ON (Def) HIF_WBSH_S HP008197 ON (Def) HIF_HRSV_S HP011197 ON (Def) HIF_HRSH_S HP010197 ON (Def) TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Sets periodic housekeeping packet generation period	HC016289	
		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 Command Parameter(s) : HIFI_BB_ID HP001197 0 <hex> (Def) HIFI_OBS_ID HP000197 0 <hex> (Def) TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Set Observation-ID and Building-Block-ID	HC014289	
		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				