

LO functional test  
 File: H\_COP\_HIF\_RFLD.xls  
 Author: R. Biggins



## Procedure Summary

### Objectives

The objective of this procedure is to execute the standard functional test of the Local Oscillator Unit. It consists of a switch of each of the LO-band at the default frequencies and safe voltages, as well as an IV Curve characterization of the multipliers.

Based on procedure:  
 HIFI-COP-1.2-LO\_FT (v1)

### Summary of Constraints

Note that this procedure is made up of 2 sequences.  
 The second sequence is executed via the following TPF file:  
 HCHRFLDY\_LO\_FT\_7A\_vvvv.IPF

### Spacecraft Configuration

**Start of Procedure**

n/a

**End of Procedure**

n/a

### Reference File(s)

**Input Command Sequences**

**Output Command Sequences**

HCHRFLDX  
 HCHRFLDY

### Referenced Displays

**ANDs**      **GRDs**      **SLDs**  
 ZAZ9C999

### Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
31/10/08		1	Created	R. Biggins	
27/11/08	2	2	Updates due to updates from D. Teyssier - Step 3 and 4 moved to the second sequence - Last 2 parameters of TC HIFI_P_Configure_FCU (step 5) changed to FP	R. Biggins	
08/04/09	2.3	3	Changes due to updates from D. Teyssier - Step 3 removed - HIFI_non_periodic_hk_FCU TC removed from step 5 - TC flags updated	R. Biggins	
10/09/09	2.5	4	Updates based on comments by D. Teyssier - Pause added after step 5 and 6 - TC HC198289 added before HC019289 quintuplet	R. Biggins	

Status : Version 7 - Updated  
 Last Checkin: 11/01/10

LO functional test  
 File: H\_COP\_HIF\_RFLD.xls  
 Author: R. Biggins

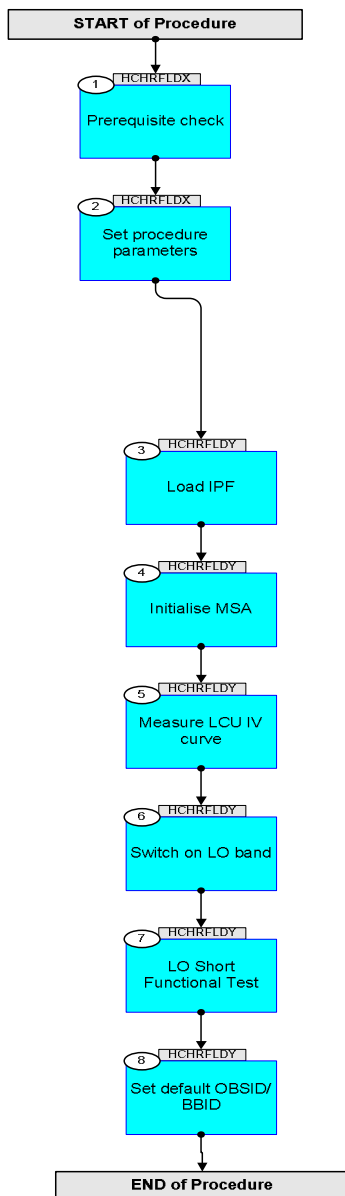


07/01/10		5	All ET times removed	R. Biggins	
08/01/10		6	Update due to MOIS error in generating FPs	R. Biggins	
11/01/10	3	7	Update due to MOIS associating incorrect calibration curves to imported FPs	R. Biggins	

LO functional test  
File: H\_COP\_HIF\_RFLD.xls  
Author: R. Biggins



## Procedure Flowchart Overview





LO functional test  
 File: H\_COP\_HIF\_RFLD.xls  
 Author: R. Biggins



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch																					
	ET=+ UT=+00.00.00	<p>HIFI_Housekeeping_on</p> <p style="text-align: center;"><b>HIFI_Housekeeping_on</b></p> <p>Command Parameter(s) :</p> <table border="0"> <tr> <td>HIF_HK_rate</td> <td>HP012197</td> <td>1_pkt_per_s</td> </tr> <tr> <td>HIF_FCU_S</td> <td>HP006197</td> <td>ON (Def)</td> </tr> <tr> <td>HIF_LCU_S</td> <td>HP007197</td> <td>ON (Def)</td> </tr> <tr> <td>HIF_WBSV_S</td> <td>HP009197</td> <td>ON (Def)</td> </tr> <tr> <td>HIF_WBSH_S</td> <td>HP008197</td> <td>ON (Def)</td> </tr> <tr> <td>HIF_HRSV_S</td> <td>HP011197</td> <td>ON (Def)</td> </tr> <tr> <td>HIF_HRSH_S</td> <td>HP010197</td> <td>ON (Def)</td> </tr> </table> <p>Subsch. ID : 70            Det. descr. : Sets periodic housekeeping packet generation period</p>	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)	HC016289	
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)																							
		<p>Verify: The following <b>TM(3,25)</b> packets should be produced once every second:</p> <p><b>HIFI_essential_HK</b> (APID 1025)  <b>HIFI_HK_rev_7</b> (APID 1027)</p>																							
<p>TC Seq. Name : HCHRFLDY (LO functional test)</p> <p>TimeTag Type: N            Sub Schedule ID:</p> <p style="text-align: center;">□</p>																									
3		Load IPF		Next Step: 4																					
		<p>Load the following IPF (TPF) file into the Manual Stack (where vvvv is the latest version number):</p> <p><b>HCHRFLDY_LO_FT_7A_vvvv.IPF</b></p>																							
4		Initialise MSA		Next Step: 5																					
	ET=+ UT=+00.00.01	<p>HIFI_Configure_FCU_Power</p> <p style="text-align: center;"><b>HIFI_Configure_FCU_Power</b></p> <p>Command Parameter(s) :</p> <table border="0"> <tr> <td>HIFI_BB_ID</td> <td>HP001197</td> <td>C800001 &lt;hex&gt;</td> </tr> <tr> <td>HF_CPR_Mixer_H_S</td> <td>HP203191</td> <td>ON (Def)</td> </tr> <tr> <td>HF_CPR_Mixer_V_S</td> <td>HP204191</td> <td>ON (Def)</td> </tr> <tr> <td>HF_CPR_Chopper_S</td> <td>HP205191</td> <td>ON (Def)</td> </tr> <tr> <td>HF_CPR_UCH_S</td> <td>HP206191</td> <td>ON (Def)</td> </tr> <tr> <td>HF_CPR_UCV_S</td> <td>HP207191</td> <td>ON (Def)</td> </tr> </table> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 70</p> <p>Det. descr. : Switch ON or OFF the five FCU-boards (mixer H/V, chopper, IF HV)</p>	HIFI_BB_ID	HP001197	C800001 <hex>	HF_CPR_Mixer_H_S	HP203191	ON (Def)	HF_CPR_Mixer_V_S	HP204191	ON (Def)	HF_CPR_Chopper_S	HP205191	ON (Def)	HF_CPR_UCH_S	HP206191	ON (Def)	HF_CPR_UCV_S	HP207191	ON (Def)	HC027289				
HIFI_BB_ID	HP001197	C800001 <hex>																							
HF_CPR_Mixer_H_S	HP203191	ON (Def)																							
HF_CPR_Mixer_V_S	HP204191	ON (Def)																							
HF_CPR_Chopper_S	HP205191	ON (Def)																							
HF_CPR_UCH_S	HP206191	ON (Def)																							
HF_CPR_UCV_S	HP207191	ON (Def)																							

LO functional test  
 File: H\_COP\_HIF\_RFLD.xls  
 Author: R. Biggins



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch																																																																																																																											
	ET=+ UT=+00.00.00	<p>HIFI_R_Configure_FCU</p> <p style="text-align: center;">HIFI_R_Configure_FCU</p> <p>Command Parameter(s) :</p> <table border="0"> <tr><td>    HIFI_BB_ID</td><td>HP001197</td><td>C800001 &lt;hex&gt;</td></tr> <tr><td>    HF_CPR_MXBAND</td><td>HP202191</td><td>7 &lt;dec&gt;</td></tr> <tr><td>    HF_CH1_DPFP1</td><td>HP176191</td><td>227 &lt;dec&gt; (Def)</td></tr> <tr><td>    HF_CH2_FIF1_Drain_V</td><td>HP177191</td><td>0.75 V</td></tr> <tr><td>    HF_CH2_FIF1_Drain_C</td><td>HP178191</td><td>4.0 mA</td></tr> <tr><td>    HF_CH2_FIF2_Drain_V</td><td>HP179191</td><td>0.65 V</td></tr> <tr><td>    HF_CH2_FIF2_Drain_C</td><td>HP180191</td><td>3.0 mA</td></tr> <tr><td>    HF_CH2_SIF1_Drain_V</td><td>HP181191</td><td>0.57 V</td></tr> <tr><td>    HF_CH2_SIF1_Drain_C</td><td>HP182191</td><td>3.5 mA</td></tr> <tr><td>    HF_CH2_SIF2_Drain_V</td><td>HP183191</td><td>0.8 V</td></tr> <tr><td>    HF_CH2_SIF2_Drain_C</td><td>HP184191</td><td>1.85 mA</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>    HF_CH2_SIF3_Drain_V</td><td>HP185191</td><td>0.8 V</td></tr> <tr><td>    HF_CH2_SIF3_Drain_C</td><td>HP186191</td><td>2.5 mA</td></tr> <tr><td>    HF_CV1_DPFP1</td><td>HP191191</td><td>227 &lt;dec&gt; (Def)</td></tr> <tr><td>    HF_CV2_FIF1_Drain_V</td><td>HP192191</td><td>0.75 V</td></tr> <tr><td>    HF_CV2_FIF1_Drain_C</td><td>HP193191</td><td>4.0 mA</td></tr> <tr><td>    HF_CV2_FIF2_Drain_V</td><td>HP194191</td><td>0.65 V</td></tr> <tr><td>    HF_CV2_FIF2_Drain_C</td><td>HP195191</td><td>3.0 mA</td></tr> <tr><td>    HF_CV2_SIF1_Drain_V</td><td>HP196191</td><td>0.57 V</td></tr> <tr><td>    HF_CV2_SIF1_Drain_C</td><td>HP197191</td><td>3.5 mA</td></tr> <tr><td>    HF_CV2_SIF2_Drain_V</td><td>HP198191</td><td>0.57 V</td></tr> <tr><td>    HF_CV2_SIF2_Drain_C</td><td>HP199191</td><td>3.5 mA</td></tr> <tr><td>    HF_CV2_SIF3_Drain_V</td><td>HP200191</td><td>0.71 V</td></tr> <tr><td>    HF_CV2_SIF3_Drain_C</td><td>HP201191</td><td>2.8 mA</td></tr> <tr><td>    HF_CPR_CH_SINE_S</td><td>HP211191</td><td>ON (Def)</td></tr> <tr><td>    HF_CPR_CH_LOOP_S</td><td>HP210191</td><td>CLOSE (Def)</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>    HF_CPR_CHFP1</td><td>HP212191</td><td>17 &lt;dec&gt;</td></tr> <tr><td>    HF_CPR_CHFP2</td><td>HP213191</td><td>201 &lt;dec&gt; (Def)</td></tr> <tr><td>    HF_CPR_CHFP3</td><td>HP214191</td><td>1010 &lt;dec&gt;</td></tr> <tr><td>    HF_CPR_CHFP4</td><td>HP215191</td><td>885 &lt;dec&gt; (Def)</td></tr> <tr><td>    HF_CPR_CHFP5</td><td>HP216191</td><td>149 &lt;dec&gt; (Def)</td></tr> <tr><td>    HF_CPR_Cal_Heater_C</td><td>HP217191</td><td>1.1 mA</td></tr> <tr><td>    HF_CH1_MXBIAS_V</td><td>HP172191</td><td>6.0 mV</td></tr> <tr><td>    HF_CH1_MX_MG_C</td><td>HP173191</td><td>0.0 mA (Def)</td></tr> <tr><td>    HF_CV1_MXBIAS_V</td><td>HP187191</td><td>6.0 mV</td></tr> <tr><td>    HF_CV1_MX_MG_C</td><td>HP188191</td><td>0.0 mA (Def)</td></tr> <tr><td>    HF_R_Chopper_Rot</td><td>HP455191</td><td>-2.33 V</td></tr> <tr><td>    HF_CH1_DFACT_C</td><td>HP174191</td><td>A</td></tr> <tr><td>    HF_CV1_DFACT_C</td><td>HP189191</td><td>B</td></tr> </table> <p>Subsch. ID : 70</p> <p>Det. descr. : Configure the FCU-subsystem (redundant)</p>	HIFI_BB_ID	HP001197	C800001 <hex>	HF_CPR_MXBAND	HP202191	7 <dec>	HF_CH1_DPFP1	HP176191	227 <dec> (Def)	HF_CH2_FIF1_Drain_V	HP177191	0.75 V	HF_CH2_FIF1_Drain_C	HP178191	4.0 mA	HF_CH2_FIF2_Drain_V	HP179191	0.65 V	HF_CH2_FIF2_Drain_C	HP180191	3.0 mA	HF_CH2_SIF1_Drain_V	HP181191	0.57 V	HF_CH2_SIF1_Drain_C	HP182191	3.5 mA	HF_CH2_SIF2_Drain_V	HP183191	0.8 V	HF_CH2_SIF2_Drain_C	HP184191	1.85 mA				HF_CH2_SIF3_Drain_V	HP185191	0.8 V	HF_CH2_SIF3_Drain_C	HP186191	2.5 mA	HF_CV1_DPFP1	HP191191	227 <dec> (Def)	HF_CV2_FIF1_Drain_V	HP192191	0.75 V	HF_CV2_FIF1_Drain_C	HP193191	4.0 mA	HF_CV2_FIF2_Drain_V	HP194191	0.65 V	HF_CV2_FIF2_Drain_C	HP195191	3.0 mA	HF_CV2_SIF1_Drain_V	HP196191	0.57 V	HF_CV2_SIF1_Drain_C	HP197191	3.5 mA	HF_CV2_SIF2_Drain_V	HP198191	0.57 V	HF_CV2_SIF2_Drain_C	HP199191	3.5 mA	HF_CV2_SIF3_Drain_V	HP200191	0.71 V	HF_CV2_SIF3_Drain_C	HP201191	2.8 mA	HF_CPR_CH_SINE_S	HP211191	ON (Def)	HF_CPR_CH_LOOP_S	HP210191	CLOSE (Def)				HF_CPR_CHFP1	HP212191	17 <dec>	HF_CPR_CHFP2	HP213191	201 <dec> (Def)	HF_CPR_CHFP3	HP214191	1010 <dec>	HF_CPR_CHFP4	HP215191	885 <dec> (Def)	HF_CPR_CHFP5	HP216191	149 <dec> (Def)	HF_CPR_Cal_Heater_C	HP217191	1.1 mA	HF_CH1_MXBIAS_V	HP172191	6.0 mV	HF_CH1_MX_MG_C	HP173191	0.0 mA (Def)	HF_CV1_MXBIAS_V	HP187191	6.0 mV	HF_CV1_MX_MG_C	HP188191	0.0 mA (Def)	HF_R_Chopper_Rot	HP455191	-2.33 V	HF_CH1_DFACT_C	HP174191	A	HF_CV1_DFACT_C	HP189191	B	HC183289	
HIFI_BB_ID	HP001197	C800001 <hex>																																																																																																																													
HF_CPR_MXBAND	HP202191	7 <dec>																																																																																																																													
HF_CH1_DPFP1	HP176191	227 <dec> (Def)																																																																																																																													
HF_CH2_FIF1_Drain_V	HP177191	0.75 V																																																																																																																													
HF_CH2_FIF1_Drain_C	HP178191	4.0 mA																																																																																																																													
HF_CH2_FIF2_Drain_V	HP179191	0.65 V																																																																																																																													
HF_CH2_FIF2_Drain_C	HP180191	3.0 mA																																																																																																																													
HF_CH2_SIF1_Drain_V	HP181191	0.57 V																																																																																																																													
HF_CH2_SIF1_Drain_C	HP182191	3.5 mA																																																																																																																													
HF_CH2_SIF2_Drain_V	HP183191	0.8 V																																																																																																																													
HF_CH2_SIF2_Drain_C	HP184191	1.85 mA																																																																																																																													
HF_CH2_SIF3_Drain_V	HP185191	0.8 V																																																																																																																													
HF_CH2_SIF3_Drain_C	HP186191	2.5 mA																																																																																																																													
HF_CV1_DPFP1	HP191191	227 <dec> (Def)																																																																																																																													
HF_CV2_FIF1_Drain_V	HP192191	0.75 V																																																																																																																													
HF_CV2_FIF1_Drain_C	HP193191	4.0 mA																																																																																																																													
HF_CV2_FIF2_Drain_V	HP194191	0.65 V																																																																																																																													
HF_CV2_FIF2_Drain_C	HP195191	3.0 mA																																																																																																																													
HF_CV2_SIF1_Drain_V	HP196191	0.57 V																																																																																																																													
HF_CV2_SIF1_Drain_C	HP197191	3.5 mA																																																																																																																													
HF_CV2_SIF2_Drain_V	HP198191	0.57 V																																																																																																																													
HF_CV2_SIF2_Drain_C	HP199191	3.5 mA																																																																																																																													
HF_CV2_SIF3_Drain_V	HP200191	0.71 V																																																																																																																													
HF_CV2_SIF3_Drain_C	HP201191	2.8 mA																																																																																																																													
HF_CPR_CH_SINE_S	HP211191	ON (Def)																																																																																																																													
HF_CPR_CH_LOOP_S	HP210191	CLOSE (Def)																																																																																																																													
HF_CPR_CHFP1	HP212191	17 <dec>																																																																																																																													
HF_CPR_CHFP2	HP213191	201 <dec> (Def)																																																																																																																													
HF_CPR_CHFP3	HP214191	1010 <dec>																																																																																																																													
HF_CPR_CHFP4	HP215191	885 <dec> (Def)																																																																																																																													
HF_CPR_CHFP5	HP216191	149 <dec> (Def)																																																																																																																													
HF_CPR_Cal_Heater_C	HP217191	1.1 mA																																																																																																																													
HF_CH1_MXBIAS_V	HP172191	6.0 mV																																																																																																																													
HF_CH1_MX_MG_C	HP173191	0.0 mA (Def)																																																																																																																													
HF_CV1_MXBIAS_V	HP187191	6.0 mV																																																																																																																													
HF_CV1_MX_MG_C	HP188191	0.0 mA (Def)																																																																																																																													
HF_R_Chopper_Rot	HP455191	-2.33 V																																																																																																																													
HF_CH1_DFACT_C	HP174191	A																																																																																																																													
HF_CV1_DFACT_C	HP189191	B																																																																																																																													
	ET=+ UT=+00.00.03	<p>HIFI_CH1_MXBIAS_V</p> <p style="text-align: center;">HIFI_CH1_MXBIAS_V</p> <p>Command Parameter(s) :</p> <table border="0"> <tr><td>    HIFI_BB_ID</td><td>HP001197</td><td>C800001 &lt;hex&gt;</td></tr> <tr><td>    HF_CH1_MXBIAS_V</td><td>HP172191</td><td>0.6 mV</td></tr> </table> <p>Subsch. ID : 70</p> <p>Det. descr. : Send single command to set H mixer bias voltage</p>	HIFI_BB_ID	HP001197	C800001 <hex>	HF_CH1_MXBIAS_V	HP172191	0.6 mV	HC095289																																																																																																																						
HIFI_BB_ID	HP001197	C800001 <hex>																																																																																																																													
HF_CH1_MXBIAS_V	HP172191	0.6 mV																																																																																																																													

LO functional test  
 File: H\_COP\_HIF\_RFLD.xls  
 Author: R. Biggins



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.00	HIFI_CV1_MXBIAS_V  HIFI_CV1_MXBIAS_V  <i>Command Parameter(s) :</i> HIFI_BB_ID                  HP001197 HF_CV1_MXBIAS_V          HP187191  <i>Subsch. ID : 70</i> Det. descr. : Send single command to set V mixer bias voltage	HC098289  C800001 <hex> 0.6 mV	
	ET=+ UT=+00.00.01	HIFI_HL_Normal  HIFI_HL_Normal  <i>Command Parameter(s) :</i> HIFI_BB_ID                  HP001197  <i>Subsch. ID : 70</i> Det. descr. : Send single command to switch LCU to normal mode	HC082289  E2F0001 <hex>	
	ET=+ UT=+00.00.00	HIFI_Conf_nom_LCU_ch0  HIFI_Conf_nom_LCU_ch0  <i>Command Parameter(s) :</i> HIFI_BB_ID                  HP001197  <i>Subsch. ID : 70</i> Det. descr. : Create macro-command to switch off the bands	HC049289  E2F0001 <hex>	
	ET=+ UT=+00.00.10	HIFI_HL_heater  HIFI_HL_heater  <i>Command Parameter(s) :</i> HIFI_BB_ID                  HP001197 HL_heater                  HP397194  <i>Subsch. ID : 70</i> Det. descr. : Send single command to control the LCU heater	HC086289  E2F0001 <hex> 6.0 V	
		Verify Telemetry  HL_Channel_S                  HM003194	= OFF	AND=ZAZ9C999
		Verify Telemetry  HL_MODE_S                  HM258194	= normal	AND=ZAZ9C999
5		Measure LCU IV curve		Next Step: 6

LO functional test  
 File: H\_COP\_HIF\_RFLD.xls  
 Author: R. Biggins



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.00	HIFI_measure_LCU_IV  HIFI_measure_LCU_IV  Command Parameter(s) : HIFI_BB_ID                  HP001197 HIF_LCU_diode              HP072197 HIF_LCU_IV_delay          HP073197  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 70 Det. descr. : Perform IV-measurement on an LOU-diode	HC108289  E4F0001 <hex> M1_7a 90 <dec>	
	ET=+ UT=+00.01.32	HIFI_measure_LCU_IV  HIFI_measure_LCU_IV  Command Parameter(s) : HIFI_BB_ID                  HP001197 HIF_LCU_diode              HP072197 HIF_LCU_IV_delay          HP073197  Subsch. ID : 70 Det. descr. : Perform IV-measurement on an LOU-diode	HC108289  E4F0002 <hex> M2_7a 109 <dec>	
		SPACON:  Confirmation from the HIFI representative should be requested before continuing.		
6		Switch on LO band		Next Step: 7
	ET=+ UT=+00.01.51	HIFI_HL_Normal  HIFI_HL_Normal  Command Parameter(s) : HIFI_BB_ID                  HP001197  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 70 Det. descr. : Send single command to switch LCU to normal mode	HC082289  E2A0001 <hex>	
	ET=+ UT=+00.00.01	HIFI_Conf_nom_LCU_ch7a  HIFI_Conf_nom_LCU_ch7a  Command Parameter(s) : HIFI_BB_ID                  HP001197 HL_freq_nx                  HP436194 HL_LSU_main                  HP438194 HL_LSU_offset              HP439194 HL_D2_step                  HP437194 HL_PL_7A_C                  HP382194 HL_M1_7A_V                  HP383194 HL_M2_7A_V                  HP384194 HL_Gate1_7A_V              HP385194 HL_Gate2_7A_V              HP386194 HL_Drain1_7A_V             HP387194	HC047289  1 2 3 4 5 6 7 8 9 10 11	



LO functional test  
 File: H\_COP\_HIF\_RFLD.xls  
 Author: R. Biggins



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		HL_Curlim1 HP290194 HL_Drain2_7A_V HP388194 HL_Curlim2 HP291194 HL_macro_checksum HP440194  Subsch. ID : 70 Det. descr. : Create macro-command to configure LCU band 7a	12 13 14 15	
	ET=+ UT=+00.00.20	Execute Telecommand  HIFI_LCU_read_settings  Subsch. ID : 70 Det. descr. : Requests setting parameters from LCU RAM page 7A	HC198289	
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk  HIFI_LCU_macro_tuning_hk  Command Parameter(s) : HIF_LCU_memmacro           HP068197  Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_TM1 (Def)	
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk  HIFI_LCU_macro_tuning_hk  Command Parameter(s) : HIF_LCU_memmacro           HP068197  Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_TM2	
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk  HIFI_LCU_macro_tuning_hk  Command Parameter(s) : HIF_LCU_memmacro           HP068197  Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_TM3	
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk  HIFI_LCU_macro_tuning_hk  Command Parameter(s) : HIF_LCU_memmacro           HP068197  Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_TM	

LO functional test  
 File: H\_COP\_HIF\_RFLD.xls  
 Author: R. Biggins



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk HIFI_LCU_macro_tuning_hk Command Parameter(s) : HIF_LCU_memmacro                  HP068197 Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_G	
	ET=+ UT=+00.00.02	HIFI_LCU_Single HIFI_LCU_Single Command Parameter(s) : HIFI_BB_ID                  HP001197 LCU_cmd                  HP234194 Subsch. ID : 70 Det. descr. : Send a single command to LCU	HC101289  E210001 <hex> HL_CLR_ERR	
	ET=+ UT=+00.00.01	HIFI_HL_heater HIFI_HL_heater Command Parameter(s) : HIFI_BB_ID                  HP001197 HL_heater                  HP397194 Subsch. ID : 70 Det. descr. : Send single command to control the LCU heater	HC086289  16 17	
		Verify Telemetry HL_Channel_S                  HM003194	= 7a	AND=ZAZ9C999
		Verify Telemetry HL_MODE_S                  HM258194	= normal	AND=ZAZ9C999
		SPACON:  Confirmation from the HIFI representative should be requested before continuing.		
7		LO Short Functional Test		Next Step: 8
		Verify: Monitor the following parameter and ensure that any occurrences of a 'FAULT' condition are communicated immediately to the HIFI representative (use AND HA004289).  HM259194 HL_error_word_S		

LO functional test  
 File: H\_COP\_HIF\_RFLD.xls  
 Author: R. Biggins



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.00	HIFI_HL_Normal  <b>HIFI_HL_Normal</b>  Command Parameter(s) : HIFI_BB_ID                  HP001197  TC Control Flags : GBM IL DSE --Y -- ---  Subsch. ID : 70 Det. descr. : Send single command to switch LCU to normal mode	HC082289  E2A0002 <hex>	
	ET=+ UT=+00.00.01	HIFI_Conf_nom_LCU_ch7a  <b>HIFI_Conf_nom_LCU_ch7a</b>  Command Parameter(s) : HIFI_BB_ID                  HP001197                  18 HL_freq_nx                  HP436194                  19 HL_LSU_main                  HP438194                  20 HL_LSU_offset                  HP439194                  21 HL_D2_step                  HP437194                  22 HL_PL_7A_C                  HP382194                  23 HL_M1_7A_V                  HP383194                  24 HL_M2_7A_V                  HP384194                  25 HL_Gate1_7A_V                  HP385194                  26 HL_Gate2_7A_V                  HP386194                  27 HL_Drain1_7A_V                  HP387194                  28  HL_Curlim1                  HP290194                  29 HL_Drain2_7A_V                  HP388194                  30 HL_Curlim2                  HP291194                  31 HL_macro_checksum                  HP440194                  32  Subsch. ID : 70 Det. descr. : Create macro-command to configure LCU band 7a	HC047289	
	ET=+ UT=+00.00.20	Execute Telecommand  <b>HIFI_LCU_read_settings</b>  Subsch. ID : 70 Det. descr. : Requests setting parameters from LCU RAM page 7A	HC198289	
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk  <b>HIFI_LCU_macro_tuning_hk</b>  Command Parameter(s) : HIF_LCU_memmacro                  HP068197  Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_TM1 (Def)	

LO functional test  
 File: H\_COP\_HIF\_RFLD.xls  
 Author: R. Biggins



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk HIFI_LCU_macro_tuning_hk Command Parameter(s) : HIF_LCU_memmacro                  HP068197 Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_TM2	
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk HIFI_LCU_macro_tuning_hk Command Parameter(s) : HIF_LCU_memmacro                  HP068197 Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_TM3	
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk HIFI_LCU_macro_tuning_hk Command Parameter(s) : HIF_LCU_memmacro                  HP068197 Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_TM	
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk HIFI_LCU_macro_tuning_hk Command Parameter(s) : HIF_LCU_memmacro                  HP068197 Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_G	
	ET=+ UT=+00.00.02	HIFI_LCU_Single HIFI_LCU_Single Command Parameter(s) : HIFI_BB_ID                  HP001197 LCU_cmd                  HP234194 Subsch. ID : 70 Det. descr. : Send a single command to LCU	HC101289  E210002 <hex> HL_CLR_ERR	
	ET=+ UT=+00.00.01	HIFI_HL_heater HIFI_HL_heater Command Parameter(s) : HIFI_BB_ID                  HP001197 HL_heater                  HP397194 Subsch. ID : 70 Det. descr. : Send single command to control the LCU heater	HC086289  33 34	

LO functional test  
 File: H\_COP\_HIF\_RFLD.xls  
 Author: R. Biggins



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.20	HIFI_HL_Normal  <b>HIFI_HL_Normal</b>  Command Parameter(s) : HIFI_BB_ID                  HP001197  Subsch. ID : 70 Det. descr. : Send single command to switch LCU to normal mode	HC082289   E2A003 <hex>	
	ET=+ UT=+00.00.01	HIFI_Conf_nom_LCU_ch7a  <b>HIFI_Conf_nom_LCU_ch7a</b>  Command Parameter(s) : HIFI_BB_ID                  HP001197                  35 HL_freq_nx                  HP436194                  36 HL_LSU_main                  HP438194                  37 HL_LSU_offset                  HP439194                  38 HL_D2_step                  HP437194                  39 HL_PL_7A_C                  HP382194                  40 HL_M1_7A_V                  HP383194                  41 HL_M2_7A_V                  HP384194                  42 HL_Gate1_7A_V                  HP385194                  43 HL_Gate2_7A_V                  HP386194                  44 HL_Drain1_7A_V                  HP387194                  45  HL_Curlim1                  HP290194                  46 HL_Drain2_7A_V                  HP388194                  47 HL_Curlim2                  HP291194                  48 HL_macro_checksum                  HP440194                  49  Subsch. ID : 70 Det. descr. : Create macro-command to configure LCU band 7a	HC047289	
	ET=+ UT=+00.00.20	Execute Telecommand  <b>HIFI_LCU_read_settings</b>  Subsch. ID : 70 Det. descr. : Requests setting parameters from LCU RAM page 7a	HC198289	
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk  <b>HIFI_LCU_macro_tuning_hk</b>  Command Parameter(s) : HIF_LCU_memmacro                  HP068197  Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_TM1 (Def)	
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk  <b>HIFI_LCU_macro_tuning_hk</b>  Command Parameter(s) : HIF_LCU_memmacro                  HP068197  Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_TM2	

LO functional test  
 File: H\_COP\_HIF\_RFLD.xls  
 Author: R. Biggins



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk HIFI_LCU_macro_tuning_hk Command Parameter(s) : HIF_LCU_memmacro                  HP068197 Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_TM3	
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk HIFI_LCU_macro_tuning_hk Command Parameter(s) : HIF_LCU_memmacro                  HP068197 Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_TM	
	ET=+ UT=+00.00.02	HIFI_LCU_macro_tuning_hk HIFI_LCU_macro_tuning_hk Command Parameter(s) : HIF_LCU_memmacro                  HP068197 Subsch. ID : 70 Det. descr. : Requests one of the eight LCU intermediate housekeeping-sets	HC019289  HSK_G	
	ET=+ UT=+00.00.02	HIFI_LCU_Single HIFI_LCU_Single Command Parameter(s) : HIFI_BB_ID                  HP001197 LCU_cmd                  HP234194 Subsch. ID : 70 Det. descr. : Send a single command to LCU	HC101289  E210003 <hex> HL_CLR_ERR	
		Verify: Verify the content of the following ANDs with the HIFI representative:  HA004289 LCU_status2 HA019289 LCU_7a		
	ET=+ 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  TC Control Flags :  GBM IL DSE --Y -- ---	HC016289  1_pkt_per_4_s ON (Def) ON (Def) ON (Def) ON (Def) ON (Def) ON (Def)	

LO functional test  
 File: H\_COP\_HIF\_RFLD.xls  
 Author: R. Biggins



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 <b>TM(3,25)</b> packets should be produced once every 4 seconds:  <b>HIFI_essential_HK</b> (APID 1025) <b>HIFI_HK_rev_7</b> (APID 1027)		
8		Set default <i>OBSID/BBID</i>		Next Step: END
	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 -- ---  <i>Subsch. ID : 70</i> 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
<b>End of Procedure</b>				