SPIRE-AST-REP-002632

Title: **PACS IMT PART 2**

CI-No: 153700

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Distribution: See Distribution List (last page)

Issue	Date	Sheet	Description of Change	Release
1	7/11/2005		First Issue	

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1 Scope

1.1 Objective

This test report describes the results of the second and third part of IMT performed for the Herschel PACS Instrument. The first part of the IMT was stopped because of problems with the DPU and cooler recycle.

The second part of the test was performed at ASED in Ottobrunn from 19/10/2005 to 20/10/2005.

The third part of the test was performed at ASED in Ottobrunn from 2/11/2005 to 6/11/2005.

1.2 Summary

Detailed results are given in the as-run-procedure in Chapter 6.1

The following NCR's have been raised:

- HP-113000-ASED-NC-1619 - Type 1 packets not forwarded to IEGSE because not defined in TMD.dat (see Appendix 9)
- HP-113000-ASED-NC-1665 – Command to set bias fails sporadically (see Appendix 10)
- HP-113000-ASED-NC-1666 – Grating does not work correct (see Appendix 11)

The following NCR's have been altered:

- N/A

An overview can be found in chapter 17.2

Conclusion:

- Second part of IMT (19/10 to 20/10)

  The cooler recycle was successful. The evaporator temperature stayed below 0.3K for ~ 36 hours. Because of this, the IMT was successfully continued. Although many problems were detected during the IMT, many tests were executed successfully. PACS will analyse the results adapt TCL files and retest the failed sequences.

- Third part of IMT (2/11 to 6/11)

  All spectroscopy tests have been completed. All discovered problems are tracked with NCR's. The instrument was left on during the weekend to get a good estimate of the hold time of the cooler recycle. The hold time was approximately 39 hours. Some photometry tests were repeated to solve problems detected during the first and second part of IMT.

Extra Comments:

- During the IMT multiple TCL scripts have been updated since errors were detected during the tests. All these changes are clearly indicated in the report
- The IMT was not done in the pre-defined order (see "Detailed PACS IMT planning based on PACS-ME-TP-021) because of the cooler recycle characteristics and the fact that some tests were already executed during the first part of the IMT.

2 Documents/Drawings

2.1 Applicable Documents

INSTRUMENT PLM EQM LEVEL TEST PROCEDURE

HP-2-ASED-PR-0051, issue 1.1 from 24.06.2005

EGSE CONFIGURATION PROCEDURE

HP-2-ASED-PR-0035, Issue 4 from 03.08.2005

INSTRUMENT TEST PROCEDURE

PACS-ME-TP-021, Issue 1.1 from 06.09.2005

2.2 Reference Documents

N/A

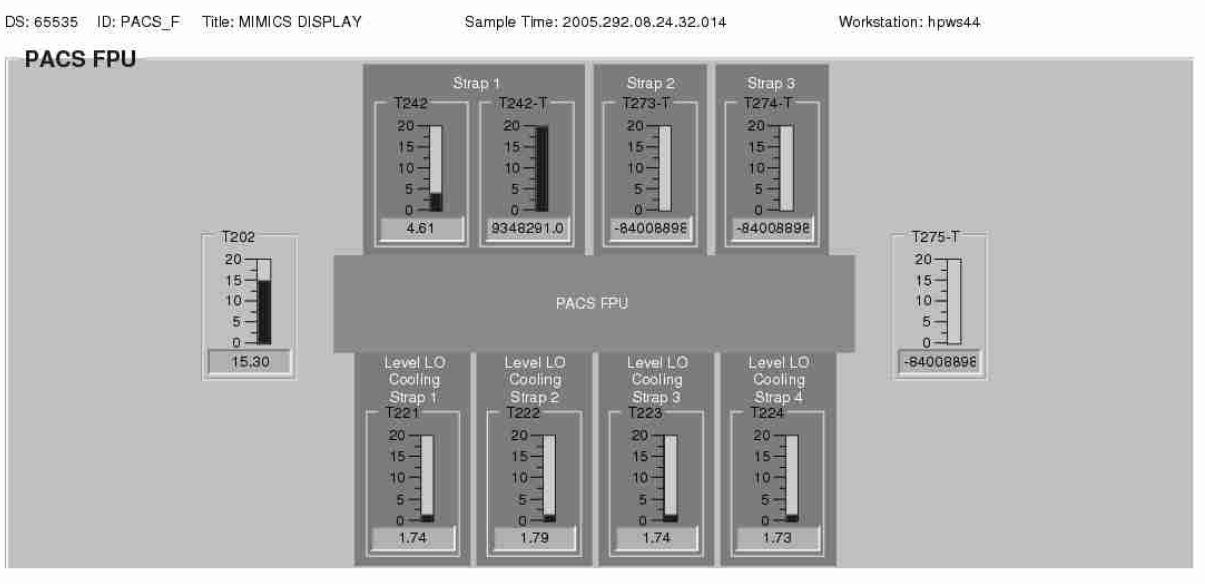
2.3 OtherDocuments

N/A

3 Configuration

3.1 PLM Configuration

SVM integrated with cryostat. Cryostat is at He II level (~1.7 K).



3.2 Environment

Environmental	Actual
Clean Room Class	100.000
Temperature	~21 °C
Rel. Humidity	~52.10 %
Pressure	~857 mbar

4 Conditions

4.1 Personnel

Responsibility	Name / Organization
Test Manager	S. Idler
Test Engineer	S. Ilsen
EGSE Operator	S. Ilsen
Instrument Engineer	H Feuchtgruber, T. Mueller, E. Wiezorrek
PA Responsible	D. Hendry
ESA/Alcatel Representative	W. Pinter-Krainer, / B. Collaudin

4.2 Environmental

See chapter 3.2

4.3 General Precautions and Safety

N/A

4.3.1 General Safety Requirements, Precautions

N/A

4.3.2 ESD constraints

N/A

4.3.3 Special QA Requirements

N/A

4.4 EGSE

4.4.1 Hardware: CCS, EGSE's and DFE's

Item	Hardware Id	Serial No.
CCS	N/A	HPCCS 4
PLM SCOE	SE8426	03/001
CDMU DFE	SE8455	03/002
CRYO SCOE	EQM	N/A
IEGSE	N/A	N/A

4.4.2 Hardware: Prime Instrument

Item	Model	Remark
DPU	AVM	
SPU	AVM	
DEC/MEC	EM	

4.4.3 Software

Prime Instrument: PACS

SW Ident	Issue /Version	Responsible	Comment
Inst OBS SPU	11.7	Inst	
Inst SPU boot OBSW	1.4	Inst	
Inst OBS DECMEC	5.0.25 Version for Mech control cold	Inst	V 5.0.24 Mech controller hot
Inst DECMEC boot OBSW	1.1	Inst	
Inst OBS DPU	7.65	Inst	
Inst DPU Boot OBSW	1.0	Inst	

Standby Instrument: HIFI

SW Ident	Issue /Version	Responsible	Comment
Inst ICU OBS	2.22	Inst	18.05.2005
Inst LCU OBS	17.0	Inst	01.10.2004

Standby Instrument: SPIRE

SW Ident	Issue /Version	Responsible	Comment
Inst DPU OBS	2.0.A1	Inst	
Inst DRCU OBS	Boot SW June 2003	Inst	

IEGSE Configuration

SW Ident	Issue /Version	Responsible	Comment
MIB on I-EGSE	7_18	Inst	
HCSS Build Version	687	Inst	
PACS Build	20050706A	Inst	

CCS Configuration

SW Ident	Issue /Version	Responsible	Comment
TCL Scripts HIFI	ist_cus_0.7_tcl.zip	ASP	Delivered on 19.08.2005
TCL Scripts PACS	IMT_cus-shell-scripts_19092005.zip	ASP	Delivered on 19.09.2005
TCL Scripts SPIRE	SPIRE-SFTs-09092005.tar.gz + adapted script: SFT-SPIRE-CCS-DRCU-ON-STEP2.tcl	ASP	Delivered on 09.09.2005 (12.09.2005)
CCS MIB Bridge files	CCS_Her_PLM__01_v1_2.zip	ASP	2005-09-08
CCS S/W Release	2.0.637	Terma	Updated on 06.10.2005

CDMU DFE Configuration

SW Ident	Issue /Version	Responsible	Comment
CDMU DFE CMS	2.3.0.0	SSBV	Part of CDMU DFE Workstation
CDMU DFE Pipe I/F (IPC Handler P7001)	2.4.0.0	SSBV	Part of CDMU DFE Workstation
CDMU DFE Pipe I/F (IPC Handler Pipe P 7002)	1.2.1.0	SSBV	Part of CDMU DFE Workstation
CDMU archive Browser	2.2.2.72	SSBV	Part of CDMU DFE Workstation
Mil-STD-1553b BusMonitor	1.11.1.87	SSBV	Part of CDMU DFE Workstation
CDMU DFE IPC Handler object implementation	2.4.0.18	SSBV	Part of CDMU DFE Workstation
SimFE	1.5.0.0	SSBV	Part of CDMU DFE Platform

HLBC	1.07.00	SSBV	Part of CDMU DFE Platform

PLM SCOE Configuration

SW Ident	Issue /Version	Responsible	Comment
PLM SCOE CMS	1.5.0.0	SSBV	Part of PLM SCOE Workstation
PLM SCOE archive browser	2.2.1.70	SSBV	Part of PLM SCOE Workstation
PLM SCOE pipe I/F	1.3.0.0	SSBV	Part of PLM SCOE Workstation
PLM SCOE IPC Handler object implementation	2.1.0.7	SSBV	Part of PLM SCOE Workstation
PDU Controller	1.5.0.0	SSBV	Part of PLM SCOE Platform

Bus Profiles

The following bus profiles are loaded on the CDMU DFE. They are provided, checked and validated by Patrice Couzin (ASP). They were delivered by email on 01.09.2005

- PACS_prime_inst.PST
- SPIRE_prime_inst.PST
- HIFI_prime_inst.PST
- PACS_SPIRE_par.PST
- PACS_burst_mode.PST
- Inst_sdby.PST

The profiles allow one instrument in PRIME mode, while the others are in standby mode. This test will use only the following bus profile(s):

- PACS_prime_inst.PST (see Appendix 1)

4.4.4 Special Equipment

N/A

4.5 MIB

4.5.1 Version

The used MIB has reference: CCS_Her_PLM__01_v1_2.zip

And reference date: 2005-09-08

The MIB was received by email from Sonia Dos-Santos (ASP) on 08/09/2005

4.5.2 Configuration & Manual changes

The following files have been manually changed by Alcatel after the generation process (taken from the configuration.txt file included in the MIB):

- CDF.DAT

  HPSDB does not allows fixed counter flags (ie CDF_ELTYPR=F for counters) HPSDB NCR 478

- CDF.DAT

  Problem on the (PTC,PFC)=(7,0) Variable octect string (PP004380).

  PACS has the following data:

  PC010380 E 8 32 PP004380 R

  On HPSDB this line is generated

  PC010380 E 0 32 0 PP004380 R

  For now has been manually replaced.

- DPC.DAT

  Add the line

  HA000289 HU035197 63 1 Y N

  HPSDB NCR, not possible to add User parameters on an alphanumeric display (NCR 495)

  Note: The parameter HU035197 can not be loaded via S2K files, because is not associated to a Packet (NCR created 475)

  Error HPSDB Solution: The parameter as been loaded by the an XML file Add_Parameter_HU035197.xml, to correct this problem.

- PLF.DAT

  (HPSDB NCR 474) error when loading/generating SCOS TM packets has fixed and variable but with diferent definitions, (the following packet has the

parameter repeated 16 times on plf.dat, and repeated 0 times (variable) on the vpd.dat table)

The vpd.dat is corrected generated but not the plf.dat

replace the line (manual)

HM057190 80044289 0 0 1 0 0 0

by

HM056190 80044289 16 0 1 0 0 0

HM057190 80044289 17 0 64 0 0 0

- TCD.DAT

  Generated empty by HPSDB, NCR 497 replaced by the one used on the tests week 28

- SCO.DAT

  replaced by the one used on the tests week 28. This file shall be discussed with S. Ilsen because of the SCOE's names, HPSDB generates the names of the real elements.

- TMD.DAT

  Add packets sent by SPIRE team by email on 31/08/2005

- PCF.DAT

  Change PCF_VALPAR=0 on the parameter HU035197 inside of the pcf.dat. This was ok on HIFI, but not done on the XML file loaded

  Add_Parameter_HU035197.xml

- PLF.DAT

  Change the field PLF_LOGCC from NULL to 32 bits (see email from Luc Dubbeldam- HIFI on 06/09/2005)

  HM057190 80044289 17 0 64 32 0 0

The following files have been changed manually by ASED OTN (Stijn Ilsen):

- CAP.DAT – The decimal separator for the EQM CRYO SCOE calibration is manually changed from “,” to “.”. This also to solve problems with the EQM CRYO SCOE calibrations. EQM CRYO SCOE MIB will be updated by ASED to avoid this problem in the future.
- TMD.DAT – The EQM CRYO packets have been added to the tmd.dat file on the CCS to make sure all EQM CRYO SCOE packets are forwarded to the IEGSE.

Remark: Because of NCR 1482, a MIB change was necessary after the first day of IMT. The CDF.DAT file is changed. Command PC162420 allows 8 entries for parameter PP067420, this is changed into 9.

5 Step by Step Procedure: Configure CCS and EGSE

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution - steps 1 to 9)**

Step #	Action	Comments	Check
1	Note Testsession	2005_10_19_06_45_ilsens_hpws42_REALTIME_P_CoolRec	**OK**
2	Power on CDMU DFE platform		**OK**
3	Power on PLM SCOE platform		**OK**
4	Power on the CDMU DFE workstation and wait for the BIST to finish.	Check: BIST successful?	**OK**
5	Power on the PLM SCOE workstation and wait for the BIST to finish.	Check: BIST successful?	**OK**
6	Execute “EGSE_CONFIG_AUTO.tcl” (see log in Appendix 3)	Check: PLM SCOE HK packets arriving	**OK**
		Check: CDMU DFE HK packets arriving	**OK**
		Check: Check name of bus profile (PST) in CDMU DFE HK or on CDMU DFE workstation **Result: PACS_prime_inst.pst**	**OK**
7	Execute “SubscribeParams.tcl”	Check: Wait until status of TCL file has changed to WAITING. This can take up to 10 minutes.	**OK**
8	Execute “Connect HIEGSE”	Check with IEGSE operators if IEGSE is connected.	**OK**
9	Execute “WARNING_LAMP_POWER_ON.tcl”	**Not done since warning lamp is broken.**	**N/A**
extra	Execute “connect EQMCRYO”		**OK**

6 Step by Step Procedure: Power On Instruments

Remark: Since this test was primarily focused on the cooler recycling, the other instruments were not powered on during the test.

6.1 Power on PACS to PRIME Mode

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 10)**
- **PACS-ME-TP-021 (Issue 1.1 – 06/09/05 – chapter 4.1)**

Configuration Check:

Step #	Action	Comments	Check
1	PACS warm electronics is mounted on the SVM		**OK**
2	28 V power is connected to CCS power supplies		**OK**
3	PACS OBT interface is connected to CCS OBT simulator		**OK**
4	DPU 1553 interface is connected to CDMU DFE		**OK**
5	The CDMU DFE is up and running bus list "nominal"	**PACS_prime_inst.pst**	**OK**
6	PACS+EGSE grounding has been verified against AD-7		**OK**
7	Check that all TOPE-Tcl scripts (sec.10) are accessible via the CCS	**All received PACS TCL scripts have been added to the CCS. No time was available to check this. In case TCL scripts would be missing, they will be added to the running CCS session later.**	**OK**

Remark: During the power on multiple out of limits were reported. This is a known ASED NCR 1276. Also a SSC error was reported on the CCS (known ASED NCR 1247).

Step #	Action	Comments	Check
1	Execute script: PACS_POWER_ON.tcl	PACS is sending regular non-Prime HK packets and essential HK packets	**OK**

	(log see Appendix 4)	1355 links DPU-SPUS, DPU-SPUL, DPU-DMC, DMC-SPUS, DMC-SPUL, DMC-BOLC are on and communicating	**OK**
		Counters for TM(1,2), TM(1,8) and NACKs shall be 0	**OK**
		¨ 28 V power is on for all 4 sub-systems	**OK**

7 Step by Step Procedure: PACS IMT results

7.1 Test ID: 410 – Cooler Recycling

Step #	Action	Comments	Check
1	Execute: BOLO_cooler_OBS_shell.tcl	Started at 09h26m42s UTC	OK
		Heater currents are set as commanded	OK
		TEMP_EV should be close to 0.3 K after the execution of the script (110 min)	OK
		TEMP_EV should be below 300mK 120 min after starting of the recycling	OK

Important remark: After execution of this script, the following TCL files are updated and patched into the running CCS session:

- **BOLO_cooler_OBS_shell.tcl**
- **Emissivity_SPEC_spu_setup.tcl**
- **PHOT_setup_OBS_shell.tcl**
- **PHOT_thermal_OBS_shell.tcl**
- **rsrf_SPEC_spu_setup**
- **SPEC_dark_current_spt_eqmimt_obs_shell.tcl**
- **Wavecal_SPEC_spu_setup.tcl**

7.2 Test ID: 411 – Thermal Behaviour Test in Photometry

Step #	Action	Comments	Check
1	Execute: PHOT_thermal_OBS_shell.tcl **During the sequence PACS demanded to send a manual stack command: PC221410 (PP114410 = 35 Hex) This was due to a problem with the group switch-on.** **PACS also indicates that there is a problem with the heat up of the calibration sources. They describe it as "oscillating read backs'. In spectroscopy mode, the calibration sources worked correctly.**	0 Check that photometry HK packets are sent and temperature sensors are on	OK
		1 Check that groups 1,3,5,6 are switched-on and bolometer temperature sensors are on	NOK
		6 Check if the safe polarisations for M7 configuration are set	OK
		11 Is the chopper moving between the 2 CSs?	OK
		16 Are both calibration sources heating up?	OK
		36 Is the filter wheel changing positions every 15 sec?	OK
		39 Is the chopper moving between the 2 CSs?	OK

		44 Are both CSs switched off?	**OK**
		46 Are the chopper and grating controller switched-off?	**OK**
		48 Are the bolometer array groups 1,3,5,6 switched-off?	**OK**
		53 Is the HK list set again to NonPrime?	**OK**
2	Execute: ENTER_SAFE__Mode_Shell.tcl **This script is not executed on request of PACS.**	PACS is in SAFE mode	**N/A**

7.3 Test ID: 412 – PACS Setup of Photometry, FW Photometry and Data Rate

Step #	Action	Comments	Check
1	Execute: PHOT_setup_OBS_shell.tcl **The problems described in test ID 411 continue.**	Photometry HK packets are sent	**OK**
		Filter wheel is at position 1, the chopper is near position 0 and the calibration sources are heating up	**OK**
		Groups 1,3,5,6 are switched on, the temperature sensors are on and indicate their expected LHe values and data frequency is 20 Hz	**NOK**
		Check if correct safe biases are set for the M7 configuration for groups 1,3,5,6	**OK**
		Bolometer and HK data are sent to DMC, check if sequence mode is "Sbolo-Sref"	**OK**
		Check if correct operating biases are set for the M7 configuration for groups	**OK**
		Check if sequence mode is set to "Sbolo - Sref"	**OK**
		Gain is set to "high"	**OK**
		Photometry science packets are generated	**OK**
2	Execute: PACS_Phot_Fil_Diaghk_Setup.tcl	Diagnostic HK packets are produced	**OK**
3	Execute: PHOT_FW_loop_obs_Shell.tcl	FW rotates every ~30 seconds	**OK**
4	Execute: PACS_Diaghk_Reset.tcl	Production of diagnostic HK packets stops	**OK**
5	Execute: PHOT_spu_data_rate_obs_shell.tcl	Chopper moves to CS2	**OK**
		Check that after 15 minutes of staring measurement, the chopper goes back to zero	**OK**

Extra

Step #	Action	Comments	Check
extra	Execute: ENTER_SAFE__Mode_Shell.tcl	PACS is in SAFE mode	**OK**
extra	Execute: PHOT_setup_OBS_shell.tcl **During the sequence PACS demanded to send a manual stack command: PC221410 (PP114410 = 35 Hex). This just before the biases were set. Despite of this the group switch on did not work correctly.**	Photometry HK packets are sent	**OK**
		Filter wheel is at position 1, the chopper is near position 0 and the calibration sources are heating up	**OK**
		Groups 1,3,5,6 are switched on, the temperature sensors are on and indicate their expected LHe values and data frequency is 20 Hz	**NOK**
		Check if correct safe biases are set for the M7 configuration for groups 1,3,5,6	**OK**
		Bolometer and HK data are sent to DMC, check if sequence mode is "Sbolo-Sref"	**OK**
		Check if correct operating biases are set for the M7 configuration for groups	**OK**
		Check if sequence mode is set to "Sbolo - Sref"	**OK**
		Gain is set to "high"	**OK**
		Photometry science packets are generated	**OK**

7.4 Test ID: 534 – Focal Plane Map with Calibration Sources and representative thermal Background

Step #	Action	Comments	Check
1	Execute: PHOT_focal_map_OBS_shell.tcl	SPU science data flow has started	**OK**
		Filter moves from A to B to A	**OK**
		Chopper moves from - 26000 to 27000 and back (twice)	**OK**
		SPU science data flow has stopped	**OK**

7.5 Test ID: 533 – Test of Internal Calibration Recipes in Photometry

Step #	Action	Comments	Check
1	Execute: PHOT_cal_recipes_OBS_shell.tcl	SPU science data flow has started	**OK**
		Filter moves from A to B to A	**OK**
		Chopper moves between - 22680 and +23590	**OK**
		SPU science data flow has stopped	**OK**

7.6 Test ID: 413 – Bolometers Saturation Check

Step #	Action	Comments	Check
1	Execute: PHOT_saturation_OBS_shell.tcl	Chopper is moving every 2 sec by 5000 commanded units	**OK**
		Gain is changing from "high" to "low" to "high"	**OK**
		Filter wheel position changes from "1" to "0" to "1"	**OK**
		Check the detector signal in QLA (for several pixels) and in case of saturation: note the gain-filter-chopper combinations and avoid these settings later on.	**OK**

7.7 Test ID: 643 – Tutti Frutti AOT Test Photometry

Step #	Action	Comments	Check
Extra	Manual stack command: PC220410 (BOLC_SET_GAIN) With PP112410 - LOW		**OK**
1	Execute: PHOT_all_aots_OBS_shell_01.tcl	Filter position is "A"	**OK**
		Check that all 7 OBCP finish correctly	**OK**
		Filter position is "B" (after approx. 13 min)	**OK**
		Check that all 7 OBCP fin ish correctly	**OK**
		Filter position is "A"	**OK**
		Check that in total 14 TM (1,7) have been issued	**OK**

7.8 Test ID: 538 – Test Pattern Photometry

Step #	Action	Comments	Check
1	Execute: PHOT_testpattern.tcl **This script failed because of missing commands in the TCL script. PACS will update the script and try again during the rest of IMT.**	The BOL-C test pattern is visible in QLA (60 sec)	**NOK**

At this point PACS is switched to SAFE mode with the following script: ENTER_SAFE__Mode_Shell.tcl.

This is the beginning of the second day of IMT part 2 (20/10/2005).

Important remark: The following TCL files are updated and patched into the running CCS session:

- **PHOT_setup_OBS_shell.tcl**
- **PHOT_testpattern.tcl**
- **PHOT_thermal_OBS_shell.tcl**

7.9 Test ID: 412 – PACS Setup of Photometry, FW Photometry and Data Rate

Step #	Action	Comments	Check
1	Execute: PHOT_setup_OBS_shell.tcl	Photometry HK packets are sent	**OK**
		Filter wheel is at position 1, the chopper is near position 0 and the calibration sources are heating up	**OK**
		Groups 1,3,5,6 are switched on, the temperature sensors are on and indicate their expected LHe values and data frequency is 20 Hz	**Not all groups OK**
		Check if correct safe biases are set for the M7 configuration for groups 1,3,5,6	**OK**
		Bolometer and HK data are sent to DMC, check if sequence mode is "Sbolo-Sref"	**OK**
		Check if correct operating biases are set for the M7 configuration for groups	**OK**
		Check if sequence mode is set to "Sbolo - Sref"	**OK**
		Gain is set to "high"	**OK**
		Photometry science packets are generated	**OK**
Extra	Only STEP A needs to be executed according to PACS personal.		

7.10 Test ID: 538 – Test Pattern Photometry

Step #	Action	Comments	Check
1	Execute: PHOT_testpattern.tcl	The BOL-C test pattern is visible in QLA (60 sec)	**OK**

	This script failed before, but was updated at the beginning of the day. The update worked. PACS will investigate data offline.		

7.11 Test ID: 537 – SPU Compression/Reduction Mode Test Photometer

Step #	Action	Comments	Check
1	Execute: PHOT_spu_lowmodestest.tcl Request CCS to enter burst mode bus list	Reduced science data is seen in QLA	**OK**
		CCS bus list is set to burst mode	**OK**
2	Execute: PHOT_spu_highmodestest.tcl Request CCS to enter nominal bus list mode again	Raw science data is seen in QLA	**OK**
		CCS bus list is nominal again	**OK**

Important remark: It is noticed that the IEGSE does not receive any "Type 1" packets from the DPU. This is because the tmd.dat file on the CCS does not contain the SPIDs of these Type 1 packets. An NCR is raised (HP-113000-ASED-NC1619) and Alcatel is informed to change the tmd file in the next delivery.

7.12 Test ID: 645 – Two/Three position chopping with/without internal calibration block

Step #	Action	Comments	Check
1	Execute: PHOT_int_cal_block_1_OBS_shell.tcl	Filter position is "A"	**OK**
		Check that all 7 OBCP 4 calls finish correctly	**OK**
		Filter position is "B" (after approx. 15 min)	**OK**
		Check that all 7 OBCP 4 calls finish correctly	**OK**
		Filter position is "A"	**OK**
		Check that in total 14 TM (1,7) have been issued **Could not be checked. Assumed to be OK**	**N/A**
2	Execute: ENTER_SAFE_Mode_Shell.tcl **This script is not executed (request from**	PACS is in SAFE mode	**N/A**

	PACS)		

7.13 Test ID: 536 – Detector Selection Table Test Photometer

Step #	Action	Comments	Check
1	Execute: PHOT_spu_detseltest.tcl	SPU transmits only data for blue subarray 1, red subarray 2	**OK**
		SPU transmits only data for one red and blue detector pixel	**OK**
		SPU transmits data for one row of pixels	**OK**
		SPU transmits data for one column of pixels	**OK**
		SPU transmits data for all detectors **This step failed because of an error in the TCL script. PACS will fix this in the next delivery.**	**NOK**

7.14 Test ID: 644 – Internal Calibration Blocks Photometry

Step #	Action	Comments	Check
1	Execute: PHOT_int_cal_block_OBS_shell.tcl	Filter position is "A"	
		Check that all 7 OBCP 4 calls finish correctly	
		Filter position is "B" (after approx. 15 min)	
		Check that all 7 OBCP 4 calls finish correctly	
		Filter position is "A"	
		Check that in total 14 TM (1,7) have been issued	

7.15 Test ID: 534 – Focal Plane Map with Calibration Sources and representative thermal Background

Test is repeated because now more groups are available. This test is done with a much higher cover temperature; it might be interesting to see the difference with yesterday.

Step #	Action	Comments	Check
1	Execute: PHOT_focal_map_OBS_shell.tcl	SPU science data flow has started	**OK**
		Filter moves from A to B to A	**OK**

		Chopper moves from - 26000 to 27000 and back (twice)	**OK**
		SPU science data flow has stopped	**OK**
extra	Execute: ENTER_SAFE_Mode_Shell.tcl **This script is executed on request of PACS**	PACS is in SAFE mode	**OK**

7.16 Test ID: 646 – PACS Setup of Spectroscopy

At this point it is decided to switch to spectroscopy mode. The cover will in the meanwhile be flushed again (new He dewar connected).

Step #	Action	Comments	Check
1	Execute: SetupSpectroscopyEQMIMT_Shell.tcl **This script failed because the launch lock was still closed.**	Spectroscopy HK packets are sent	**N/A**
		Nominal detector setting (C=0.3pF, r=64, bias=[210mV,70mV], heater=200uA)	**N/A**
		Chopper controller on	**N/A**
		Grating controller on and grating homing completed	**N/A**
		Calibration sources are heating up	**N/A**
extra	Manual Stack Command to recover from the failed test: PC005380 (DPU_SET_FUNC) with: PP007380 = 103 PP006380 = ENABLE (1)		**OK**
extra	Execute: ENTER_SAFE_Mode_Shell.tcl	PACS is in SAFE mode	**OK**
extra	Execute: Llock_Open_Shell.tcl	Verify in HK that launch lock open bit has been set for at least 1 HK packet	**OK**
Repeat 1	Execute: SetupSpectroscopyEQMIMT_Shell.tcl	Spectroscopy HK packets are sent	**OK**
		Nominal detector setting (C=0.3pF, r=64, bias=[210mV,70mV], heater=200uA)	**OK**
		Chopper controller on	**OK**
		Grating controller on and grating homing completed	**OK**
		Calibration sources are heating up	**OK**

7.17 Test ID: 520 – Quick Wavelength Check

Step #	Action	Comments	Check
1	Execute: SPEC_spu_reset.tcl	Science data flow stops	**OK**

2	Execute: wavecal_SPEC_cre_setup.tcl	CRE housekeeping as commanded	**OK**
3	Execute: wavecal_SPEC_spu_setup.tcl	Science data flow starts	**OK**
4	Execute: wavecal_cs1_scan.tcl **During this sequence all PACS packets were identified by the CCS as "bad packets". This is a known NCR 1497. To recover from this the following command is send: PC 3673380 (DPU_RESET_1553).** **The script failed because of an unknown reason. Script should be repeated.**	Grating moves in steps of 133 from position 535000 to 715000 and back	**OK**
extra	Repeat Execution: wavecal_cs1_scan.tcl **Script failed. An additional manual stack command was send to recover: PC005380 (DPU_SET_FUNC) with: PP007380 = 103 PP006380 = ENABLE (1)**		**NOK**
extra	Execute: ENTER_SAFE_Mode_Shell.tcl	PACS is in SAFE mode	**OK**
extra	Execute: SetupSpectroscopyEQMIMT_Shell.tcl		**OK**

7.18 Test ID: 522 – S/N as a Function of Reset Interval

Step #	Action	Comments	Check
1	Execute: SPEC_Readouts_per_Ramp_Test_Shell_01.tcl	Readouts per ramp are set to 16 for blue and red detectors	**OK**
2	Execute: SPEC_Readouts_per_Ramp_Test_Shell_02.tcl	Readouts per ramp are set to 32 for blue and red detectors	**OK**
3	Execute: SPEC_Readouts_per_Ramp_Test_Shell_03.tcl	Readouts per ramp are set to 64 for blue and red detectors	**OK**
4	Execute: SPEC_Readouts_per_Ramp_Test_Shell_04.tcl	Readouts per ramp are set to 128 for blue and red detectors	**OK**
5	Execute: SPEC_Readouts_per_Ramp_Test_Shell_05.tcl	Readouts per ramp are set to 256 for blue and red detectors	**OK**
6	Execute: SPEC_Readouts_per_Ramp_Test_Shell_06.tcl	Readouts per ramp are set to 512 for blue and red detectors	**OK**

Important remark: The following TCL files are updated and patched into the running CCS session:

- **PHOT_stray_light_obs_Shell.tcl (new TCL script)**
- **Emissivity_SPEC_spu_setup.tcl**
- **PHOT_focal_map_OBS_shell.tcl**

- **PHOT_saturation_OBS_shell.tcl**
- **PHOT_spu_detseltest.tcl**
- **PHOT_spu_highmodestest.tcl**
- **PHOT_spu_lowmodestest.tcl**
- **rsrf_SPEC_spu_setup.tcl**
- **wavecal_SPEC_spu_setup.tcl**

7.19 Test ID: 520 – Quick Wavelength Check

Step #	Action	Comments	Check
1	Execute: SPEC_spu_reset.tcl	Science data flow stops	**OK**
2	Execute: wavecal_SPEC_cre_setup.tcl	CRE housekeeping as commanded	**OK**
3	Execute: wavecal_SPEC_spu_setup.tcl	Science data flow starts	**OK**
4	Execute: wavecal_cs1_scan.tcl	Grating moves in steps of 133 from position 535000 to 715000 and back	**OK**
5	Execute: SPEC_spu_reset.tcl	Science data flow stops	**OK**

7.20 Test ID: 523 – Different Bias settings for Ge:Ga detectors

Step #	Action	Comments	Check
1	Execute: SPEC_Bias_d_loop_obs_shell.tcl	Chopper moves to CS2	**OK**
		Grating moves to a key lambda	**OK**
		Check that loop over 8 bias values is executed	**OK**
		Chopper moves to zero	**OK**
		Detectors are reset with nominal bias	**OK**
		Science data flow stops	**OK**

7.21 Test ID: 642 – Setup Photometry

Step #	Action	Comments	Check
extra	Execute:	PACS is in SAFE mode	**OK**

	ENTER_SAFE_Mode_Shell.tcl		
1	Execute: PHOT_setup_OBS_shell.tcl **During this script (and during previous days), it was noticed that the result of the script is not as desired. To solve this, some manual stack commands need to be send.**	Photometry HK packets are sent	**OK**
		Filter wheel is at position 1, the chopper is near position 0 and the calibration sources are heating up	**OK**
		Groups 1,3,5,6 are switched on, the temperature sensors are on and indicate their expected LHe values and data frequency is 20 Hz	**OK**
		Check if correct safe biases are set for the M7 configuration for groups 1,3,5,6	**OK**
		Bolometer and HK data are sent to DMC, check if sequence mode is "Sbolo-Sref"	**OK**
		Check if correct operating biases are set for the M7 configuration for groups	**OK**
		Check if sequence mode is set to "Sbolo - Sref"	**OK**
		Gain is set to "high"	**OK**
extra	Manual Stack command: PC176420 (DMC_WRT_TIMING_FPGA_PAR) with: PP067420 = 0 PP067420 = 0 PP067420 = 0 PP067420 = 26 (Dec) PP067420 = 95217CB PP067420 = 3 PP066420 = BD70		**OK**
extra	Manual Stack command: PC081420 (DMC_SET_TIMING_FPGA_PAR)		**OK**
extra	Manual Stack command: PC080420 (DMC_SYNCHRONIZE_ON_DET) with: PP074420 = 4		**OK**
extra	Manual Stack command: PC123420 with: PP079420 = -1000		**OK**
extra	Manual Stack command: PC123420 with: PP079420 = 5000		**OK**
extra	Manual Stack command: PC123420 with: PP079420 = 0		**OK**

Important remark: The following TCL files are updated and patched into the running CCS session:

- **astrium_cryostat_bg_test_SPEC_cre_setup.tcl (new TCL script)**
- **astrium_cryostat_bg_test_SPEC_full_cover_scan.tcl (new TCL script)**
- **astrium_cryostat_bg_test_SPEC_spu_setup.tcl (new TCL script)**

- **DiagHK_setup_CS1_obs_Shell.tcl**
- **emissivity_SPEC_spu_setup.tcl**
- **rsrf_SPEC_spu_setup.tcl**
- **wavecal_SPEC_spu_setup.tcl**

7.22 Test ID: 644 – Internal Calibration Blocks Photometry

Step #	Action	Comments	Check
extra	Execute: ENTER_SAFE_Mode_Shell.tcl	PACS is in SAFE mode	**OK**
1	Execute: PHOT_int_cal_block_OBS_shell.tcl	Filter position is "A"	**OK**
		Check that all 7 OBCP 4 calls finish correctly	**OK**
		Filter position is "B" (after approx. 15 min)	**OK**
		Check that all 7 OBCP 4 calls finish correctly	**OK**
		Filter position is "A"	**OK**
		Check that in total 14 TM (1,7) have been issued	**OK**

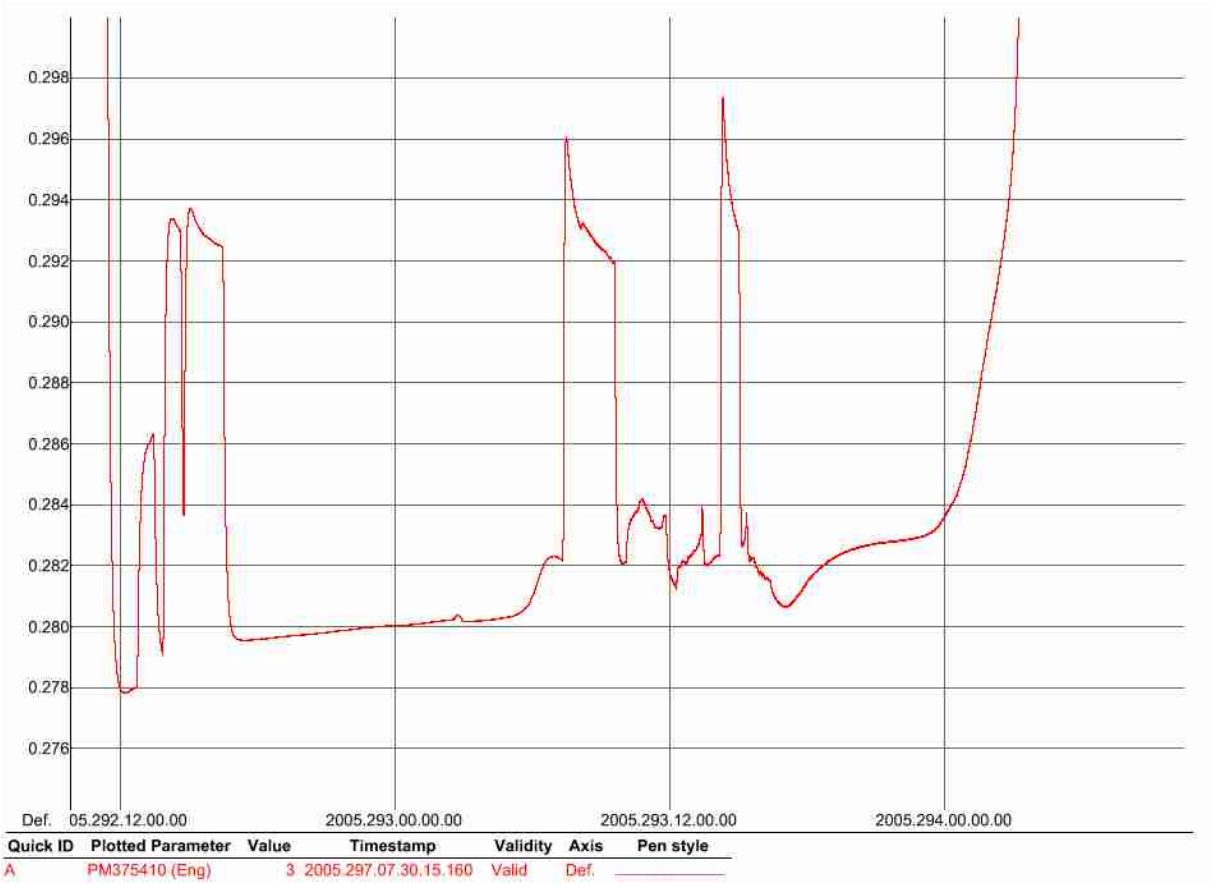
7.23 Test ID: 520 – Quick Wavelength Check

Step #	Action	Comments	Check
1	Execute: SPEC_spu_reset.tcl	Science data flow stops	**OK**
2	Execute: wavecal_SPEC_cre_setup.tcl	CRE housekeeping as commanded **PACS detected problems**	**NOK**
extra	Execute (again): wavecal_SPEC_cre_setup.tcl	CRE housekeeping as commanded	**OK**
3	Execute: wavecal_SPEC_spu_setup.tcl	Science data flow starts	**OK**
4	Execute: wavecal_cs1_scan.tcl	Grating moves in steps of 133 from position 535000 to 715000 and back	**OK**
5	Execute: SPEC_spu_reset.tcl	Science data flow stops	

7.24 Test ID: 407 – Setup Spectroscopy, Data Rate and Cryostat Background Adjustment

Step #	Action	Comments	Check
1	Execute: SetupSpectroscopyEQMIMT_Shell.tcl **PACS personal indicated that this script should not be executed at this time.**	Spectroscopy HK packets are sent	**N/A**
		Nominal detector setting (C=0.3pF, r=64, bias=[210mV,70mV], heater=200uA)	**N/A**
		Chopper controller on	**N/A**
		Grating controller on and grating homing completed	**N/A**
		Calibration sources are heating up	**N/A**
2	Execute: SPEC_spu_data_rate_obs_Shell.tcl **PACS personal indicated that this script should not be executed at this time.**	Check that chopper moves to CS2	**N/A**
		Check correct display of science data in QLA	**N/A**
		Check that chopper moves to zero	**N/A**
3	Execute: Background_Adjustment_Shell_01.tcl	Monitor detector signal due to cryostat background in comparison to signal of internal calibration sources	**OK**
4	Execute (again): Background_Adjustment_Shell_01.tcl	Continue monitoring cryostat background signal until the signal level reaches a value between the CS1 and CS2 signal	**OK**
Extra	Manual Stack command: PC087420 (DMC_SET_B_SPEC_HEAT_1_C) with: PP073420 = 0 uA		
extra	Execute: ENTER_SAFE_Mode_Shell.tcl	PACS is in SAFE mode	**OK**

7.25 Cooler Recycle Overview


0.298
0.296
0.294
0.292
0.290
0.288
0.286
0.284
0.282
0.280
0.278
0.276
Def. 05.292.12.00.00
2005.293.00.00.00
2005.293.12.00.00
2005.294.00.00.00
Quick ID Plotted Parameter Value Timestamp Validity Axis Pen style
A PM375410 (Eng) 3 2005.297.07.30.15.160 Valid Def.

8 Step by Step Procedure: Switch Off Instruments

PACS is left STANDBY over the weekend to make sure the end of the cooler recycle is recorded correctly.

9 Step by Step Procedure: Set EGSE to OFFLINE

All EGSE's, DFE's etc… are left on because SPIRE IMT is starting directly after the weekend.

10 SPIRE IMT

The PACS IMT part 2 is stopped. All instruments are left in STANDBY mode over the weekend and SPIRE IMT part 2 is continued the next week (see HP-2-ASED-TR-0101). At the end of SPIRE IMT, all instruments are powered down.

This is the start of the third part of PACS IMT (02/11/2005). The CCS and EGSE is configured (see following chapters), all instruments are powered on to STANDBY mode and PACS IMT is restarted.

11 Step by Step Procedure: Configure CCS and EGSE

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution - steps 1 to 9)**

Step #	Action	Comments	Check
1	Note Testsession	2005_11_02_07_21_ilsens_hpws42_REALTIME_P_IMT_p3	**OK**
2	Power on CDMU DFE platform		**OK**
3	Power on PLM SCOE platform		**OK**
4	Power on the CDMU DFE workstation and wait for the BIST to finish.	Check: BIST successful?	**OK**
5	Power on the PLM SCOE workstation and wait for the BIST to finish.	Check: BIST successful?	**OK**
6	Execute “EGSE_CONFIG_AUTO.tcl” (see log in Appendix 5)	Check: PLM SCOE HK packets arriving	**OK**
		Check: CDMU DFE HK packets arriving	**OK**
		Check: Check name of bus profile (PST) in CDMU DFE HK or on CDMU DFE workstation **Result: PACS_prime_inst.pst**	**OK**
7	Execute “SubscribeParams.tcl”	Check: Wait until status of TCL file has changed to WAITING. This can take up to 10 minutes.	**OK**
8	Execute “Connect HIEGSE”	Check with IEGSE operators if IEGSE is connected.	**OK**
9	Execute “WARNING_LAMP_POWER_ON.tcl”	**Not done since warning lamp is broken.**	**N/A**
extra	Execute “connect EQMCRYO”		**OK**

12 Step by Step Procedure: Power On Instruments

Remark: Since this test was primarily focused on the cooler recycling, the other instruments were not powered on during the test.

12.1 Power on HIFI to STANDBY Mode

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 10)**
- **SRON-G/HIFI/PR/2005-101 chapter 2.4.1 & 2.4.5**

The complete power on of HIFI is done with HIFI_POWER_ON.tcl. The log can be found in Appendix 6

Step #	Action	Comments	Check
1	Apply power to ICU	Select ICU_housekeeping AND	**OK**
		Check voltage in the range 26V – 29V Actual value = **27.93 V**	**OK**
		Check ICU current draw is TBD - TBD mA Actual value = **0.96 A**	**OK**
		Check for receipt of (5,2) event packet after power-on	**OK**
2	Command: HIFI_force_boot	Check for absence of (5,4) event packet after HIFI_force_boot command	**OK**
		Check for receipt of HK packets every 3 sec	**OK**
		Check OBS version **Result: 1.3dec**	**OK**
		Compare HK (secondary supply voltages) with previous results **Could not be done since HIFI is not present**	**OK**
3	Command: HIFI_Housekeeping_on HIF_HK_rate=1_pkt_per_sec	Check for HK updates every 1 sec	
4	Command: HIFI_notify_PDU_status HIF_FCU_s=on	*Select ICU_housekeeping and HRH_analog AND's*	**OK**
		Check FCU HK received and no limit errors	**NOK**
5	Apply power to HRH	*Select ICU_housekeeping and HRH_analog AND's*	**OK**
		Check voltage in the range 26V – 29V Actual value = **27.73 V**	**OK**
		Check HRH current draw is 2.2A – 2.5A Actual value = **2.43 A**	**OK**

6	Command: HIFI_notify_PDU_status HIF_FCU_s=on HIF_HRSH_s=on	Check HRH HK received and no limit errors	**OK**
7	Apply power to WEH	Select ICU_housekeeping and WBS_H AND's	**OK**
		Check voltage in the range 26V – 29V Actual value = **27.93 V**	**OK**
		Check WEH current draw is 0.9A – 1.0A Actual value = **0.94 A**	**OK**
8	Command: HIFI_notify_PDU_status HIF_FCU_s=on HIF_HRSH_s=on HIF_WBSH_s=on	Check WBS_H HK received and no limit errors	**OK**
9	Apply power to LCU	Select ICU_housekeeping and LCU_status AND's	**OK**
		Check voltage in the range 26V – 29V Actual value = **27.93 V**	**OK**
		Check WEH current draw is 0.69A – 0.75A Actual value = **0.72 A**	**OK**
10	Command: HIFI_notify_PDU_status HIF_FCU_s=on HIF_HRSH_s=on HIF_WBSH_s=on HIF_LCU_s=on	Check LCU HK received and no limit errors	**OK**

Remark: Since HIFI is in STANDY mode during the SPIRE IMT, the HK rate is reduced to once a second. This is done with command: HIFI_Housekeeping_on (HIF_HK_rate=1_pkt_per_5_s)

12.2 Power on SPIRE to STANDBY Mode

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 10)**
- **SPIRE-RAL-PRC-002494 (Issue 1.1 Appendix 1 – 09/09/05)**

Step #	Action	Comments	Check
1	CCS 28V Power Supply to the DPU is available		**OK**
2	SPIRE MIB is imported in the CCS database.		**OK**
3	CCS is up and running (SCOS, TOPE and the CDMU Simulator)		**OK**
4	DPU AND OBS PARAMETERS display is selected on the CCS		**OK**

12.2.1 SFT-SPIRE-CCS-DPU-ON

Purpose: To switch on the SPIRE DPU and start generating housekeeping

Step #	Action	Comments	Check
1	Power on the SPIRE DPU using the CCS 28V Power Supply	**This action is performed from INSTR_POWER_ON.tcl (see Appendix 7)** **Result:** • **Voltage: 27.8 V** • **Current: 0.45 A** **(5,2) packet received**	**OK**
2	Execute TCL script SFT-SPIRE-CCS-DPU-ON.tcl		**OK**
3	Check that THSK parameter on the DPU AND OBS PARAMETERS display on SCOS is refreshing every second	THSK incrementing every second	**OK**
4	Check that TM2N parameter on the DPU AND OBS PARAMETERS display on SCOS is incrementing every second	TM2N incrementing every second	**OK**

Final Configuration: SPIRE DPU is on but the DRCU is still off

12.2.2 SFT-SPIRE-CCS-DRCU-ON

Purpose: To switch on the SPIRE DRCU and start generating housekeeping

Step #	Action	Comments	Check
1	Execute TCL script SFT-SPIRE-CCS-DRCU-ON-STEP1.tcl	**HK stopped as expected**	**OK**
2	Check that THSK parameter is not refreshing anymore		**OK**
3	Check that TM2N parameter is not incrementing anymore		**OK**
4	Ensure the SPIRE Power Bench is connected to the mains – see Figure 2.		**OK**
	Ensure all 5 remote DCU switches are in the off position – see Figures 3 & 4 below.		**OK**
	Switch on the Primary Power on the back of the SPIRE Power Bench (Figure 2).	**Prime power led becomes orange** **Main power led becomes green**	**OK**
	Switch on the Secondary Power on the front of the SPIRE Power Bench by pulling out and lifting up the switch (shown in yellow circle in Figure 5)	**Secondary power led becomes red**	**OK**
5	Execute TCL script SFT-SPIRE-CCS-DRCU-ON-STEP2-STBY.tcl		**OK**
6	Manual Switch on of the DRCU by the CCS staff step 2: • Switch on all 5 remote DCU		**OK**

	switches		
7	Check that THSK parameter is again refreshing every second	**THSK incrementing every 4 second**	**OK**
8	Check that TM2N parameter is again incrementing every second	**TM2N incrementing every 4 second**	**OK**

Final Configuration:

- SPIRE DPU and DRCU are both on
- HK generation is on

12.2.3 SFT-SPIRE-CCS-FUNC-SCU-03

Purpose: SCU DC thermometry check

Step #	Action	Comments				Check
1	Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-03.tcl					**OK**
2	Wait for the parameter BBFULLTYPE to get set to SCU_DC_Therm					**OK**
3	A few seconds later record the value of parameter SCUTEMPSTAT	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		SCUTEMPSTAT **Observed**	0 **0000000**	FFFF **0000FFFF**	FFFF **0000FFFF**	**OK**
4	Record the RAW values	**Parameter**		**Value**		**OK**

	of SCU temperatures	**PUMPHTRTEMP** **PUMPHSTEMP** **EVAPHSTEMP** **SHUNTTEMP** **SOBTEMP** **SL0TEMP** **PL0TEMP** **OPTTEMP** **BAFTEMP** **BSMIFTEMP** **SCAL2TEMP** **SCAL4TEMP** **SCALTEMP** **SMECIFTEMP** **SMECTEMP** **BSMTEMP**	**3.83** **6.18** **5.84** **1.72** **7.83** **1.86** **1.90** **7.49** **7.33** **6.99** **6.08** **9.45** **7.68** **7.65** **9.82** **6.94**	

Final Configuration: Unchanged

12.2.4 SFT-SPIRE-CCS-FUNC-SCU-06

Purpose: SCU AC thermometry check

Preconditions: SPIRE CQM is electrically integrated with the Herschel EQM

Initial Configuration:

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

Step #	Action	Comments				Check
1	Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-06.tcl					**OK**
2	Wait for the parameter BBFULLTYPE to get set to SCU_AC_Therm					**OK**
3	A few seconds later record the value of parameter SUBKSTAT	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		SUBKSTAT	0	1	1	**OK**
		Observed values	**0**	**1**	**1**	
4	Record the RAW value of SUBKTEMP	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		SUBKTEMP	?		?	**OK**

		Observed values	**-**	**-**	**1.90**	
5	Note down the value of the MODE parameter on the DPU AND OBS PARAMETERS display	**Parameter**	**Start**	**During**	**End**	**OK**
		MODE	-	-	REDY	
		Observed values	**-**	**-**	**REDY**	

Final Configuration: Unchanged

12.3 Power on PACS to PRIME Mode

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 10)**
- **PACS-ME-TP-021 (Issue 1.1 – 06/09/05 – chapter 4.1)**

Configuration Check:

Step #	Action	Comments	Check
1	PACS warm electronics is mounted on the SVM		**OK**
2	28 V power is connected to CCS power supplies		**OK**
3	PACS OBT interface is connected to CCS OBT simulator		**OK**
4	DPU 1553 interface is connected to CDMU DFE		**OK**
5	The CDMU DFE is up and running bus list "nominal"	**PACS_prime_inst.pst**	**OK**
6	PACS+EGSE grounding has been verified against AD-7		**OK**
7	Check that all TOPE-Tcl scripts (sec.10) are accessible via the CCS		**OK**

Remark: During the power on multiple out of limits were reported. This is a known ASED NCR 1276. Also a SSC error was reported on the CCS (known ASED NCR 1247).

Step #	Action	Comments	Check
1	Execute script: PACS_POWER_ON.tcl (log see Appendix 8)	PACS is sending regular non-Prime HK packets and essential HK packets	**OK**
		1355 links DPU-SPUS, DPU-SPUL, DPU-DMC, DMC-SPUS, DMC-SPUL, DMC-BOLC are on and communicating	**OK**
		Counters for TM(1,2), TM(1,8) and NACKs shall be 0	**OK**
		¨ 28 V power is on for all 4 sub-systems	**OK**

13 Step by Step Procedure: PACS IMT results (part 2)

This is the start of the first day of PACS IMT part 3 (02.11.05)

Important remark: The following TCL files are updated and patched into the running CCS session:

- **PHOT_low_freq_OBS_shell.tcl**
- **rsrf_cs1_scan.tcl**
- **wavecal_cs1_scan.tcl**

Important remark: During last PACS IMT, it was noticed that all type 1 packets were not forwarded to the IEGSE. This is a known NCR (ASED-NC-1619). To temporally solve this, the tmd.dat file has been changed before starting this CCS session. Two new SPIDs have been added to the tmd.dat file (70004000 and 70003000). PACS confirm that they have now visibility of the type 1 packets.

13.1 Test ID: 646 – PACS Setup of Spectroscopy

Step #	Action	Comments	Check
1	Execute: SetupSpectroscopyEQMIMT_Shell.tcl **Executed at: 08h16m06s UTC**	Spectroscopy HK packets are sent	**OK**
		Nominal detector setting (C=0.3pF, r=64, bias=[210mV,70mV], heater=200uA)	**OK**
		Chopper controller on	**OK**
		Grating controller on and grating homing completed	**OK**
		Calibration sources are heating up	**OK**

13.2 Test ID: 524 – Test of Internal Calibration Recipes in Spectroscopy

Step #	Action	Comments	Check
1	Execute: SPEC_cal_recipes_OBS_shell_01.tcl **Executed at: 09h08m38s UTC**	SPU science data flow has started	**OK**
		For each grating position all 4 OBCPs finish correctly	**OK**
		Check that all 3 grating position were reached	**OK**
		Check the commanded chopper positions of ±25000	**OK**
		Check that in total 12 TM (1,7) have	**OK**

		been issued	
		Check that chopper and grating are at their default positions in the end	**OK**
		SPU science data flow stopped	**OK**
2	Execute: SPEC_cal_recipes_OBS_shell_02.tcl **Executed at:** **09h24m33s UTC**	SPU science data flow has started	**OK**
		For each grating position all 4 OBCPs finish correctly	**OK**
		Check that all 3 grating position were reached	**OK**
		Check the commanded chopper positions of ±25000	**OK**
		Check that in total 12 TM (1,7) have been issued	**OK**
		Check that chopper and grating are at their default positions in the end	**OK**
		SPU science data flow stopped	**OK**
3	Execute: SPEC_cal_recipes_OBS_shell_03.tcl **Executed at:** **09h40m32s UTC**	SPU science data flow has started	**OK**
		For each grating position all 4 OBCPs finish correctly	**OK**
		Check that all 3 grating position were reached	**OK**
		Check the commanded chopper positions of ±25000	**OK**
		Check that in total 12 TM (1,7) have been issued	**OK**
		Check that chopper and grating are at their default positions in the end	**OK**
		SPU science data flow stopped	**OK**

13.3 Test ID: 525 – Time Constants for Flux Changes in Spectroscopy

Step #	Action	Comments	Check
1	Execute: SPEC_Chop_move_abs_raw_obs_Shell.tcl **Executed at:** **09h55m56s UTC**	Check that chopper moved to target	**OK**
2	Execute: SPEC_spu_reset_obs_Shell.tcl **Executed at:** **09h56m37s UTC**	No science packets are being generated	**OK**
3	Execute: SPEC_cre_setup_obs_Shell_025s.tcl	Bias voltage of the CREs is 70mV for red and 210mV for blue and ramp_length=64 samples	**OK**

	Executed at: **09h57m20s UTC**		
4	Execute: SPEC_spu_setup_obs_Shell_025s.tcl **Executed at:** **09h58m09s UTC**	Science packets are received	**OK**
5	Execute: SPEC_Det_time_constant_Shell.tcl **Executed at:** **09h58m41s UTC**	Check in QLA that nominal science data are produced and that chopper moves between calibration sources every ~180 sec.	**OK**
6	Execute: SPEC_spu_reset_obs_Shell.tcl **Executed at:** **10h13m52s UTC**	Science data flow stops	**OK**
7	Execute: SPEC_cre_setup_obs_Shell_1s.tcl **Executed at:** **10h14m45s UTC**	Bias voltage of the CREs is 70mV for red and 210mV for blue and ramp_length=256 samples	**OK**
8	Execute: SPEC_spu_setup_obs_Shell_1s.tcl **Executed at:** **10h15m54s UTC**	Science packets are received	**OK**
9	Execute: SPEC_Det_time_constant_Shell.tcl **Executed at:** **10h16m29s UTC**	Check in QLA that nominal science data are produced and that chopper moves between calibration sources every ~180 sec.	**OK**
10	Execute: SPEC_spu_reset_obs_Shell.tcl **Executed at:** **10h32m18s UTC**	Science data flow stops	**OK**
12	Execute: SPEC_cre_setup_obs_Shell_025s.tcl **Executed at:** **10h32m50s UTC**	Bias voltage of the CREs is 70mV for red and 210mV for blue and ramp_length=64 samples	**OK**

13.4 Test ID: 521 – Grating Relative Spectral Response on Internal Calibration Source

Step #	Action	Comments	Check
1	Execute: SPEC_spu_reset.tcl **Executed at:** **10h39m13s UTC**	Science data flow stops	**OK**
2	Execute: rsrf_SPEC_cre_setup.tcl **Executed at:** **10h39m44s UTC**	CRE housekeeping as commanded	**OK**
3	Execute: rsrf_SPEC_SPU_setup.tcl **Executed at:** **10h40m31s UTC**	Science data flow starts	**OK**
4	Execute: rsrf_cs1_scan.tcl **Executed at:** **10h41m06s UTC**	Grating moves in steps of 133 from position 65535 to 990000 and back **PACS indicated that the test failed because of problem with the grating.** **Script is manually stopped on CCS.**	**NOK**
Extra	Execute: ENTER_SAFE_Mode_Shell.tcl **Executed at:** **10h45m56s UTC**		**OK**
Extra	Execute: SetupSpectroscopyEQMIMT_Shell.tcl **Executed at:** **10h46m15s UTC**		**OK**
5	Execute: SPEC_spu_reset.tcl	Science data flow stops	**N/A**

13.5 Test ID: 521 – Grating Relative Spectral Response on Internal Calibration Source (repeated)

Step #	Action	Comments	Check
1	Execute: SPEC_spu_reset.tcl **Executed at:**	Science data flow stops	**OK**

	10h54m15s UTC		
2	Execute: rsrf_SPEC_cre_setup.tcl **Executed at:** **10h54m42s UTC**	CRE housekeeping as commanded	**OK**
3	Execute: rsrf_SPEC_SPU_setup.tcl **Executed at:** **10h55m31s UTC**	Science data flow starts	**OK**
4	Execute: rsrf_cs1_scan.tcl **Executed at:** **10h56m00s UTC**	Grating moves in steps of 133 from position 65535 to 990000 and back **PACS indicated that the test failed because of problem with the grating. An NCR is raised to track this problem. (ASED-NC-1666)** **Script is manually stopped on CCS.**	**NOK**
Extra	Execute: ENTER_SAFE_Mode_Shell.tcl **Executed at:** **11h02m48s UTC**		**OK**
Extra	Execute: SetupSpectroscopyEQMIMT_Shell.tcl **Executed at:** **11h03m05s UTC**		**OK**
5	Execute: SPEC_spu_reset.tcl	Science data flow stops	**N/A**

13.6 Test ID: 526 – Internal Calibration Sources Performance Test

Step #	Action	Comments	Check
1	Execute: SPEC_CS_spt_eqmimt_obs_Shell.tcl **Executed at:** **11h19m35s UTC**	Diagnostic TM packets are produced	**OK**
		CS1 is stable on 80 Ohm and CS2 on 92 Ohm	**OK**
		Monitor the behaviour of both CSs at the desired target temperatures	**OK**
		CS1 goes up to 85 Ohm and CS2 to 97 Ohm	**OK**
		Monitor the behaviour of both CSs at the desired target temperatures	**OK**
		Both CSs go down to 39 Ohm	**OK**
		Diagnostic HK is deactivated	**OK**

13.7 Test ID: 527 – Detector Selection Table Test Spectroscopy

Step #	Action	Comments	Check
1	Execute: SPEC_spu_detseltest.tcl **Executed at:** **12h30m23s UTC**	Science data flow starts, check sequence of pixel selections on QLA: ¨ active CQM modules ¨ 1 pixel blue, 1 pixel red ¨ 14 detectors in blue, 14 detectors in red ¨ 1 module blue, 1 module red ¨ 1 row blue, 1 row red ¨ data for all detectors ¨ Science data flow stops	**OK**

13.8 Test ID: 528 – SPU Compression/Reduction Mode Test Spectrometer

Step #	Action	Comments	Check
1	Execute: a) SPEC_spu_lowmodestest.tcl - Request CCS to enter burst mode bus list **Executed at:** **12h46m20s UTC**	Reduced science data is seen in QLA	**NOK**
		Check that CCS bus list is set to burst mode **During the script multiple (>10) type 1,8 packets were received. This indicates that the execution of the commands was not successful.** **The problem was traced by PACS and an error was detected in the TCL (wrong command).**	**NOK**
Extra	Manual Stack Command: PC005380 (DPU_SET_FUNCT) PP007380 = 101 PP006380 = 1 (ENABLE) **Executed at:** **13h09m07s UTC**		**OK**
2	Execute: b) SPEC_spu_highmodestest.tcl - Request CCS to enter nominal bus list mode again	Raw science data is seen in QLA ¨ Check that CCS bus list is nominal again	**N/A**

13.9 Test ID: 647 – Tutti Frutti AOT Test Spectroscopy

Step #	Action	Comments	Check

1	Execute: SPEC_all_aots_OBS_shell.tcl **Executed at:** **13h14m05s UTC**	SPU science data flow is running	**OK**
		Check that all 6 OBCP calls finished correctly	**OK**
		SPU science data flow has stopped	**OK**
		Check that in total 6 TM (1,7) have been issued **PACS confirms that test seems to be OK after some quick analysis.**	**OK**

13.10 Test ID: 528 – SPU Compression/Reduction Mode Test Spectrometer (repeated)

Step #	Action	Comments	Check
1	Execute: a) SPEC_spu_lowmodestest.tcl - Request CCS to enter burst mode bus list **Executed at:** **14h27m51s UTC** **During the execution multiple type 1,8 packets are received on the CCS.** **PACS indicates it's the same problem as before. The update of the TCL/CUS script was not successfully.**	Reduced science data is seen in QLA	**NOK**
		Check that CCS bus list is set to burst mode	**NOK**
Extra	Manual Stack Command: PC005380 (DPU_SET_FUNCT) PP007380 = 101 PP006380 = 1 (ENABLE) **Executed at:** **13h09m07s UTC**		**OK**
2	Execute: b) SPEC_spu_highmodestest.tcl - Request CCS to enter nominal bus list mode again	Raw science data is seen in QLA ¨ Check that CCS bus list is nominal again	**N/A**

13.11 Test ID: 528 – SPU Compression/Reduction Mode Test Spectrometer (repeated 2)

Step #	Action	Comments	Check

1	Execute: a) SPEC_spu_lowmodestest.tcl - Request CCS to enter burst mode bus list **Executed at:** **15h07m14s UTC**	Reduced science data is seen in QLA	**OK**
		Check that CCS bus list is set to burst mode	**OK**
2	Execute: b) SPEC_spu_highmodestest.tcl - Request CCS to enter nominal bus list mode again **Executed at:** **15h12m59s UTC**	Raw science data is seen in QLA ¨ Check that CCS bus list is nominal again	**OK**

13.12 Test ID: 650 – Internal Calibration Blocks Spectroscopy

Step #	Action	Comments	Check
1	Execute: SPEC_cal_blocks_1_OBS_shell.tcl **Executed at:** **15h29m57s UTC**	SPU science data flow is running	**OK**
		Grating step size is +/- 133	**OK**
		Check that the commanded chopper positions are correct	**OK**
		Check that all 5 OBCP calls finished correctly	**OK**
		SPU science data flow has stopped	**OK**
		Check that in total 5 TM (1,7) have been issued	**OK**
2	Execute: SPEC_cal_blocks_2_OBS_shell.tcl **Executed at:** **15h49m55s UTC**	SPU science data flow is running	**OK**
		Grating step size is +/- 133	**OK**
		Check that the commanded chopper positions are correct	**OK**
		Check that all 5 OBCP calls finished correctly	**OK**
		SPU science data flow has stopped	**OK**
		Check that in total 5 TM (1,7) have been issued	**OK**
3	Execute: SPEC_cal_blocks_3_OBS_shell.tcl **Executed at:** **16h09m03s UTC**	SPU science data flow is running	**OK**
		Grating step size is +/- 133	**OK**
		Check that the commanded chopper positions are correct	**OK**
		Check that all 5 OBCP calls finished correctly	**OK**
		SPU science data flow has stopped	**OK**
		Check that in total 5 TM (1,7) have been issued	**OK**

13.13 Test ID: 651 – Wavelength Switching Test

Step #	Action	Comments	Check
1	Execute: SPEC_freq_switch_len_OBS_shell.tcl **Executed at:** **16h29m14s UTC** **The script failed because the command to set the biases did not execute as it should. This is a sporadic error and is not predictable.** **An NCR will be raised about this. (ASED-NC-1665)**	SPU science data flow is running	**N/A**
		Check that the commanded grating positions are correct	**N/A**
		Check that the commanded chopper positions are correct	**N/A**
		Check that both OBCP calls finished correctly	**N/A**
		SPU science data flow has stopped	**N/A**
		Check that in total 2 TM (1,7) have been issued	**N/A**
extra	Execute: SPEC_freq_switch_len_OBS_shell.tcl **Executed at:** **16h38m27s UTC**	SPU science data flow is running	**OK**
		Check that the commanded grating positions are correct	**OK**
		Check that the commanded chopper positions are correct	**OK**
		Check that both OBCP calls finished correctly	**OK**
		SPU science data flow has stopped	**OK**
		Check that in total 2 TM (1,7) have been issued	**OK**
2	Execute: SPEC_freq_switch_ampl_OBS_shell.tcl **Executed at:** **16h46m12s UTC**	SPU science data flow is running	**OK**
		Check that the commanded grating positions are correct	**OK**
		Check that the commanded chopper positions are correct	**OK**
		Check that all 4 OBCP calls finished correctly	**OK**
		SPU science data flow has stopped	**OK**
		Check that in total 4 TM (1,7) have been issued	**OK**
3	Execute: SPEC_freq_switch_full_OBS_shell.tcl **Executed at:** **16h56m23s UTC**	SPU science data flow is running	**OK**
		Check that the commanded grating positions are correct	**OK**
		Check that the commanded chopper positions are correct	**OK**
		Check that all 3 OBCP calls finished correctly	**OK**
		SPU science data flow has stopped	**OK**
		Check that in total 3 TM (1,7) have been issued	**OK**

13.14 Test ID: 648 – Medium Sampling Grating Scan Test

Step #	Action	Comments	Check
1	Execute: SPEC_lowres_scan_CS1_OBS_shell.tcl **Executed at:** **17h12m16s UTC** **PACS detected some problems with the grating again (ASED-NC-1666). The script is stopped**		**NOK**
2	Execute: SPEC_lowres_scan_CS2_OBS_shell.tcl	SPU science data flow is running	**N/A**
		Check that the grating step size is +/- 2400	**N/A**
		Check that the commanded chopper position is -25000 (first 32 min) and +25000 (second 32 min)	**N/A**
		Check that both OBCP calls finished correctly	**N/A**
		SPU science data flow has stopped	**N/A**
		Check that in total two TM (1,7) have been issued	**N/A**

Step #	Action	Comments	Check
1	Execute: ENTER_SAFE_Mode_Shell.tcl **Executed at:** **17h30m36s UTC**	Check that PACS is in SAFE mode	

This is the end of the first day of the third part of PACS IMT (02/11/2005). All instruments are in STANDBY mode.

13.15 Test ID: 646 – PACS Setup of Spectroscopy

This is the start of the second day of the third part of PACS IMT (03/11/2005). All instruments were fine in the morning.

Step #	Action	Comments	Check
1	Execute:	Spectroscopy HK packets are sent	**OK**

	SetupSpectroscopyEQMIMT_Shell.tcl **Executed at:** **07h09m16s UTC**	Nominal detector setting (C=0.3pF, r=64, bias=[210mV,70mV], heater=200uA)	**OK**
		Chopper controller on	**OK**
		Grating controller on and grating homing completed	**OK**
		Calibration sources are heating up	**OK**

13.16 Problems with PACS HK

The problem involves both HK packets (ESSENTIAL_HK and SPEC_HK). The ESSENTIAL_HK packet is received twice (two times the same generation time and SSC). When this happens, the SPEC_HK packet is missing one SSC.

An attempt is made to solve this problem (Manual Stack Command DPU_RESET_1553), but this did not solve the problem.

This problem was previously seen during the SPIRE IMT. An NCR is raised (ASED-NC-1622).

PACS requested to keep working with the error, until they can talk to the DPU support team, since this problem is not that easy to reproduce.

13.17 Test ID: 652 – Line Scan AOT with variation of internal calibration concept

Step #	Action	Comments	Check
1	Execute: SPEC_line_scan_OBS_shell.tcl **Executed at:** **08h02m04s UTC**	SPU science data flow is running	**OK**
		Check that the commanded grating positions are correct	**OK**
		Check that the commanded chopper positions are correct	**OK**
		Check that 4 OBCP calls finished correctly	**OK**
		SPU science data flow has stopped	**OK**
		Check that in total 4 TM (1,7) have been issued	**OK**

13.18 Test ID: 404 – Grating Test

Step #	Action	Comments	Check
1	Execute: PACS_Spec_Gra_Diaghk_Setup.tcl **Executed at:** **08h39m04s UTC**		**OK**
2	Execute: SPEC_Gra_Healthcheck_obs_Shell.tcl **Executed at:** **08h39m48s UTC**		**OK**
3	Execute: PACS_Diaghk_Reset.tcl **Executed at:** **08h52m59s UTC**	Production of diagnostic HK packets stops	**OK**

13.19 Test ID: 521 – Grating Relative Spectral Response on Internal Calibration Source

Step #	Action	Comments	Check
1	Execute: SPEC_spu_reset.tcl **Executed at:** **08h54m17s UTC**	Science data flow stops	**OK**
2	Execute: rsrf_SPEC_cre_setup.tcl **Executed at:** **08h54m53s UTC**	CRE housekeeping as commanded	**OK**
3	Execute: rsrf_SPEC_SPU_setup.tcl **Executed at:** **08h55m41s UTC**	Science data flow starts	**OK**
4	Execute: rsrf_cs1_scan.tcl **Executed at:** **08h56m20s UTC**	~~Grating moves in steps of 133 from position 65535 to 990000 and back~~ **The script has been changed to move the grating from 115000 to 972500.** **The script is stopped on request of PACS personal, because the grating stopped in the middle of the test.**	**NOK**
Extra	Manual Stack Command: PC013380 (DPU_STOP_OBCP) Parameter value = 28 **Executed at:**		**OK**

	10h30m35s UTC		
Extra	Manual Stack Command: PC110420 (DMC_ENABLE_GRAT_CONT) **Executed at:** **10h33m08s UTC**		**OK**
Extra	Manual Stack Command: PC112420 (DMC_MOVE_GRAT_ABS) Parameter value = 500000 **Executed at:** **10h33m08s UTC**		**OK**
5	Execute: SPEC_spu_reset.tcl **Executed at:** **10h35m56s UTC**	Science data flow stops	**OK**

13.20 Test ID: 648 – Medium Sampling Grating Scan Test

Step #	Action	Comments	Check
1	Execute: SPEC_lowres_scan_CS1_OBS_shell.tcl **Executed at:** **10h40m08s UTC**	**Script failed because of grating problems (NC-1666). The test is aborted.**	**NOK**
Extra	Manual Stack Command: PC013380 (DPU_STOP_OBCP) Parameter value = 27 **Executed at:** **10h30m35s UTC**		**OK**
Extra	Manual Stack Command: PC110420 (DMC_ENABLE_GRAT_CONT) **Executed at:** **10h33m08s UTC**		**OK**
Extra	Manual Stack Command: PC112420 (DMC_MOVE_GRAT_ABS) Parameter value = 500000 **Executed at:** **10h33m08s UTC**		**OK**
2	Execute: SPEC_lowres_scan_CS2_OBS_shell.tcl	SPU science data flow is running	**N/A**
		Check that the grating step size is +/- 2400	**N/A**
		Check that the commanded chopper position is -25000 (first 32 min) and +25000 (second 32 min)	**N/A**

		Check that both OBCP calls finished correctly	**N/A**
		SPU science data flow has stopped	**N/A**
		Check that in total two TM (1,7) have been issued	**N/A**

13.21 Test ID: 404 – Grating Test

Step #	Action	Comments	Check
1	Execute: PACS_Spec_Gra_Diaghk_Setup.tcl **Executed at:** **10h53m15s UTC**		**OK**
Extra	Execute: SPEC_spu_reset.tcl **Executed at:** **10h55m37s UTC**	**Since last test was stopped, the spu data was enabled.**	**OK**
2	Execute: SPEC_Gra_Healthcheck_obs_Shell.tcl **Executed at:** **10h57m11s UTC**		**OK**
3	Execute: PACS_Diaghk_Reset.tcl **Executed at:** **11h10m07s UTC**	Production of diagnostic HK packets stops	**OK**

The next tests should be done after a cooler recycle. Since the instrument HK is still corrupted each 10 seconds (ASED-NC-1622), and no solution can be found for this at the moment, it is concluded that PACS should be switched off and on again to reset the DPU. Therefore the following actions are done.

Step #	Action	Comments	Check
1	Execute: ENTER_SAFE_MODE_Shell.tcl **Executed at:** **11h12m29s UTC**		**OK**
2	Execute: PACS_POWER_OFF.tcl **Executed at:** **11h13m37s UTC**		**OK**

3	Execute: PACS_POWER_ON.tcl **Executed at:** **11h14m59s UTC**		**OK**

13.22 Test ID: 410 – Cooler Recycling

Step #	Action	Comments	Check
1	Execute: BOLO_cooler_OBS_shell.tcl **Executed at:** **11h21m17s UTC**	Heater currents are set as commanded	**OK**
		TEMP_EV should be close to 0.3 K after the execution of the script (110 min)	**OK**
		TEMP_EV should be below 300mK 120 min after starting of the recycling	**OK**

13.23 PACS Setup of Photometry

Step #	Action	Comments	Check
1	Execute: PHOT_setup_OBS_shell.tcl **Executed at:** **14h07m31s UTC**	Photometry HK packets are sent	**OK**
		Filter wheel is at position 1, the chopper is near position 0 and the calibration sources are heating up	**OK**
		Groups 1,3,5,6 are switched on, the temperature sensors are on and indicate their expected LHe values and data frequency is 20 Hz	**OK**
		Check if correct safe biases are set for the M7 configuration for groups 1,3,5,6	**OK**
		Bolometer and HK data are sent to DMC, check if sequence mode is "Sbolo-Sref"	**OK**
		Check if correct operating biases are set for the M7 configuration for groups	**OK**
		Check if sequence mode is set to "Sbolo - Sref"	**OK**
		Gain is set to "high"	**OK**
		Photometry science packets are generated	**OK**

13.24 Test ID: 535 – Staring Measurement on Calibration Source for low Frequency Noise

Step #	Action	Comments	Check
1	Execute: PHOT_low_freq_OBS_shell.tcl **Executed at:** **14h42m51s UTC** **Test was successful although the last 15 minutes of test won't be useable since the cover temperatures started rising (Helium dewar empty).**	SPU science data flow has started	**OK**
		Filter position is A	**OK**
		Chopper positions at +23590 and later 0	**OK**
		Science data flow is running	**OK**
		TEMP_EV is always below 300 mK	**OK**
		SPU science data flow has stopped	**OK**

13.25 Test ID: 533 – Test of Internal Calibration Recipes in Photometry

This test is started after the cover temperature got below 15 K again (change of the dewar). The cryo cover temperature is not stable however below 15K in the beginning of the test.

Step #	Action	Comments	Check
1	Execute: PHOT_cal_recipes_OBS_shell.tcl **Executed at:** **17h19m25s UTC** **Script failed. PACS will investigate.**	SPU science data flow has started	**N/A**
		Filter moves from A to B to A	**N/A**
		Chopper moves between - 22680 and +23590	**N/A**
		SPU science data flow has stopped	**N/A**

This is the end of day 2 of IMT (03/11/2005). PACS is switched to STANDBY mode with ENTER_SAFE_MODE_Shell.tcl. (Execution time: 17h41m24s UTC).

14 Step by Step Procedure: PACS Additional Tests results

14.1 Stray-Light tests (according to HP-2-ASED-SD-0064)

The 3rd day of IMT (04/11/2005) is used to repeat some photometry tests and to conduct some additional tests to investigate the straylight problem. These tests are according to HP-2-ASED-SD-0064.

The following TCL script has been added to the CCS before this test:
PHOT_setup_No_CS_Obs_shell.tcl

Step #	Action	Comments	Check
1	Execute: PHOT_setup_No_CS_Obs_shell.tcl **Executed at:** **08h13m47s UTC**		**OK**
2	Execute: PHOT_Focal_Map_Obs_shell.tcl **Executed at:** **08h28m12s UTC**		**OK**
3	Execute: ENTER_SAFE_MODE_shell.tcl **Executed at:** **08h40m22s UTC**		**OK**
4	Execute: PHOT_setup_Obs_shell.tcl **Executed at:** **08h42m36s UTC**		**OK**
5	Execute: PHOT_Focal_Map_Obs_shell.tcl **Executed at:** **09h32m44s UTC**		**OK**
6	Execute: PHOT_Stray_Light_Obs_shell.tcl **Executed at:** **09h42m37s UTC**	**Script failed because the TCL was empty.** **PACS will generate new TCL script to solve this problem. In the meanwhile an IMT photometer test is repeated.**	**NOK**

14.2 Test ID: 645 – Two/Three position chopping with/without internal calibration block

Step #	Action	Comments	Check
1	Execute: PHOT_int_cal_block_1_OBS_shell.tcl **Executed at:** **10h21m48s UTC**	Filter position is "A"	**OK**
		Check that all 7 OBCP 4 calls finish correctly	**OK**
		Filter position is "B" (after approx. 15 min)	**OK**
		Check that all 7 OBCP 4 calls finish correctly	**OK**
		Filter position is "A"	**OK**
		Check that in total 14 TM (1,7) have been issued	**OK**
2	Execute: ENTER_SAFE_Mode_Shell.tcl **PACS indicated that this script is not needed at this point since another photometry will be done.**	PACS is in SAFE mode	**N/A**

14.3 Stray-Light tests part 2 (according to HP-2-ASED-SD-0064)

Step 6 of HP-2-ASED-SD-0064 failed previously this day. PACS has modified the TCL script to make the necessary corrections. The result is 2 new TCL scripts:

- **PHOT_stray_light_A_Obs_Shell.tcl**
- **PHOT_stray_light_B_Obs_Shell.tcl**

The new scripts are loaded and patched into the running CCS session prior to this test.

Step #	Action	Comments	Check
6	Execute: PHOT_Stray_Light_A_Obs_shell.tcl **Executed at:** **11h10m48s UTC**	**The script did not start execution because of an apparent timing problem on the CCS or CCS-IEGSE connection.**	**NOK**
6	Execute: PHOT_Stray_Light_A_Obs_shell.tcl **Executed at:** **11h18m28s UTC**		

This concludes the stray light investigation stated in HP-2-ASED-SD-0064.

14.4 Test ID: 644 – Internal Calibration Blocks Photometry

Step #	Action	Comments	Check
1	Execute: PHOT_int_cal_block_OBS_shell.tcl **Executed at:** **12h30m56s UTC**	Filter position is "A"	
		Check that all 7 OBCP 4 calls finish correctly	
		Filter position is "B" (after approx. 15 min)	
		Check that all 7 OBCP 4 calls finish correctly	
		Filter position is "A"	
		Check that in total 14 TM (1,7) have been issued	

14.5 Cooler Recycle plot

The graph below gives an overview of the complete cooler recycle.

15 Step by Step Procedure: Switch Off Instruments

All instruments are left in STANDBY mode over the weekend (5-6/11/2005).

16 Step by Step Procedure: Set EGSE to OFFLINE

The EGSE and CCS are left configured and running since all instrument are left in STANDBY mode over the weekend.

17 Summary Sheets

17.1 Procedure Variation Summary

	Test Change	Curr. No.: Date Page of	
Test designation	Test Procedure	Issue	Rev.
Test step changed	Reason for Change		
Prepared by:	Resp. Test Leader	Project Engineer	
PA/QA	Prime	Customer	

Table 17.1-1: Procedure Variation Sheet

17.2 Non Conformance Report (NCR) Summary

NCR - No.	NCR - Title	Date	Open Closed
ASED-NC-1619	Type 1 packets not forwarded to IEGSE because not defined in TMD.dat	24/10/2005	Open
ASED-NC-1665	Command to set bias fails sporadically	02/11/2005	Open
ASED-NC-1666	Grating does not work correct	02/11/2005	Open

Table 17.2-1: Non-Conformance Record Sheet

17.3 Sign-off Sheet

	Name	Date	Signature
Test Manager	Sigmund Idler	7.11.05	
Operator	Stijn Ilsen	7.11.05	
PA Responsible	David Hendry	7/11/05	

Appendix 1: PACS Nominal Bus Profile (PACS_prime_inst.PST)

```
;Nominal HERSCHEL/PACS Prime bus profile
;PACS is RT 25: 25TM, 2TC
;SPIRE is RT 21: 2TM, 1TC
;HIFI is RT 16: 2TM, 1TC

[Config]
NumberOfSubFrames=64

[SubFrame1]
1=RTaccessSA

[SubFrame2]
1=RTaccessSA

[SubFrame3]
1=RTaccessSA

[SubFrame4]
1=TMpoll,21     ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame5]
1=TMpacket,21  ;TM packet from: SPIRE
2=TMpoll,16    ;TM poll from: HIFI
3=RTaccessSA

[SubFrame6]
1=TMpacket,16  ;TM packet from: HIFI
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame7]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,21    ;TM poll from: SPIRE
3=RTaccessSA

[SubFrame8]
1=TMpacket,21  ;TM packet from: SPIRE
2=TMpoll,16    ;TM poll from: HIFI
3=RTaccessSA

[SubFrame9]
1=TMpacket,16  ;TM packet from: HIFI
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame10]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame11]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame12]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame13]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame14]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame15]
```

```
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame16]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame17]
1=TCpacket     ;TC packet to: PACS
2=RTaccessSA

[SubFrame18]
1=TCpacket     ;TC packet to: SPIRE
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame19]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame20]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame21]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame22]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame23]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame24]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame25]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame26]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame27]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,21    ;TM poll from: SPIRE
3=RTaccessSA

[SubFrame28]
1=TMpacket,21  ;TM packet from: SPIRE
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame29]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame30]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame31]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,16    ;TM poll from: HIFI
3=RTaccessSA
```

```
[SubFrame32]
1=TMpacket,16  ;TM packet from: HIFI
2=RTaccessSA

[SubFrame33]
1=TimeSync     ;Time distribution broadcast
2=TCpacket     ;TC packet to: PACS
3=TMpoll,25    ;TM poll from: PACS
4=RTaccessSA

[SubFrame34]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame35]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame36]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame37]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame38]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame39]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame40]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame41]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame42]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame43]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame44]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame45]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame46]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame47]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame48]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame49]
```

```
1=TCpacket  ;TC packet to: HIFI
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame50]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame51]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame52]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame53]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame54]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame55]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame56]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame57]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame58]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame59]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame60]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame61]
1=RTreadSA,25,1 ;RT status from: PACS
2=TMpoll,25    ;TM poll from: PACS

[SubFrame62]
1=RTreadSA,21,1 ;RT status from: SPIRE
2=TMpacket,25  ;TM packet from: PACS

[SubFrame63]
1=RTreadSA,16,1 ;RT status from: HIFI
```

Appendix 2: PACS Burst Mode Bus Profile (PACS_burst_mode.PST)

```
;Burst HERSCHEL bus profile
;PACS is RT 25: 38TM, 2TC
;SPIRE is RT 21: 2TM, 1TC
;HIFI is RT 16:  2TM, 1TC

[Config]
NumberOfSubFrames=64

[SubFrame1]
1=RTaccessSA

[SubFrame2]
1=RTaccessSA

[SubFrame3]
1=RTaccessSA

[SubFrame4]
1=TMpoll,21     ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame5]
1=TMpacket,21  ;TM packet from: SPIRE
2=TMpoll,16    ;TM poll from: HIFI
3=RTaccessSA

[SubFrame6]
1=TMpacket,16  ;TM packet from: HIFI
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame7]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame8]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame9]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame10]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame11]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame12]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame13]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame14]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
```

```
3=RTaccessSA

[SubFrame15]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame16]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame17]
1=TCpacket     ;TC packet PACS
2=RTaccessSA

[SubFrame18]
1=TCpacket     ;TC packet SPIRE
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame19]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame20]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame21]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame22]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame23]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame24]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame25]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame26]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame27]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,21    ;TM poll from: SPIRE
3=RTaccessSA

[SubFrame28]
1=TMpacket,21  ;TM packet from: SPIRE
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame29]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA
```

```
[SubFrame30]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame31]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,16    ;TM poll from: HIFI
3=RTaccessSA

[SubFrame32]
1=TMpacket,16  ;TM packet from: HIFI
2=RTaccessSA

[SubFrame33]
1=TimeSync     ;Time distribution broadcast
2=TCpacket     ;TC packet PACS
3=RTaccessSA

[SubFrame34]
1=RTaccessSA

[SubFrame35]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame36]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame37]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame38]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame39]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame40]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame41]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame42]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame43]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame44]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame45]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA
```

```
[SubFrame46]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame47]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame48]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame49]
1=TCpacket     ;TC packet HIFI
2=RTaccessSA

[SubFrame50]
1=RTaccessSA

[SubFrame51]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame52]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame53]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame54]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame55]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame56]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame57]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame58]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame59]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame60]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,21    ;TM poll from: SPIRE
3=RTaccessSA
```

```
[SubFrame61]
1=RTreadSA,25,1 ;RT status from: PACS
2=TMpacket,21  ;TM packet from: SPIRE
3=TMpoll,16    ;TM poll from: HIFI

[SubFrame62]
1=RTreadSA,16,1 ;RT status from: HIFI
2=TMpacket,16  ;TM packet from: HIFI
3=TMpoll,25    ;TM poll from: PACS

[SubFrame63]
1=RTreadSA,21,1 ;RT status from: SPIRE
2=TMpacket,25  ;TM packet from: PACS
```

Appendix 3: Log of EGSE_CONFIG_AUTO.tcl

```
*******************************************************************************
2005.292.07.57.50.512279 EGSE CONFIG Sequence
*******************************************************************************
2005.292.07.57.50.512869
*******************************************************************************
2005.292.07.57.50.513454 Check of CDMU DFE and PLM SCOE
*******************************************************************************
2005.292.07.57.50.513758
2005.292.07.57.50.513981
2005.292.07.57.50.514206 Connecting to CDMU DFE
2005.292.07.57.52.520035 Attaching to CMDU DFE
2005.292.07.57.53.529413
2005.292.07.57.53.529772 Checking if CDMU DFE BIST was OK
2005.292.07.57.55.532745
2005.292.07.57.55.771062 >>> RESULT : CDMU DFE BIST OK, continuing EGSE_CONFIG.
2005.292.07.57.57.774161
2005.292.07.57.57.774520 Connecting to PLM SCOE
2005.292.07.57.59.777418 Attaching to PLM SCOE
2005.292.07.58.00.781010
2005.292.07.58.00.781373 Checking if PLM SCOE BIST was OK
2005.292.07.58.02.784232
2005.292.07.58.03.083606 >>> RESULT : PLM SCOE BIST OK, continuing EGSE_CONFIG.
*******************************************************************************
2005.292.07.58.05.086705 Configuring CDMU DFE
*******************************************************************************
2005.292.07.58.05.087106
2005.292.07.58.05.087625 Switching CDMUDFE to ONLINE mode
2005.292.07.58.06.197238
2005.292.07.58.06.197628
2005.292.07.58.06.198232
2005.292.07.58.06.198769 Available PST tables:
2005.292.07.58.06.199321 1. HIFI_prime_inst.PST
2005.292.07.58.06.199938 2. SPIRE_prime_inst.PST
2005.292.07.58.06.200510 3. PACS_prime_inst.PST
2005.292.07.58.06.201079 4. PACS_burst_mode.PST
2005.292.07.58.06.201655 5. PACS_SPIRE_par.PST
2005.292.07.58.06.202236
2005.292.07.58.06.240117  >>> Please enter the number of the required PST table. Enter 0 for
an unlisted.
2005.292.07.58.26.775667
2005.292.07.58.26.776020 You have selected 3 : PACS_prime_inst.PST
2005.292.07.58.26.776625
2005.292.07.58.26.777422 Loading PACS_prime_inst.PST file on CDMU DFE
2005.292.07.58.26.778019
2005.292.07.58.32.095170 The PST table is loaded on the CDMU DFE.
2005.292.07.58.32.095875
2005.292.07.58.32.096864 Enabling PST file execution.
2005.292.07.58.33.176847
2005.292.07.58.33.177220 Enabling TM Queue.
2005.292.07.58.34.211647
2005.292.07.58.34.212017 Enabling TM Polling.
2005.292.07.58.35.246476
2005.292.07.58.35.246889 Enabling TC Queue.
2005.292.07.58.36.318376
2005.292.07.58.36.318733 Enabling SA Queue.
2005.292.07.58.37.423469
2005.292.07.58.37.423828 Enabling SA Reading.
2005.292.07.58.38.458293
2005.292.07.58.38.458651 Enabling Low Level Time Synchronisation.
2005.292.07.58.39.495076
2005.292.07.58.39.536790 ******************* USER INFORMATION *******************
2005.292.07.58.39.537515 User Info>: >>> Please Enable the Busmonitor (Set Online Mode and
Start New Acquisition) and press OK.
2005.292.07.58.39.538198 ********************************************************
2005.292.07.59.58.018787 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.292.07.59.58.019181 >>>>>>>>  Reading out CDMUDFE Settings
2005.292.07.59.58.019773 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
```

```
2005.292.07.59.58.020358
2005.292.07.59.58.027691 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.292.07.59.58.030935 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.292.07.59.58.033839 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.292.07.59.58.036727 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.292.07.59.58.279674 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.292.07.59.58.282664 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.292.07.59.58.283851 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.292.07.59.58.286622 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
********************************************************************************
2005.292.08.00.01.291665 Configuring PLM SCOE
********************************************************************************
2005.292.08.00.01.292102
2005.292.08.00.01.292736 Switching PLM SCOE to ONLINE mode
2005.292.08.00.02.421637
2005.292.08.00.07.425901 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.292.08.00.07.426276 >>>>>>>>  Reading out PLM SCOE Settings
2005.292.08.00.07.426905 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.292.08.00.07.427505
2005.292.08.00.07.642848 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.292.08.00.07.645892 Status_PLM_PSU1_Master is currently 0 (extracted from TLM YM129942)
2005.292.08.00.07.648640 Status_PLM_PSU1_Slave is currently 0 (extracted from TLM YM145942)
2005.292.08.00.07.651430 Status_PLM_PSU2_Master is currently 0 (extracted from TLM YM177942)
2005.292.08.00.07.893839 Status_PLM_PSU2_Slave is currently 0 (extracted from TLM YM193942)
2005.292.08.00.07.997757 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.292.08.00.08.002397 Status_PLM_LCL1_I is currently 0.000101930265373 (extracted from TLM
YM232942)
2005.292.08.00.08.007352 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.292.08.00.08.251572 Status_PLM_LCL2_I is currently 0.000506599550135 (extracted from TLM
YM248942)
2005.292.08.00.08.256361 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.292.08.00.08.260218 Status_PLM_LCL3_I is currently 0.000506599550135 (extracted from TLM
YM264942)
2005.292.08.00.08.265419 Status_PLM_LCL4_V is currently 0.034854657948 (extracted from TLM
YM276942)
2005.292.08.00.08.510205 Status_PLM_LCL4_I is currently 0.000506599550135 (extracted from TLM
YM280942)
2005.292.08.00.08.514965 Status_PLM_LCL5_V is currently 0.0302073694766 (extracted from TLM
YM292942)
2005.292.08.00.08.518736 Status_PLM_LCL5_I is currently 0.000253299775068 (extracted from TLM
YM296942)
2005.292.08.00.08.523516 Status_PLM_LCL6_V is currently 0.0743566006422 (extracted from TLM
YM308942)
2005.292.08.00.08.817498 Status_PLM_LCL6_I is currently 0.000253299775068 (extracted from TLM
YM312942)
2005.292.08.00.08.824465 Status_PLM_LCL7_V is currently 0.034854657948 (extracted from TLM
YM324942)
2005.292.08.00.08.828313 Status_PLM_LCL7_I is currently 0.000506599550135 (extracted from TLM
YM328942)
2005.292.08.00.09.073322 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.292.08.00.09.126234 Status_PLM_LCL8_I is currently 0.000506599550135 (extracted from TLM
YM344942)
2005.292.08.00.09.131237 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.292.08.00.09.135049 Status_PLM_LCL9_I is currently 0.00101319910027 (extracted from TLM
YM360942)
2005.292.08.00.09.379823 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.292.08.00.09.383932 Status_PLM_LCL10_I is currently 0.000253299775068 (extracted from TLM
YM376942)
2005.292.08.00.09.388944 Status_PLM_LCL11_V is currently 0.00697093131021 (extracted from TLM
YM388942)
2005.292.08.00.09.392980 Status_PLM_LCL11_I is currently 0.000506599550135 (extracted from TLM
YM392942)
2005.292.08.00.09.639334 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
```

```
2005.292.08.00.09.643415 Status_PLM_LCL12_I is currently 0.00101319910027 (extracted from TLM
YM408942)
2005.292.08.00.09.648384 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.292.08.00.09.652310 Status_PLM_LCL13_I is currently 0.000506599550135 (extracted from TLM
YM424942)
2005.292.08.00.09.897709 Status_PLM_LCL14_V is currently 0.090622112155 (extracted from TLM
YM436942)
2005.292.08.00.09.956157 Status_PLM_LCL14_I is currently 0.000253299775068 (extracted from TLM
YM440942)
```

Appendix 4: Log of PACS_POWER_ON.tcl

```
2005.292.08.56.39.118015
********************************************************************************
2005.292.08.56.39.118933 Start of PACS POWER ON sequence.
********************************************************************************
2005.292.08.56.39.119249
2005.292.08.56.39.119480 To run this script, the CDMU DFE and PLM SCOE should be
2005.292.08.56.39.119719 powered and configured.
2005.292.08.56.39.119992 To initiate, this script will connect and attach to the CDMUDFE
2005.292.08.56.39.120234 and PLM SCOE.
2005.292.08.56.39.120460
2005.292.08.56.39.120686 >>> Connecting to CDMU DFE.
2005.292.08.56.42.125092 >>> Attaching to CDMU DFE.
2005.292.08.56.45.133851
2005.292.08.56.45.134214 >>> Connecting to PLM SCOE.
2005.292.08.56.48.136834 >>> Attaching to PLM SCOE.
2005.292.08.56.51.139776
2005.292.08.56.51.140136 >>> Reading out CDMUDFE Settings
2005.292.08.56.51.140573
2005.292.08.56.51.235896 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.292.08.56.51.238003 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.292.08.56.51.240061 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.292.08.56.51.242135 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.292.08.56.51.244218 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.292.08.56.51.245984 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.292.08.56.51.247550 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.292.08.56.51.249274 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.292.08.56.51.249826
2005.292.08.56.51.250310 >>> Reading out PLM SCOE Settings
2005.292.08.56.51.250805
2005.292.08.56.51.381326 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.292.08.56.51.383354 Status_PLM_PSU1_Master is currently 0 (extracted from TLM YM129942)
2005.292.08.56.51.385129 Status_PLM_PSU1_Slave is currently 0 (extracted from TLM YM145942)
2005.292.08.56.51.386887 Status_PLM_PSU2_Master is currently 0 (extracted from TLM YM177942)
2005.292.08.56.51.388649 Status_PLM_PSU2_Slave is currently 0 (extracted from TLM YM193942)
2005.292.08.56.51.391747 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.292.08.56.51.394599 Status_PLM_LCL1_I is currently 0.000101930265373 (extracted from TLM
YM232942)
2005.292.08.56.51.398408 Status_PLM_LCL2_V is currently 0.0627383813262 (extracted from TLM
YM244942)
2005.292.08.56.51.401087 Status_PLM_LCL2_I is currently 0.000506599550135 (extracted from TLM
YM248942)
2005.292.08.56.51.404235 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.292.08.56.51.406972 Status_PLM_LCL3_I is currently 0.000506599550135 (extracted from TLM
YM264942)
2005.292.08.56.51.410587 Status_PLM_LCL4_V is currently 0.034854657948 (extracted from TLM
YM276942)
2005.292.08.56.51.413800 Status_PLM_LCL4_I is currently 0.000506599550135 (extracted from TLM
YM280942)
2005.292.08.56.51.417928 Status_PLM_LCL5_V is currently 0.0302073694766 (extracted from TLM
YM292942)
2005.292.08.56.51.421943 Status_PLM_LCL5_I is currently 0.000253299775068 (extracted from TLM
YM296942)
2005.292.08.56.51.427165 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.292.08.56.51.430502 Status_PLM_LCL6_I is currently 0.000253299775068 (extracted from TLM
YM312942)
2005.292.08.56.51.434363 Status_PLM_LCL7_V is currently 0.034854657948 (extracted from TLM
YM324942)
2005.292.08.56.51.437735 Status_PLM_LCL7_I is currently 0.000506599550135 (extracted from TLM
YM328942)
2005.292.08.56.51.441758 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.292.08.56.51.445058 Status_PLM_LCL8_I is currently 0.000506599550135 (extracted from TLM
YM344942)
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2005.292.08.56.51.448903 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.292.08.56.51.452230 Status_PLM_LCL9_I is currently 0.00101319910027 (extracted from TLM
YM360942)
2005.292.08.56.51.456233 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.292.08.56.51.459742 Status_PLM_LCL10_I is currently 0.000253299775068 (extracted from TLM
YM376942)
2005.292.08.56.51.463475 Status_PLM_LCL11_V is currently 0.00697093131021 (extracted from TLM
YM388942)
2005.292.08.56.51.468341 Status_PLM_LCL11_I is currently 0.000506599550135 (extracted from TLM
YM392942)
2005.292.08.56.51.472989 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.292.08.56.51.476365 Status_PLM_LCL12_I is currently 0.00101319910027 (extracted from TLM
YM408942)
2005.292.08.56.51.480477 Status_PLM_LCL13_V is currently 0.0162655059248 (extracted from TLM
YM420942)
2005.292.08.56.51.483984 Status_PLM_LCL13_I is currently 0.000506599550135 (extracted from TLM
YM424942)
2005.292.08.56.51.488004 Status_PLM_LCL14_V is currently 0.090622112155 (extracted from TLM
YM436942)
2005.292.08.56.51.491676 Status_PLM_LCL14_I is currently 0.000253299775068 (extracted from TLM
YM440942)
2005.292.08.56.51.492402
2005.292.08.56.51.493029 >>> Switch ON PSU(s)
2005.292.08.56.51.493668
2005.292.08.56.51.577622 >>> Sending Telecommand YC036942
2005.292.08.56.51.577995
2005.292.08.56.51.578647 >>> Checking
2005.292.08.56.57.582276 PSU 2 Master status is currently 1 (from YM177942)
2005.292.08.56.57.582673 PSU 2 Slave status is currently 1 (from YM193942)
2005.292.08.56.57.583328
2005.292.08.56.57.583942 >>> Switch ON DPU
2005.292.08.56.57.584569
2005.292.08.56.57.683143 >>> Sending Telecommand YC040942 to Enable Limiter 13 -> PACS DPU
2005.292.08.56.57.683523
2005.292.08.56.57.752043 >>> Sending Telecommand YC043942 to Set Limiter 13 -> PACS DPU
2005.292.08.56.57.752438
2005.292.08.56.57.753058 >>> Checking
2005.292.08.57.03.756044 LCL 13 has currently a voltage of 27.9511127472.(from YM420942)
2005.292.08.57.03.756446 LCL 13 has currently a current of 0.472657352686.(from YM424942)
2005.292.08.57.03.757078
2005.292.08.57.20.764993 Force Boot DPU
2005.292.08.57.21.947908 ******************* USER INFORMATION *******************
2005.292.08.57.21.948378 User Info>: Please check if the force boot has been executed
correctly and press OK.
2005.292.08.57.21.949074 ***********************************************************
2005.292.08.57.31.885485
2005.292.08.57.31.885833
2005.292.08.57.31.886436 >>> Switch ON DEC/MEC
2005.292.08.57.31.887069
2005.292.08.57.31.937985 >>> Sending Telecommand YC040942 to Enable Limiter 12 -> PACS DEC/MEC
2005.292.08.57.31.938354
2005.292.08.57.32.005237 >>> Sending Telecommand YC043942 to Set Limiter 12 -> PACS DEC/MEC
2005.292.08.57.32.005860
2005.292.08.57.32.006646 >>> Checking
2005.292.08.57.38.010388 LCL 12 has currently a voltage of 27.909286499.(from YM404942)
2005.292.08.57.38.010794 LCL 12 has currently a current of 0.527370095253.(from YM408942)
2005.292.08.57.38.011426
2005.292.08.57.58.020548 DPU reset of 1355
2005.292.08.58.00.123408 Establish DPU --> DMC connection (DPU-START-OBCP, n=19)
2005.292.08.58.04.155358 Copy DMC SW from EEPROM to RAM
2005.292.08.58.06.193748 DMC_LLSW_LOAD_EEPROM
2005.292.08.58.08.298524 Start DMC HLSW
2005.292.08.58.18.834155 DPU starts link with DMC with DPU as slave
2005.292.08.58.21.924942
2005.292.08.58.21.925312
2005.292.08.58.21.925898 >>> Switch ON BOLC
2005.292.08.58.21.926461
2005.292.08.58.21.990965 >>> Sending Telecommand YC040942 to Enable Limiter 11 -> PACS BOLC
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2005.292.08.58.21.991347
2005.292.08.58.22.097085 >>> Sending Telecommand YC043942 to Set Limiter 11 -> PACS BOLC
2005.292.08.58.22.097468
2005.292.08.58.22.098051 >>> Checking
2005.292.08.58.28.103668 LCL 11 has currently a voltage of 27.9650535583.(from YM388942)
2005.292.08.58.28.104070 LCL 11 has currently a current of 0.0443274602294.(from YM392942)
2005.292.08.58.28.104676
2005.292.08.58.43.113497 DMC_RESET_SMCS_CHIP_2
2005.292.08.58.47.246908 Execute BOLC initialisation including frequency setting
2005.292.08.58.53.477292 set image frequence to 20 Hz
2005.292.08.58.54.063109
2005.292.08.58.54.063497
2005.292.08.58.54.064074 >>> Switch ON SPU
2005.292.08.58.54.064635
2005.292.08.58.54.078402 >>> Sending Telecommand YC040942 to Enable Limiter 14 -> PACS SPU
2005.292.08.58.54.078872
2005.292.08.58.54.181635 >>> Sending Telecommand YC043942 to Set Limiter 14 -> PACS SPU
2005.292.08.58.54.182112
2005.292.08.58.54.182704 >>> Checking
2005.292.08.59.00.185173 LCL 14 has currently a voltage of 28.0440578461.(from YM436942)
2005.292.08.59.00.185576 LCL 14 has currently a current of 0.44783398509.(from YM440942)
2005.292.08.59.00.186197
2005.292.08.59.20.195243 DPU reset of 1355
2005.292.08.59.24.297510 DPU starts link with DMC with DPU as slave
2005.292.08.59.34.403556 DPU starts link with (blue) SPUS with DPU as master
2005.292.08.59.38.478413 DPU starts link with (red) SPUL with DPU as master
2005.292.08.59.42.617699 LOAD SPU RED HLSW FROM EEPROM TO RAM
2005.292.08.59.48.861816 LOAD SPU BLUE HLSW FROM EEPROM TO RAM
2005.292.08.59.57.072079 Start SPUS HLSW
2005.292.09.00.00.149169 DPU starts link with (blue) SPUS with DPU as slave
2005.292.09.00.04.216314 Start SPUL HLSW
2005.292.09.00.07.254337 DPU starts link with (red) SPUL with DPU as slave
2005.292.09.00.12.397235 Establish connection SPUL-DMC, DMC as master
2005.292.09.00.13.432040 Establish connection SPUS-DMC, DMC as master
2005.292.09.00.15.464601 Establish connection DMC-SPURS DMC Master
2005.292.09.00.16.569712 Establish connection DMC-SPURL DMC Master
2005.292.09.00.19.242845 FPU T-sensors are activated
2005.292.09.00.19.243457
2005.292.09.00.19.244626
2005.292.09.00.19.245764 >>> Reading out CDMUDFE Settings
2005.292.09.00.19.246920
2005.292.09.00.19.250298 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.292.09.00.19.251444 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.292.09.00.19.252519 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.292.09.00.19.253639 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.292.09.00.19.254720 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.292.09.00.19.255770 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.292.09.00.19.256869 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.292.09.00.19.257913 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.292.09.00.19.258556
2005.292.09.00.19.259136 >>> Reading out PLM SCOE Settings
2005.292.09.00.19.259726
2005.292.09.00.19.260734 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.292.09.00.19.261781 Status_PLM_PSU1_Master is currently 0 (extracted from TLM YM129942)
2005.292.09.00.19.262832 Status_PLM_PSU1_Slave is currently 0 (extracted from TLM YM145942)
2005.292.09.00.19.263886 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.292.09.00.19.264936 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.292.09.00.19.266049 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.292.09.00.19.267148 Status_PLM_LCL1_I is currently 0.000101930265373 (extracted from TLM
YM232942)
2005.292.09.00.19.268285 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.292.09.00.19.269387 Status_PLM_LCL2_I is currently 0.000506599550135 (extracted from TLM
YM248942)
2005.292.09.00.19.270516 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.292.09.00.19.271626 Status_PLM_LCL3_I is currently 0.000506599550135 (extracted from TLM
YM264942)
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2005.292.09.00.19.272733 Status_PLM_LCL4_V is currently 0.034854657948 (extracted from TLM
YM276942)
2005.292.09.00.19.273837 Status_PLM_LCL4_I is currently 0.000506599550135 (extracted from TLM
YM280942)
2005.292.09.00.19.274925 Status_PLM_LCL5_V is currently 0.0302073694766 (extracted from TLM
YM292942)
2005.292.09.00.19.276171 Status_PLM_LCL5_I is currently 0.000253299775068 (extracted from TLM
YM296942)
2005.292.09.00.19.278695 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.292.09.00.19.279952 Status_PLM_LCL6_I is currently 0.000253299775068 (extracted from TLM
YM312942)
2005.292.09.00.19.281076 Status_PLM_LCL7_V is currently 0.034854657948 (extracted from TLM
YM324942)
2005.292.09.00.19.282280 Status_PLM_LCL7_I is currently 0.000506599550135 (extracted from TLM
YM328942)
2005.292.09.00.19.283420 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.292.09.00.19.284550 Status_PLM_LCL8_I is currently 0.0045593958348 (extracted from TLM
YM344942)
2005.292.09.00.19.285679 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.292.09.00.19.286794 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.292.09.00.19.287934 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.292.09.00.19.289030 Status_PLM_LCL10_I is currently 0.00303959730081 (extracted from TLM
YM376942)
2005.292.09.00.19.290156 Status_PLM_LCL11_V is currently 27.967376709 (extracted from TLM
YM388942)
2005.292.09.00.19.291271 Status_PLM_LCL11_I is currently 0.044580757618 (extracted from TLM
YM392942)
2005.292.09.00.19.292408 Status_PLM_LCL12_V is currently 27.8930225372 (extracted from TLM
YM404942)
2005.292.09.00.19.293525 Status_PLM_LCL12_I is currently 0.753820121288 (extracted from TLM
YM408942)
2005.292.09.00.19.294693 Status_PLM_LCL13_V is currently 27.9534358978 (extracted from TLM
YM420942)
2005.292.09.00.19.295850 Status_PLM_LCL13_I is currently 0.439475089312 (extracted from TLM
YM424942)
2005.292.09.00.19.296986 Status_PLM_LCL14_V is currently 28.0231437683 (extracted from TLM
YM436942)
2005.292.09.00.19.298120 Status_PLM_LCL14_I is currently 0.749260723591 (extracted from TLM
YM440942)
2005.292.09.00.19.298805
2005.292.09.00.19.299432
*********************************************************************************
2005.292.09.00.19.300432 PACS Power On Sequence has ended
*********************************************************************************
2005.292.09.00.19.301182
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Appendix 5: Log of EGSE_CONFIG_AUTO.tcl

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*******************************************************************************
2005.306.07.28.38.286624 EGSE CONFIG Sequence
*******************************************************************************
2005.306.07.28.38.287085
*******************************************************************************
2005.306.07.28.38.287668 Check of CDMU DFE and PLM SCOE
*******************************************************************************
2005.306.07.28.38.287975
2005.306.07.28.38.288196
2005.306.07.28.38.288423 Connecting to CDMU DFE
2005.306.07.28.40.293982 Attaching to CMDU DFE
2005.306.07.28.41.301463
2005.306.07.28.41.301825 Checking if CDMU DFE BIST was OK
2005.306.07.28.43.302804
2005.306.07.28.43.611464 >>> RESULT : CDMU DFE BIST OK, continuing EGSE_CONFIG.
2005.306.07.28.45.612915
2005.306.07.28.45.613459 Connecting to PLM SCOE
2005.306.07.28.47.617203 Attaching to PLM SCOE
2005.306.07.28.48.620275
2005.306.07.28.48.620656 Checking if PLM SCOE BIST was OK
2005.306.07.28.50.623381
2005.306.07.28.50.957583 >>> RESULT : PLM SCOE BIST OK, continuing EGSE_CONFIG.
*******************************************************************************
2005.306.07.28.52.961025 Configuring CDMU DFE
*******************************************************************************
2005.306.07.28.52.961422
2005.306.07.28.52.961928 Switching CDMUDFE to ONLINE mode
2005.306.07.28.54.085247
2005.306.07.28.54.085642
2005.306.07.28.54.086243
2005.306.07.28.54.086776 Available PST tables:
2005.306.07.28.54.087330 1. HIFI_prime_inst.PST
2005.306.07.28.54.087956 2. SPIRE_prime_inst.PST
2005.306.07.28.54.088530 3. PACS_prime_inst.PST
2005.306.07.28.54.089128 4. PACS_burst_mode.PST
2005.306.07.28.54.089703 5. PACS_SPIRE_par.PST
2005.306.07.28.54.090308
2005.306.07.28.54.114739  >>> Please enter the number of the required PST table. Enter 0 for
an unlisted.
2005.306.07.28.59.162468
2005.306.07.28.59.162818 You have selected 3 : PACS_prime_inst.PST
2005.306.07.28.59.163444
2005.306.07.28.59.164241 Loading PACS_prime_inst.PST file on CDMU DFE
2005.306.07.28.59.164853
2005.306.07.29.04.439270 The PST table is loaded on the CDMU DFE.
2005.306.07.29.04.439715
2005.306.07.29.04.440372 Enabling PST file execution.
2005.306.07.29.05.544613
2005.306.07.29.05.544982 Enabling TM Queue.
2005.306.07.29.06.577555
2005.306.07.29.06.577959 Enabling TM Polling.
2005.306.07.29.07.612323
2005.306.07.29.07.612693 Enabling TC Queue.
2005.306.07.29.08.645172
2005.306.07.29.08.645543 Enabling SA Queue.
2005.306.07.29.09.680047
2005.306.07.29.09.680416 Enabling SA Reading.
2005.306.07.29.10.716741
2005.306.07.29.10.717102 Enabling Low Level Time Synchronisation.
2005.306.07.29.11.786732
2005.306.07.29.11.816006 ******************* USER INFORMATION *******************
2005.306.07.29.11.816774 User Info>: >>> Please Enable the Busmonitor (Set Online Mode and
Start New Acquisition) and press OK.
2005.306.07.29.11.817419 *********************************************************
2005.306.07.29.48.255933 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.306.07.29.48.256310 >>>>>>>>  Reading out CDMUDFE Settings
2005.306.07.29.48.256914 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
```

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2005.306.07.29.48.257502
2005.306.07.29.48.309289 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.306.07.29.48.312119 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.306.07.29.48.315273 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.306.07.29.48.318501 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.306.07.29.48.560861 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.306.07.29.48.563552 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.306.07.29.48.564890 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.306.07.29.48.567591 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
********************************************************************************
2005.306.07.29.51.571156 Configuring PLM SCOE
********************************************************************************
2005.306.07.29.51.571611
2005.306.07.29.51.572225 Switching PLM SCOE to ONLINE mode
2005.306.07.29.52.661619
2005.306.07.29.57.665900 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.306.07.29.57.666289 >>>>>>>>  Reading out PLM SCOE Settings
2005.306.07.29.57.666897 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.306.07.29.57.667501
2005.306.07.29.57.769614 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.306.07.29.57.821110 Status_PLM_PSU1_Master is currently 0 (extracted from TLM YM129942)
2005.306.07.29.57.823789 Status_PLM_PSU1_Slave is currently 0 (extracted from TLM YM145942)
2005.306.07.29.57.826355 Status_PLM_PSU2_Master is currently 0 (extracted from TLM YM177942)
2005.306.07.29.58.068695 Status_PLM_PSU2_Slave is currently 0 (extracted from TLM YM193942)
2005.306.07.29.58.073912 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.306.07.29.58.077950 Status_PLM_LCL1_I is currently 0.000101930265373 (extracted from TLM
YM232942)
2005.306.07.29.58.320310 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.306.07.29.58.324015 Status_PLM_LCL2_I is currently 0.000506599550135 (extracted from TLM
YM248942)
2005.306.07.29.58.329087 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.306.07.29.58.573306 Status_PLM_LCL3_I is currently 0.000506599550135 (extracted from TLM
YM264942)
2005.306.07.29.58.628791 Status_PLM_LCL4_V is currently 0.034854657948 (extracted from TLM
YM276942)
2005.306.07.29.58.632925 Status_PLM_LCL4_I is currently 0.00101319910027 (extracted from TLM
YM280942)
2005.306.07.29.58.877582 Status_PLM_LCL5_V is currently 0.0302073694766 (extracted from TLM
YM292942)
2005.306.07.29.58.929094 Status_PLM_LCL5_I is currently 0.000253299775068 (extracted from TLM
YM296942)
2005.306.07.29.58.934317 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.306.07.29.59.178456 Status_PLM_LCL6_I is currently 0.000253299775068 (extracted from TLM
YM312942)
2005.306.07.29.59.184193 Status_PLM_LCL7_V is currently 0.034854657948 (extracted from TLM
YM324942)
2005.306.07.29.59.188377 Status_PLM_LCL7_I is currently 0.00101319910027 (extracted from TLM
YM328942)
2005.306.07.29.59.193563 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.306.07.29.59.438049 Status_PLM_LCL8_I is currently 0.000506599550135 (extracted from TLM
YM344942)
2005.306.07.29.59.442925 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.306.07.29.59.446745 Status_PLM_LCL9_I is currently 0.00101319910027 (extracted from TLM
YM360942)
2005.306.07.29.59.451599 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.306.07.29.59.750011 Status_PLM_LCL10_I is currently 0.000253299775068 (extracted from TLM
YM376942)
2005.306.07.29.59.803194 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.306.07.29.59.807697 Status_PLM_LCL11_I is currently 0.000253299775068 (extracted from TLM
YM392942)
2005.306.07.30.00.053179 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
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2005.306.07.30.00.057311 Status_PLM_LCL12_I is currently 0.00101319910027 (extracted from TLM
YM408942)
2005.306.07.30.00.063860 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.306.07.30.00.308765 Status_PLM_LCL13_I is currently 0.000506599550135 (extracted from TLM
YM424942)
2005.306.07.30.00.313819 Status_PLM_LCL14_V is currently 0.0952693969011 (extracted from TLM
YM436942)
2005.306.07.30.00.317549 Status_PLM_LCL14_I is currently 0.000253299775068 (extracted from TLM
YM440942)
```

Appendix 6: Log of HIFI_POWER_ON.tcl

```
2005.306.07.30.38.087850
*******************************************************************************
2005.306.07.30.38.088759 Start of HIFI POWER ON sequence.
*******************************************************************************
2005.306.07.30.38.089066
2005.306.07.30.38.089289 To run this script, the CDMU DFE and PLM SCOE should be
2005.306.07.30.38.089521 powered and configured.
2005.306.07.30.38.089745 To initiate, this script will connect and attach to the CDMUDFE
2005.306.07.30.38.089984 and PLM SCOE.
2005.306.07.30.38.090205
2005.306.07.30.38.090426 >>> Connecting to CDMU DFE.
2005.306.07.30.41.095703 >>> Attaching to CDMU DFE.
2005.306.07.30.44.100626
2005.306.07.30.44.100987 >>> Connecting to PLM SCOE.
2005.306.07.30.47.103618 >>> Attaching to PLM SCOE.
2005.306.07.30.50.106538
2005.306.07.30.50.106902 >>> Reading out CDMUDFE Settings
2005.306.07.30.50.107331
2005.306.07.30.50.358468 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.306.07.30.50.360817 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.306.07.30.50.363282 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.306.07.30.50.365435 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.306.07.30.50.608112 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.306.07.30.50.610546 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.306.07.30.50.612631 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.306.07.30.50.614847 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.306.07.30.50.615693
2005.306.07.30.50.616491 >>> Reading out PLM SCOE Settings
2005.306.07.30.50.617326
2005.306.07.30.51.027908 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.306.07.30.51.115937 Status_PLM_PSU1_Master is currently 0 (extracted from TLM YM129942)
2005.306.07.30.51.118212 Status_PLM_PSU1_Slave is currently 0 (extracted from TLM YM145942)
2005.306.07.30.51.120453 Status_PLM_PSU2_Master is currently 0 (extracted from TLM YM177942)
2005.306.07.30.51.122592 Status_PLM_PSU2_Slave is currently 0 (extracted from TLM YM193942)
2005.306.07.30.51.366894 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.306.07.30.51.370517 Status_PLM_LCL1_I is currently 0.000101930265373 (extracted from TLM
YM232942)
2005.306.07.30.51.374324 Status_PLM_LCL2_V is currently 0.0627383813262 (extracted from TLM
YM244942)
2005.306.07.30.51.377755 Status_PLM_LCL2_I is currently 0.000506599550135 (extracted from TLM
YM248942)
2005.306.07.30.51.622757 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.306.07.30.51.626736 Status_PLM_LCL3_I is currently 0.000506599550135 (extracted from TLM
YM264942)
2005.306.07.30.51.630634 Status_PLM_LCL4_V is currently 0.034854657948 (extracted from TLM
YM276942)
2005.306.07.30.51.634071 Status_PLM_LCL4_I is currently 0.000506599550135 (extracted from TLM
YM280942)
2005.306.07.30.51.878415 Status_PLM_LCL5_V is currently 0.0302073694766 (extracted from TLM
YM292942)
2005.306.07.30.52.054075 Status_PLM_LCL5_I is currently 0.000253299775068 (extracted from TLM
YM296942)
2005.306.07.30.52.058234 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.306.07.30.52.061771 Status_PLM_LCL6_I is currently 0.000253299775068 (extracted from TLM
YM312942)
2005.306.07.30.52.306068 Status_PLM_LCL7_V is currently 0.0371783003211 (extracted from TLM
YM324942)
2005.306.07.30.52.309784 Status_PLM_LCL7_I is currently 0.000506599550135 (extracted from TLM
YM328942)
2005.306.07.30.52.313732 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.306.07.30.52.317222 Status_PLM_LCL8_I is currently 0.000506599550135 (extracted from TLM
YM344942)
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2005.306.07.30.52.561867 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.306.07.30.52.565665 Status_PLM_LCL9_I is currently 0.00101319910027 (extracted from TLM
YM360942)
2005.306.07.30.52.569693 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.306.07.30.52.573461 Status_PLM_LCL10_I is currently 0.000253299775068 (extracted from TLM
YM376942)
2005.306.07.30.52.817646 Status_PLM_LCL11_V is currently 0.00697093131021 (extracted from TLM
YM388942)
2005.306.07.30.52.922661 Status_PLM_LCL11_I is currently 0.000253299775068 (extracted from TLM
YM392942)
2005.306.07.30.52.927011 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.306.07.30.52.931039 Status_PLM_LCL12_I is currently 0.00101319910027 (extracted from TLM
YM408942)
2005.306.07.30.53.176881 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.306.07.30.53.180873 Status_PLM_LCL13_I is currently 0.000506599550135 (extracted from TLM
YM424942)
2005.306.07.30.53.185477 Status_PLM_LCL14_V is currently 0.090622112155 (extracted from TLM
YM436942)
2005.306.07.30.53.189473 Status_PLM_LCL14_I is currently 0.000253299775068 (extracted from TLM
YM440942)
2005.306.07.30.53.190642
2005.306.07.30.53.191638 >>> Switch ON PSU(s)
2005.306.07.30.53.192947
2005.306.07.30.53.336520 >>> Sending Telecommand YC036942
2005.306.07.30.53.336904
2005.306.07.30.53.337556 >>> Checking
2005.306.07.30.59.556708 PSU 1 Master status is currently 1 (from YM129942)
2005.306.07.30.59.557117 PSU 1 Slave status is currently 1 (from YM145942)
2005.306.07.30.59.557767
2005.306.07.30.59.558391 >>> Switch ON ICU
2005.306.07.30.59.559013
2005.306.07.30.59.611892 >>> Sending Telecommand YC040942 to Enable Limiter 3 -> HIFI ICU
2005.306.07.30.59.612290
2005.306.07.30.59.716458 >>> Sending Telecommand YC043942 to Set Limiter 3 -> HIFI ICU
2005.306.07.30.59.717029
2005.306.07.30.59.717668 >>> Checking
2005.306.07.31.05.807912 LCL 3 has currently a voltage of 27.9023151398.(from YM260942)
2005.306.07.31.05.808334 LCL 3 has currently a current of 0.937209129333.(from YM264942)
2005.306.07.31.05.809013
2005.306.07.31.10.811471 Send Force Boot to ICU
2005.306.07.31.16.021710 ******************** USER INFORMATION ********************
2005.306.07.31.16.022165 User Info>: Please check if the force boot has been executed
correctly and press OK.
2005.306.07.31.16.022801 ************************************************************
2005.306.07.31.20.253731
2005.306.07.31.20.254082
2005.306.07.31.20.254676 Setting HK rate to 1 per second
2005.306.07.31.25.347794
2005.306.07.31.25.348155 Notify ICU that FCU is on
2005.306.07.31.30.590277
2005.306.07.31.30.590644 >>> Switch ON HRH
2005.306.07.31.30.591231
2005.306.07.31.30.696264 >>> Sending Telecommand YC040942 to Enable Limiter 7 -> HIFI HRH
2005.306.07.31.30.696640
2005.306.07.31.30.765127 >>> Sending Telecommand YC043942 to Set Limiter 7 -> HIFI HRH
2005.306.07.31.30.765497
2005.306.07.31.30.766083 >>> Checking
2005.306.07.31.36.927660 LCL 7 has currently a voltage of 27.7350139618.(from YM324942)
2005.306.07.31.36.928176 LCL 7 has currently a current of 2.43522381783.(from YM328942)
2005.306.07.31.36.928800
2005.306.07.31.36.929359 Notify ICU that FCU and HRH are on
2005.306.07.31.41.983266
2005.306.07.31.41.983654 >>> Switch ON WEH
2005.306.07.31.41.984236
2005.306.07.31.42.089096 >>> Sending Telecommand YC040942 to Enable Limiter 5 -> HIFI WEH
2005.306.07.31.42.089482
2005.306.07.31.42.156082 >>> Sending Telecommand YC043942 to Set Limiter 5 -> HIFI WEH
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2005.306.07.31.42.156530
2005.306.07.31.42.157111 >>> Checking
2005.306.07.31.48.267676 LCL 5 has currently a voltage of 27.9394931793.(from YM292942)
2005.306.07.31.48.268077 LCL 5 has currently a current of 0.947594463825.(from YM296942)
2005.306.07.31.48.268660
2005.306.07.31.48.269223 Notify ICU that FCU, HRH and WEH are on
2005.306.07.31.53.371968
2005.306.07.31.53.372333 >>> Switch ON LCU
2005.306.07.31.53.372902
2005.306.07.31.53.479889 >>> Sending Telecommand YC040942 to Enable Limiter 4 -> HIFI LCU
2005.306.07.31.53.480263
2005.306.07.31.53.547643 >>> Sending Telecommand YC043942 to Set Limiter 4 -> HIFI LCU
2005.306.07.31.53.548231
2005.306.07.31.53.549245 >>> Checking
2005.306.07.31.59.596761 LCL 4 has currently a voltage of 27.9348468781.(from YM276942)
2005.306.07.31.59.597256 LCL 4 has currently a current of 0.758379518986.(from YM280942)
2005.306.07.31.59.597861
2005.306.07.31.59.598614 Notify ICU that FCU, HRH, WEH and LCU are on
2005.306.07.32.04.665950
2005.306.07.32.04.666319 ###################################
2005.306.07.32.04.666896 #HIFI swith on is complete
2005.306.07.32.04.667503 ###################################
2005.306.07.32.04.668083
2005.306.07.32.04.668628 >>> Reading out CDMUDFE Settings
2005.306.07.32.04.669190
2005.306.07.32.04.743198 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.306.07.32.04.805033 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.306.07.32.04.857187 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.306.07.32.04.858808 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.306.07.32.04.860379 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.306.07.32.04.862331 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.306.07.32.04.864204 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.306.07.32.04.866533 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.306.07.32.04.867552
2005.306.07.32.04.868434 >>> Reading out PLM SCOE Settings
2005.306.07.32.04.869365
2005.306.07.32.05.112480 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.306.07.32.05.114634 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.306.07.32.05.116784 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.306.07.32.05.118916 Status_PLM_PSU2_Master is currently 0 (extracted from TLM YM177942)
2005.306.07.32.05.120874 Status_PLM_PSU2_Slave is currently 0 (extracted from TLM YM193942)
2005.306.07.32.05.122272 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.306.07.32.05.123622 Status_PLM_LCL1_I is currently 0.00101930263918 (extracted from TLM
YM232942)
2005.306.07.32.05.124901 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.306.07.32.05.126187 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.306.07.32.05.367692 Status_PLM_LCL3_V is currently 27.9046401978 (extracted from TLM
YM260942)
2005.306.07.32.05.368937 Status_PLM_LCL3_I is currently 0.915425360203 (extracted from TLM
YM264942)
2005.306.07.32.05.370032 Status_PLM_LCL4_V is currently 27.9371700287 (extracted from TLM
YM276942)
2005.306.07.32.05.371132 Status_PLM_LCL4_I is currently 0.726463735104 (extracted from TLM
YM280942)
2005.306.07.32.05.372235 Status_PLM_LCL5_V is currently 27.9394931793 (extracted from TLM
YM292942)
2005.306.07.32.05.373320 Status_PLM_LCL5_I is currently 0.948101043701 (extracted from TLM
YM296942)
2005.306.07.32.05.374755 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.306.07.32.05.375888 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.306.07.32.05.377831 Status_PLM_LCL7_V is currently 27.7326889038 (extracted from TLM
YM324942)
2005.306.07.32.05.379475 Status_PLM_LCL7_I is currently 2.46562004089 (extracted from TLM
YM328942)
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2005.306.07.32.05.380598 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.306.07.32.05.381703 Status_PLM_LCL8_I is currently 0.000506599550135 (extracted from TLM
YM344942)
2005.306.07.32.05.621590 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.306.07.32.05.623062 Status_PLM_LCL9_I is currently 0.00101319910027 (extracted from TLM
YM360942)
2005.306.07.32.05.625029 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.306.07.32.05.626347 Status_PLM_LCL10_I is currently 0.000253299775068 (extracted from TLM
YM376942)
2005.306.07.32.05.627702 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.306.07.32.05.629062 Status_PLM_LCL11_I is currently 0.000506599550135 (extracted from TLM
YM392942)
2005.306.07.32.05.630517 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.306.07.32.05.632307 Status_PLM_LCL12_I is currently 0.00101319910027 (extracted from TLM
YM408942)
2005.306.07.32.05.633656 Status_PLM_LCL13_V is currently 0.0162655059248 (extracted from TLM
YM420942)
2005.306.07.32.05.635018 Status_PLM_LCL13_I is currently 0.000506599550135 (extracted from TLM
YM424942)
2005.306.07.32.05.877322 Status_PLM_LCL14_V is currently 0.092945754528 (extracted from TLM
YM436942)
2005.306.07.32.05.934801 Status_PLM_LCL14_I is currently 0.000253299775068 (extracted from TLM
YM440942)
2005.306.07.32.05.935584
2005.306.07.32.05.936209
*********************************************************************************
2005.306.07.32.05.937229 HIFI Power On Sequence has ended
*********************************************************************************
2005.306.07.32.05.937957
```

Appendix 7: Log of INST_POWER_ON.tcl

```
2005.306.07.35.55.333406
********************************************************************************
2005.306.07.35.55.334312 Start of Instrument POWER ON sequence.
********************************************************************************
2005.306.07.35.55.334631
2005.306.07.35.55.334857  To run this script, the CDMU DFE and PLM SCOE should be
2005.306.07.35.55.335089  powered and configured.
2005.306.07.35.55.335333  To initiate, this script will connect and attach to the CDMUDFE
2005.306.07.35.55.335568  and PLM SCOE.
2005.306.07.35.55.335791
2005.306.07.35.55.336014 Connecting to CDMU DFE
2005.306.07.35.57.342845 Attaching to CMDU DFE
2005.306.07.35.58.348369
2005.306.07.35.58.348729 Connecting to PLM SCOE
2005.306.07.36.00.351639 Attaching to PLM SCOE
2005.306.07.36.01.355241 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.306.07.36.01.355643 >>>>>>>>  Reading out CDMUDFE Settings
2005.306.07.36.01.356069 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.306.07.36.01.356491
2005.306.07.36.01.487564 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.306.07.36.01.489659 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.306.07.36.01.491697 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.306.07.36.01.493805 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.306.07.36.01.495971 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.306.07.36.01.498042 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.306.07.36.01.500000 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.306.07.36.01.502112 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.306.07.36.01.502728
2005.306.07.36.01.503238 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.306.07.36.01.503770 >>>>>>>>  Reading out PLM SCOE Settings
2005.306.07.36.01.504308 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.306.07.36.01.504839
2005.306.07.36.01.668814 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.306.07.36.01.670979 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.306.07.36.01.673142 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.306.07.36.01.675611 Status_PLM_PSU2_Master is currently 0 (extracted from TLM YM177942)
2005.306.07.36.01.677804 Status_PLM_PSU2_Slave is currently 0 (extracted from TLM YM193942)
2005.306.07.36.01.681247 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.306.07.36.01.684342 Status_PLM_LCL1_I is currently 0.000917372351978 (extracted from TLM
YM232942)
2005.306.07.36.01.687811 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.306.07.36.01.690819 Status_PLM_LCL2_I is currently 0.00557259470224 (extracted from TLM
YM248942)
2005.306.07.36.01.694278 Status_PLM_LCL3_V is currently 27.9023151398 (extracted from TLM
YM260942)
2005.306.07.36.01.697398 Status_PLM_LCL3_I is currently 0.919478178024 (extracted from TLM
YM264942)
2005.306.07.36.01.700880 Status_PLM_LCL4_V is currently 27.9394931793 (extracted from TLM
YM276942)
2005.306.07.36.01.703905 Status_PLM_LCL4_I is currently 0.723930776119 (extracted from TLM
YM280942)
2005.306.07.36.01.707406 Status_PLM_LCL5_V is currently 27.9394931793 (extracted from TLM
YM292942)
2005.306.07.36.01.710679 Status_PLM_LCL5_I is currently 0.949874103069 (extracted from TLM
YM296942)
2005.306.07.36.01.852462 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.306.07.36.01.855603 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.306.07.36.01.859222 Status_PLM_LCL7_V is currently 27.7280406952 (extracted from TLM
YM324942)
```

```
2005.306.07.36.01.862331 Status_PLM_LCL7_I is currently 2.51627993584 (extracted from TLM
YM328942)
2005.306.07.36.01.865960 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.306.07.36.01.869127 Status_PLM_LCL8_I is currently 0.00101319910027 (extracted from TLM
YM344942)
2005.306.07.36.01.872742 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.306.07.36.01.876004 Status_PLM_LCL9_I is currently 0.00101319910027 (extracted from TLM
YM360942)
2005.306.07.36.01.879759 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.306.07.36.01.882925 Status_PLM_LCL10_I is currently 0.000253299775068 (extracted from TLM
YM376942)
2005.306.07.36.01.886554 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.306.07.36.01.889799 Status_PLM_LCL11_I is currently 0.000506599550135 (extracted from TLM
YM392942)
2005.306.07.36.01.893472 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.306.07.36.01.896663 Status_PLM_LCL12_I is currently 0.000506599550135 (extracted from TLM
YM408942)
2005.306.07.36.01.900381 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.306.07.36.01.903605 Status_PLM_LCL13_I is currently 0.000506599550135 (extracted from TLM
YM424942)
2005.306.07.36.01.907310 Status_PLM_LCL14_V is currently 0.090622112155 (extracted from TLM
YM436942)
2005.306.07.36.01.910604 Status_PLM_LCL14_I is currently 0.000253299775068 (extracted from TLM
YM440942)
2005.306.07.36.01.911380
2005.306.07.36.01.912062
********************************************************************************
2005.306.07.36.01.913112 Power On Instruments
********************************************************************************
2005.306.07.36.01.913897
2005.306.07.36.01.914530
2005.306.07.36.01.915141
2005.306.07.36.01.915761 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.306.07.36.01.916386 >>>>>>>>  Start Up Instruments
2005.306.07.36.01.917008 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.306.07.36.01.917652
2005.306.07.36.01.950500  Which instrument needs to be Powered? PACS, SPIRE, HIFI, CCU?
2005.306.07.36.11.724591  You have selected to power SPIRE.
2005.306.07.36.11.725181
2005.306.07.36.11.725836  The current power on order is:
2005.306.07.36.11.726458  --------------------------------
2005.306.07.36.11.728449  1. LCL 1    SPIRE HSDPU    Primary    Voltage: 0.00697093131021 V
Current: 0.000917372351978 A
2005.306.07.36.11.729291  2. LCL 0    N/A    Primary    Voltage: N/A V     Current: N/A A
2005.306.07.36.11.729959
2005.306.07.36.11.783408  Do you want to change this order? : Choose Yes or No
2005.306.07.36.13.815657  User has chosen NO
2005.306.07.36.15.819527
2005.306.07.36.15.847481  Do you want to enable the PSU(s)? : Choose Yes or No
2005.306.07.36.17.831711  User has chosen YES
2005.306.07.36.19.835822
2005.306.07.36.19.959234  Sending Telecommand YC036942
2005.306.07.36.19.959603  Synchronizing on SEV...
2005.306.07.36.19.963200  Synchronised on SEV for TC(s): YC036942
2005.306.07.36.19.963566
2005.306.07.36.19.964199  >>> Checking
2005.306.07.36.25.967622  PSU 1 Master status is currently 1 (from YM129942)
2005.306.07.36.25.968023  PSU 1 Slave status is currently 1 (from YM145942)
2005.306.07.36.25.968648
2005.306.07.36.26.053356 ******************** USER INFORMATION ********************
2005.306.07.36.26.054227 User Info>: Check Successful! PSU 1 has been enabled.
2005.306.07.36.26.054886 ************************************************************
2005.306.07.36.27.290888
2005.306.07.36.27.291282  >>> Start Enabling LCL's
2005.306.07.36.27.291900
```

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2005.306.07.36.27.321496  Do you want to enable LCL 1? : Choose Yes or No
2005.306.07.36.29.880320  User has chosen YES
2005.306.07.36.31.884730
2005.306.07.36.31.967189  Sending Telecommand YC040942 to Enable Limiter
2005.306.07.36.31.967562  Synchronizing on SEV...
2005.306.07.36.31.968663  Synchronised on SEV for TC(s): YC040942
2005.306.07.36.31.969379
2005.306.07.36.32.032387  Sending Telecommand YC043942 to Set Limiter
2005.306.07.36.32.032973  Synchronizing on SEV...
2005.306.07.36.32.087858  Synchronised on SEV for TC(s): YC043942
2005.306.07.36.32.088338
2005.306.07.36.32.088926  >>> Checking
2005.306.07.36.38.094685  LCL 1 has currently a voltage of 27.858165741.(from YM228942)
2005.306.07.36.38.095492  LCL 1 has currently a current of 0.455934077501.(from YM232942)
2005.306.07.36.38.096865
2005.306.07.36.38.141187 ******************* USER INFORMATION *******************
2005.306.07.36.38.141908 User Info>: Check Successful! LCL 1 has been enabled.
2005.306.07.36.38.142529 ********************************************************
2005.306.07.36.42.896563
2005.306.07.36.42.926547 ******************* USER INFORMATION *******************
2005.306.07.36.42.927249 User Info>: No LCL is selected to be switched on as second
2005.306.07.36.42.927844 ********************************************************
2005.306.07.36.43.600296
2005.306.07.36.43.600692
2005.306.07.36.43.601292  All selected LCL's for SPIRE are powered.
2005.306.07.36.43.601860
2005.306.07.36.43.630818  Do you want to power on another instrument? : Choose Yes or No
2005.306.07.36.44.929271  User has chosen NO
2005.306.07.36.46.932717
2005.306.07.36.46.933404 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.306.07.36.46.934010 >>>>>>>>  Reading out PLM SCOE Settings
2005.306.07.36.46.934646 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.306.07.36.46.935221
2005.306.07.36.46.936439 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.306.07.36.46.937488 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.306.07.36.46.938558 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.306.07.36.46.939592 Status_PLM_PSU2_Master is currently 0 (extracted from TLM YM177942)
2005.306.07.36.46.940624 Status_PLM_PSU2_Slave is currently 0 (extracted from TLM YM193942)
2005.306.07.36.46.941688 Status_PLM_LCL1_V is currently 27.8604888916 (extracted from TLM
YM228942)
2005.306.07.36.46.942782 Status_PLM_LCL1_I is currently 0.444212079048 (extracted from TLM
YM232942)
2005.306.07.36.46.943861 Status_PLM_LCL2_V is currently 0.0627383813262 (extracted from TLM
YM244942)
2005.306.07.36.46.944941 Status_PLM_LCL2_I is currently 0.00557259470224 (extracted from TLM
YM248942)
2005.306.07.36.46.946037 Status_PLM_LCL3_V is currently 27.9046401978 (extracted from TLM
YM260942)
2005.306.07.36.46.947128 Status_PLM_LCL3_I is currently 0.912385761738 (extracted from TLM
YM264942)
2005.306.07.36.46.948282 Status_PLM_LCL4_V is currently 27.9418182373 (extracted from TLM
YM276942)
2005.306.07.36.46.949385 Status_PLM_LCL4_I is currently 0.723424196243 (extracted from TLM
YM280942)
2005.306.07.36.46.950492 Status_PLM_LCL5_V is currently 27.9394931793 (extracted from TLM
YM292942)
2005.306.07.36.46.951574 Status_PLM_LCL5_I is currently 0.948860943317 (extracted from TLM
YM296942)
2005.306.07.36.46.952756 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.306.07.36.46.953929 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.306.07.36.46.955079 Status_PLM_LCL7_V is currently 27.7257175446 (extracted from TLM
YM324942)
2005.306.07.36.46.956186 Status_PLM_LCL7_I is currently 2.51982593536 (extracted from TLM
YM328942)
2005.306.07.36.46.957282 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.306.07.36.46.958847 Status_PLM_LCL8_I is currently 0.000506599550135 (extracted from TLM
YM344942)
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2005.306.07.36.46.961586 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.306.07.36.46.962758 Status_PLM_LCL9_I is currently 0.00101319910027 (extracted from TLM
YM360942)
2005.306.07.36.46.964054 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.306.07.36.46.965247 Status_PLM_LCL10_I is currently 0.000253299775068 (extracted from TLM
YM376942)
2005.306.07.36.46.966476 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.306.07.36.46.967612 Status_PLM_LCL11_I is currently 0.000253299775068 (extracted from TLM
YM392942)
2005.306.07.36.46.968735 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.306.07.36.46.970054 Status_PLM_LCL12_I is currently 0.000506599550135 (extracted from TLM
YM408942)
2005.306.07.36.46.971351 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.306.07.36.46.972534 Status_PLM_LCL13_I is currently 0.000506599550135 (extracted from TLM
YM424942)
2005.306.07.36.46.973751 Status_PLM_LCL14_V is currently 0.092945754528 (extracted from TLM
YM436942)
2005.306.07.36.46.975228 Status_PLM_LCL14_I is currently 0.000253299775068 (extracted from TLM
YM440942)
2005.306.07.36.46.976348 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
2005.306.07.36.46.977028 <<<<<<<  Power Sequence Ended!
2005.306.07.36.46.977697 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
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Appendix 8: Log of PACS_POWER_ON.tcl

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2005.306.07.51.01.457248
*******************************************************************************
2005.306.07.51.01.458156 Start of PACS POWER ON sequence.
*******************************************************************************
2005.306.07.51.01.458468
2005.306.07.51.01.458743 To run this script, the CDMU DFE and PLM SCOE should be
2005.306.07.51.01.458977 powered and configured.
2005.306.07.51.01.459199 To initiate, this script will connect and attach to the CDMUDFE
2005.306.07.51.01.459426 and PLM SCOE.
2005.306.07.51.01.459642
2005.306.07.51.01.459858 >>> Connecting to CDMU DFE.
2005.306.07.51.04.465842 >>> Attaching to CDMU DFE.
2005.306.07.51.07.472661
2005.306.07.51.07.473017 >>> Connecting to PLM SCOE.
2005.306.07.51.10.475829 >>> Attaching to PLM SCOE.
2005.306.07.51.13.479879
2005.306.07.51.13.480244 >>> Reading out CDMUDFE Settings
2005.306.07.51.13.480673
2005.306.07.51.13.575754 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.306.07.51.13.577526 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.306.07.51.13.579147 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.306.07.51.13.580740 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.306.07.51.13.582334 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.306.07.51.13.583952 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.306.07.51.13.585489 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.306.07.51.13.587407 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.306.07.51.13.587974
2005.306.07.51.13.588452 >>> Reading out PLM SCOE Settings
2005.306.07.51.13.588974
2005.306.07.51.13.721334 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.306.07.51.13.723222 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.306.07.51.13.724940 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.306.07.51.13.726637 Status_PLM_PSU2_Master is currently 0 (extracted from TLM YM177942)
2005.306.07.51.13.728350 Status_PLM_PSU2_Slave is currently 0 (extracted from TLM YM193942)
2005.306.07.51.13.785112 Status_PLM_LCL1_V is currently 27.8604888916 (extracted from TLM
YM228942)
2005.306.07.51.13.787888 Status_PLM_LCL1_I is currently 0.434834480286 (extracted from TLM
YM232942)
2005.306.07.51.13.790926 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.306.07.51.13.793479 Status_PLM_LCL2_I is currently 0.00557259470224 (extracted from TLM
YM248942)
2005.306.07.51.13.796591 Status_PLM_LCL3_V is currently 27.9046401978 (extracted from TLM
YM260942)
2005.306.07.51.13.799236 Status_PLM_LCL3_I is currently 0.912892341614 (extracted from TLM
YM264942)
2005.306.07.51.13.802325 Status_PLM_LCL4_V is currently 27.9394931793 (extracted from TLM
YM276942)
2005.306.07.51.13.804961 Status_PLM_LCL4_I is currently 0.721904337406 (extracted from TLM
YM280942)
2005.306.07.51.13.808037 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.306.07.51.13.810643 Status_PLM_LCL5_I is currently 0.949874103069 (extracted from TLM
YM296942)
2005.306.07.51.13.813659 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.306.07.51.13.816298 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.306.07.51.13.819396 Status_PLM_LCL7_V is currently 27.7257175446 (extracted from TLM
YM324942)
2005.306.07.51.13.822032 Status_PLM_LCL7_I is currently 2.54819560051 (extracted from TLM
YM328942)
2005.306.07.51.13.825106 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.306.07.51.13.827820 Status_PLM_LCL8_I is currently 0.000506599550135 (extracted from TLM
YM344942)
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2005.306.07.51.13.831928 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.306.07.51.13.835154 Status_PLM_LCL9_I is currently 0.00101319910027 (extracted from TLM
YM360942)
2005.306.07.51.13.838775 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.306.07.51.13.841494 Status_PLM_LCL10_I is currently 0.000253299775068 (extracted from TLM
YM376942)
2005.306.07.51.13.844831 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.306.07.51.13.847579 Status_PLM_LCL11_I is currently 0.000506599550135 (extracted from TLM
YM392942)
2005.306.07.51.13.850812 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.306.07.51.13.853584 Status_PLM_LCL12_I is currently 0.000506599550135 (extracted from TLM
YM408942)
2005.306.07.51.13.856823 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.306.07.51.13.859570 Status_PLM_LCL13_I is currently 0.000506599550135 (extracted from TLM
YM424942)
2005.306.07.51.13.862831 Status_PLM_LCL14_V is currently 0.0952693969011 (extracted from TLM
YM436942)
2005.306.07.51.13.865610 Status_PLM_LCL14_I is currently 0.000253299775068 (extracted from TLM
YM440942)
2005.306.07.51.13.866305
2005.306.07.51.13.866926 >>> Switch ON PSU(s)
2005.306.07.51.13.867577
2005.306.07.51.13.966725 >>> Sending Telecommand YC036942
2005.306.07.51.13.967097
2005.306.07.51.13.967933 >>> Checking
2005.306.07.51.19.971278 PSU 2 Master status is currently 1 (from YM177942)
2005.306.07.51.19.971935 PSU 2 Slave status is currently 1 (from YM193942)
2005.306.07.51.19.972612
2005.306.07.51.19.973213 >>> Switch ON DPU
2005.306.07.51.19.973819
2005.306.07.51.20.074106 >>> Sending Telecommand YC040942 to Enable Limiter 13 -> PACS DPU
2005.306.07.51.20.074489
2005.306.07.51.20.140859 >>> Sending Telecommand YC043942 to Set Limiter 13 -> PACS DPU
2005.306.07.51.20.141239
2005.306.07.51.20.141948 >>> Checking
2005.306.07.51.26.144740 LCL 13 has currently a voltage of 27.9534358978.(from YM420942)
2005.306.07.51.26.145141 LCL 13 has currently a current of 0.472910672426.(from YM424942)
2005.306.07.51.26.145765
2005.306.07.51.43.153941 Force Boot DPU
2005.306.07.51.44.284877 ******************** USER INFORMATION ********************
2005.306.07.51.44.285312 User Info>: Please check if the force boot has been executed
correctly and press OK.
2005.306.07.51.44.285972 ************************************************************
2005.306.07.51.51.846972
2005.306.07.51.51.847319
2005.306.07.51.51.847920 >>> Switch ON DEC/MEC
2005.306.07.51.51.848501
2005.306.07.51.51.948508 >>> Sending Telecommand YC040942 to Enable Limiter 12 -> PACS DEC/MEC
2005.306.07.51.51.948882
2005.306.07.51.52.016759 >>> Sending Telecommand YC043942 to Set Limiter 12 -> PACS DEC/MEC
2005.306.07.51.52.017133
2005.306.07.51.52.017725 >>> Checking
2005.306.07.51.58.023233 LCL 12 has currently a voltage of 27.909286499.(from YM404942)
2005.306.07.51.58.023636 LCL 12 has currently a current of 0.527370095253.(from YM408942)
2005.306.07.51.58.024238
2005.306.07.52.18.033485 DPU reset of 1355
2005.306.07.52.20.132448 Establish DPU --> DMC connection (DPU-START-OBCP, n=19)
2005.306.07.52.24.205474 Copy DMC SW from EEPROM to RAM
2005.306.07.52.26.306200 DMC_LLSW_LOAD_EEPROM
2005.306.07.52.28.377826 Start DMC HLSW
2005.306.07.52.38.948699 DPU starts link with DMC with DPU as slave
2005.306.07.52.42.039516
2005.306.07.52.42.039891
2005.306.07.52.42.040465 >>> Switch ON BOLC
2005.306.07.52.42.041025
2005.306.07.52.42.139615 >>> Sending Telecommand YC040942 to Enable Limiter 11 -> PACS BOLC
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2005.306.07.52.42.139988
2005.306.07.52.42.211013 >>> Sending Telecommand YC043942 to Set Limiter 11 -> PACS BOLC
2005.306.07.52.42.211396
2005.306.07.52.42.211976 >>> Checking
2005.306.07.52.48.214460 LCL 11 has currently a voltage of 27.967376709.(from YM388942)
2005.306.07.52.48.214859 LCL 11 has currently a current of 0.0443274602294.(from YM392942)
2005.306.07.52.48.215443
2005.306.07.53.03.224299 DMC_RESET_SMCS_CHIP_2
2005.306.07.53.07.359584 Execute BOLC initialisation including frequency setting
2005.306.07.53.13.482680 set image frequence to 20 Hz
2005.306.07.53.14.101650
2005.306.07.53.14.102029
2005.306.07.53.14.102588 >>> Switch ON SPU
2005.306.07.53.14.103131
2005.306.07.53.14.185053 >>> Sending Telecommand YC040942 to Enable Limiter 14 -> PACS SPU
2005.306.07.53.14.185667
2005.306.07.53.14.288345 >>> Sending Telecommand YC043942 to Set Limiter 14 -> PACS SPU
2005.306.07.53.14.288767
2005.306.07.53.14.289347 >>> Checking
2005.306.07.53.20.292147 LCL 14 has currently a voltage of 28.0487060547.(from YM436942)
2005.306.07.53.20.292547 LCL 14 has currently a current of 0.44783398509.(from YM440942)
2005.306.07.53.20.293144
2005.306.07.53.40.300346 DPU reset of 1355
2005.306.07.53.44.406366 DPU starts link with DMC with DPU as slave
2005.306.07.53.54.512532 DPU starts link with (blue) SPUS with DPU as master
2005.306.07.53.58.583532 DPU starts link with (red) SPUL with DPU as master
2005.306.07.54.02.685771 LOAD SPU RED HLSW FROM EEPROM TO RAM
2005.306.07.54.08.861516 LOAD SPU BLUE HLSW FROM EEPROM TO RAM
2005.306.07.54.17.073728 Start SPUS HLSW
2005.306.07.54.20.109877 DPU starts link with (blue) SPUS with DPU as slave
2005.306.07.54.24.255100 Start SPUL HLSW
2005.306.07.54.27.357657 DPU starts link with (red) SPUL with DPU as slave
2005.306.07.54.32.459569 Establish connection SPUL-DMC, DMC as master
2005.306.07.54.33.566639 Establish connection SPUS-DMC, DMC as master
2005.306.07.54.35.673361 Establish connection DMC-SPURS DMC Master
2005.306.07.54.36.743373 Establish connection DMC-SPURL DMC Master
2005.306.07.54.39.349925 FPU T-sensors are activated
2005.306.07.54.39.350306
2005.306.07.54.39.350878
2005.306.07.54.39.351442 >>> Reading out CDMUDFE Settings
2005.306.07.54.39.352007
2005.306.07.54.39.353253 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.306.07.54.39.354475 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.306.07.54.39.355533 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.306.07.54.39.356623 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.306.07.54.39.357678 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.306.07.54.39.358708 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.306.07.54.39.359776 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.306.07.54.39.360808 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.306.07.54.39.361429
2005.306.07.54.39.361990 >>> Reading out PLM SCOE Settings
2005.306.07.54.39.362565
2005.306.07.54.39.363567 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.306.07.54.39.366398 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.306.07.54.39.367951 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.306.07.54.39.369046 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.306.07.54.39.370073 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.306.07.54.39.371212 Status_PLM_LCL1_V is currently 27.8604888916 (extracted from TLM
YM228942)
2005.306.07.54.39.372287 Status_PLM_LCL1_I is currently 0.437586605549 (extracted from TLM
YM232942)
2005.306.07.54.39.373370 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.306.07.54.39.374446 Status_PLM_LCL2_I is currently 0.00557259470224 (extracted from TLM
YM248942)
2005.306.07.54.39.375538 Status_PLM_LCL3_V is currently 27.9046401978 (extracted from TLM
YM260942)
2005.306.07.54.39.376631 Status_PLM_LCL3_I is currently 0.913905620575 (extracted from TLM
YM264942)
```

```
2005.306.07.54.39.377759 Status_PLM_LCL4_V is currently 27.9418182373 (extracted from TLM
YM276942)
2005.306.07.54.39.378864 Status_PLM_LCL4_I is currently 0.721904337406 (extracted from TLM
YM280942)
2005.306.07.54.39.379966 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.306.07.54.39.381053 Status_PLM_LCL5_I is currently 0.95012742281 (extracted from TLM
YM296942)
2005.306.07.54.39.382131 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.306.07.54.39.383295 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.306.07.54.39.384394 Status_PLM_LCL7_V is currently 27.7233943939 (extracted from TLM
YM324942)
2005.306.07.54.39.385491 Status_PLM_LCL7_I is currently 2.55174183846 (extracted from TLM
YM328942)
2005.306.07.54.39.386678 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.306.07.54.39.387796 Status_PLM_LCL8_I is currently 0.0045593958348 (extracted from TLM
YM344942)
2005.306.07.54.39.388902 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.306.07.54.39.390006 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.306.07.54.39.391133 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.306.07.54.39.392229 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.306.07.54.39.393347 Status_PLM_LCL11_V is currently 27.9650535583 (extracted from TLM
YM388942)
2005.306.07.54.39.394478 Status_PLM_LCL11_I is currently 0.044580757618 (extracted from TLM
YM392942)
2005.306.07.54.39.395636 Status_PLM_LCL12_V is currently 27.8883743286 (extracted from TLM
YM404942)
2005.306.07.54.39.396755 Status_PLM_LCL12_I is currently 0.741155147552 (extracted from TLM
YM408942)
2005.306.07.54.39.397871 Status_PLM_LCL13_V is currently 27.9534358978 (extracted from TLM
YM420942)
2005.306.07.54.39.399054 Status_PLM_LCL13_I is currently 0.439728409052 (extracted from TLM
YM424942)
2005.306.07.54.39.400249 Status_PLM_LCL14_V is currently 28.0231437683 (extracted from TLM
YM436942)
2005.306.07.54.39.401368 Status_PLM_LCL14_I is currently 0.747994244099 (extracted from TLM
YM440942)
2005.306.07.54.39.402048
2005.306.07.54.39.402692
********************************************************************************
2005.306.07.54.39.403691 PACS Power On Sequence has ended
********************************************************************************
2005.306.07.54.39.404410
```

Appendix 9: HP-113000-ASED-NC-1619 - Type 1 packets not forwarded to IEGSE because not defined in TMD.dat

Monday October 24 2005 1:13 PM

Company	Project Name	NCR-No: HP-113000-ASED-NC-1619
ESTEC	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 1 of 1

Nonconformance Report

NCR Title Type 1 packets not forwarded to IEGSE because not defined in TMD.dat	
NC Item Identification PACS	
Next Higher Assembly HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)	
Drawing No	Sr No.
Procedure No	
Supplier ASP	Purchase Order
Subsystem	Model EQM
NC Observation Date: 20-OCT-05 Location: ASED OTN	NC Detected During Test

Description of Nonconformance — Requirements Violated

During part 2 of the PACS IMT, it was noticed that no PACS (APID 1152, 1154) type 1 packets were forwarded to
the IEGSE. The problems was found in the tmd.dat file on the CCS. ASED will send the SPID's of the type 1
packets to ASP. ASP should incorporate the new entries and make sure new MIB deliveries contain the new
entries.

Initiator: Date, Name and Signature 24-OCT-05 S ILSEN

Date:
Name:
Signature:

Appendix 10: HP-113000-ASED-NC-1665 – Command to set bias fails sporadically

Wednesday November 2 2005 5:52 PM

Company	Project Name	
ESTEC	HERSCHEL-PLANCK	NCR-No: HP-113000-ASED-NC-1665 Related internal NCR-No: Critical item: Yes ☐ No ☒ Revision 0 Page 1 of 1

Nonconformance Report

NCR Title Command to set bias fails sporadically	
NC Item Identification PACS	
Next Higher Assembly HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)	
Drawing No	Sr No.
Procedure No	
Supplier MPE	Purchase Order
Subsystem	Model EQM
NC Observation Date: 02-NOV-05 Location: ASED OTN	NC Detected During Test

Description of Nonconformance — Requirements Violated

The command to set the bias fails execution from time to time. The error is sporadic and not predictable. Repeating the test solves the problem most of the time. This problem is known to MPE (PACS).

PACS has an internal NCR about this and is tracking the problem.

Initiator: Date, Name and Signature 02-NOV-05 S ILSEN

Date:
Name:
Signature:

Appendix 11: HP-113000-ASED-NC-1666 – Grating does not work correct

Wednesday November 2 2005 6:2 PM

Company	Project Name	NCR-No: HP-113000-ASED-NC-1666
ESTEC	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 1 of 1

Nonconformance Report

NCR **Title** Grating does not work correct	
NC Item **Identification** PACS	
Next Higher Assembly HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)	
Drawing No	Sr No.
Procedure No	
Supplier MPE	Purchase Order
Subsystem	Model EQM
NC Observation Date: 02-NOV-05 Location: ASED OTN	NC Detected During Test
Description of Nonconformance During the PACS IMT it has been observed that the grating does not work as expected. This problem is known to MPE (PACS) and is tracked by an internal NCR.	Requirements Violated
Initiator: Date, Name and Signature 02-NOV-05 S ILSEN	
Date: Name: Signature:	

18 Distribution List

	Name	Dep./Comp.		Name	Dep./Comp.
	Alberti von Mathias Dr.	AOE22		Sonn Nico	AOE51
	Barlage Bernhard	AED11		Steininger Eric	AED44
	Bayer Thomas	AOA52	X	Stritter Rene	AED11
	Brune Holger	AOA55		Thörmer Klaus-Horst Dr.	OTN/AED65
	Fehringer Alexander	AOE13		Wagner Klaus	AOE22
X	Fricke Wolfgang Dr.	AED 65	X	Wietbrock Walter	AET12
	Geiger Hermann	AOA52		Wöhler Hans	AOE22
	Gerner Willi	AED11		Wössner Ulrich	ASE442
X	Grasl Andreas	OTN/AOA54			
	Grasshoff Brigitte	AET12			
	Hauser Armin	AOE22			
X	Hendry David	Terma Resid.			
	Hengstler Reinhold	AOA 5			
	Hinger Jürgen	AOE22	X	Alcatel	ASP
	Hofmann Rolf	ASE442	X	ESA/ESTEC	ESA
X	Hohn Rüdiger	AED65		**Instruments:**	
	Huber Johann	AOA52	X	MPE (PACS)	MPE
	Hund Walter	ASE442	X	RAL (SPIRE)	RAL
X	Idler Siegmund	AED432	X	SRON (HIFI)	SRON
X	Ilsen Stijn	Terma Resid.		**Subcontractors:**	
	Ivády von András	FAE22		Air Liquide, Space Department	AIR
	Jahn Gerd Dr.	AOE22		Air Liquide, Space Department	AIRS
	Kalde Clemens	APE3		Air Liquide, Orbital System	AIRT
	Kameter Rudolf	OTN/AOA54		Alcatel Bell Space	ABSP
	Kettner Bernhard	AET42		Astrium Sub-Subsyst. & Equipment	ASSE
X	Knoblauch August	AET32		Austrian Aerospace	AAE
X	Koelle Markus	AOA53		Austrian Aerospace	AAEM
X	Kroeker Jürgen	AED65		APCO Technologies S. A.	APCO
	Kunz Oliver Dr.	AOE22		Bieri Engineering B. V.	BIER
X	Lamprecht Ernst	OTN/ASI21		BOC Edwards	BOCE
	Lang Jürgen	ASE442		Dutch Space Solar Arrays	DSSA
	Langenstein Rolf	AED15		EADS CASA Espacio	CASA
	Langfermann Michael	AOA51		EADS CASA Espacio	ECAS
X	Mack Paul	OTN/AOA54		EADS Space Transportation	ASIP
	Müller Jörg	AOA52		Eurocopter	ECD
	Müller Ralf	FAE22		European Test Services	ETS
	Peltz Heinz-Willi	AOE13		HTS AG Zürich	HTSZ
	Pietroboni Karin	AED65		Linde	LIND
	Platzer Wilhelm	AED22		Patria New Technologies Oy	PANT
	Reichle Konrad	AOA52		Phoenix, Volkmarsen	PHOE
	Reuß Friedhelm	AED62		Prototech AS	PROT
X	Rühe Wolfgang	AED65		QMC Instruments Ltd.	QMC
	Runge Axel	OTN/AOA54		Rembe, Brilon	REMB
	Sachsse Bernt	AED21		Rosemount Aerospace GmbH	ROSE
	Schink Dietmar	AED44		RYMSA, Radiación y Microondas	RYM

	Name	Dep./Comp.		Name	Dep./Comp.
X	Schlosser Christian	OTN/AOA54		SENER Ingenieria SA	SEN
	Schmidt Rudolf	FAE22		Stöhr, Königsbrunn	STOE
	Schweickert Gunn	AOE22		Terma A/S, Herlev	TER

E N D O F D O C U M E N T