EADS astrium

Test Report

Herschel

Title:	Test Report for SPIRE FM Post-Shipment/Pre-Launch He1 CFT In Kourou
CI-No:	112 200

Prepared by:	S.Hamer	Date:	04.03.2009
Checked by:	A. Koppe		5.03.09
Product Assurance:	R. Stritter		05.03.09
Configuration Control:	W. Wietbrock		09/03/09
Project Management:	W. Fricke		6.03.09

Distribution: See Distribution List (last page)

Issue	Date	Sheet	Description of Change	Release
1	04.03.09	All	Formal Issue	

Table of Content

List of Tables

1 Scope

This document reports on the SPIRE CFT at He1 conditions, performed in the frame of the HERSCHEL S/C Health Check and Pre-Launch verification at CSG, Kourou, French Guiana on the 27th February 2009.

The test was executed with the S/C in vertical position using the Herschel CCS & I-EGSE.

1.1 Objective

The objective of this CFT was:

- To check the correct functional operation of the SPIRE FM under He1 conditions on nominal and redundant side prior to Launch

In the frame of this test the SPIRE SMEC Launch Latch status was also verified to be still locked and the LPU operation was also checked (ACS HP-2-ASED-SD-0469 refers).

Two further tests were also included in the session:

- ACS: HP-2-ASED-SD-0470: SPIRE Spectrometer Switch-on Test (leaving SSW Vss2 and Vdd2 switched off) to support NCR4705 closeout
- PVS #4: Check MilBus B interfaces to SPIRE Nominal and Redundant DPUs

1.2 Test Flow

The overall test flow of the SPIRE FM CFT was as follows:

Date	Time	Action
25/02/2009		Verify SMEC Launch Latch Status (AD3 Steps 1-17)
26/02/2009	23:19	Configure EGSEs and Power ON SVM (AD1 Section 7.2.1 in conjunction with AD2 Section 7.5 and AD5 Steps 1-13), PVS #5, #6 & #7
27/02/2009	00:43	PVS #3 SPIRE LPU Check (AD5 Steps 22-31)
27/02/2009	00:52	Power on SPIRE Nominal as per AD1, chapter 7.2.2.1
27/02/2009	01:17	Run Nominal CFT Procedures as per AD1, chapter 7.2.2.2 – 7.2.2.24
27/02/2009	04:48	SPR1187 Raised, PVS #8 called to repeat procedure to switch Photometer Detectors OFF
27/02/2009	04:52	Continue Nominal CFT Procedures as per AD1,

		chapter 7.2.2.25 – 7.2.2.29
27/02/2009	05:59	PVS #2: Perform SPIRE Spectrometer Detector Switch ON test (AD4)
27/02/2009	05:59	PVS #4: Perform Nominal/Redundant CDMS Bus switching (SVM SFT activity)
27/02/2009	06:15	Power off SPIRE Nominal as per AD 1, sections 7.2.2.30 – 7.2.2.32
27/02/2009	06:29	Power on SPIRE Redundant for SFT as per AD 1, section 7.2.3.1
27/02/2009	06:45	Run Redundant CFT Procedures as per AD1, sections 7.2.3.2 – 7.2.2.20
27/02/2009	08:08	PVS #9 Skip AD1 sections 7.2.2.21 – 7.2.2.23
27/02/2009	08:11	Continue Redundant CFT Procedures as per AD1, chapter 7.2.2.24 – 7.2.2.25
27/02/2009	08:26	PVS #9 Skip AD1 sections 7.2.2.26 – 7.2.2.28
27/02/2009	08:27	Complete Redundant CFT Procedures as per AD1, chapter 7.2.2.29
27/02/2009	08:27	PVS #4: Perform Nominal/Redundant CDMS Bus switching (SVM SFT activity)
27/02/2009	08:29	Power off SPIRE Redundant as per AD 1, section 7.2.2.30 – 7.2.2.32
27/02/2009	08:44	Power off S/C & EGSE

Table 1: SPIRE He1 CFT in Kourou Test Summary

Procedure Execution Summary:

This test has been run with the HERSCHEL S/C in vertical position at CSG, Kourou on SPIRE nominal and redundant units. The “as run” procedures are attached to this report (see Appendices 1 - 5).

The test duration of the SPIRE CFT Test was ~ 9.5 hours (from S/C OFF – S/C OFF).

Location:	CSG, Kourou, Building S1
Test Session Name:	2009_02_26_22_55_hercdmu_hpws21_REALTIME_SPIRE_SFT
Environment:	HP_2_ASED_TP_0217_iss2_SPIRE_COLD_END_001
OBSW:	CDMS 3.8.0.1, ACMS 4.0 B004
HPSDB:	HP-ASP-LI-1441_28
HPCCS Release:	HPCCS Release_2.0-1317
TRR MoM (AD6):	HP-2-ASED-MN-1650
PTR MoM (AD7):	H-P-TAS-MN-11295

Procedure variations of the CFT as recorded in the Procedure Variation Summary in § 8.1 for the corresponding “as-run” procedure are:

PVS#1	S/C left powered On – NOT USED
PVS#2	SPIRE Spectrometer switch On test
PVS#3	Functional part of LL check
PVS#4	Switch to Bus B and back to Bus A
PVS#5	Different Power On/Off (ACS HP-2-ASED-SD-0471) applicable to AD2 not this procedure
PVS#6	No SSMM, No MTL, No OBCP Upload
PVS#7	RedMarks to ACS HP-2-ASED-SD-0471 applicable to AD2 not this procedure)
PVS#8	SPR1187 – PDET-P switch Off
PVS#9	Skip Steps to Reduce Test Time

All non-compliances are recorded in the Observation/NCR Summary below as applicable and detailed further in Section 3.

Documents/Drawings

1.3 Applicable Documents

AD1	SPIRE FM Cold Functional Test – As Run	HP-2-ASED-TP-0217, Issue 2
AD2	Herschel PCDU & CDMS Nominal Switch On/Off Procedure – As Run	HP-2-ASED-PR-0070, Issue 5
AD3	SPIRE LPU Check at CSG – As Run	HP-2-ASED-SD-0469, Issue 1
AD4	SPIRE Spectrometer Switch ON Test – As Run	HP-2-ASED-SD-0470 Issue 1
AD5	Manual Operation of BDR's During Failure Investigation on the LPS/SAS SCOE	HP-2-ASED-SD-0471 Issue 1
AD6	TRR for Spire SFT Kourou MoM	HP-2-ASED-MN-1650
AD7	SPIRE CFT in Kourou PTR MoM	H-P-TAS-MN-11295

1.4 Reference Documents

None

1.5 Other Documents

None

1.6 Acronyms & Abbreviations

See "as-run" procedure.

2 Main Observations and Problems Identified.

The following NCR´s reoccurred during this run of the SPIRE CFT:

2.1 NCR3513 - During RMS 48 hrs, SPIRE TC sequence errors

This NCR was expected to recur during the test. There is an outstanding action for ESA to confirm that the NCR can be closed as "use as is" (with an associated SPIRE documentation update).

2.2 SPR1187 - SPIRE-IST-COLD-PDET-OFF-P TC Mismatch

This SPR was raised due to an incompatibility between the SPIRE IEGSE CUS configuration and the above test script, resulting in a difference between the number of TCs expected from the IEGSE and the number received. A workaround was put in place on the IEGSE to allow the script to execute successfully. This workaround was also applied for the SDET OFF sequence and also for redundant CFT. SPR has been closed.

2.3 Procedure Changes

No updates or clarifications have been identified during the CFT procedure.

3 Summary

The SPIRE CFT He1 at CSG, Kourou was successfully performed on both, nominal and redundant side.

During the CFT a number of SPIRE related activities were also performed successfully, namely:

- Reduced configuration JFET switch on test – AD4
- Spectrometer Mechanism LPU and Launch lock status checks – AD3
- CDMS Redundant MilBus Interface verification – PVS #4

3.1 Open Issues

None specifically from this test, however the following SPIRE NCRs are pending closeout verification:

NCRs requiring closeout verification by test at CSG, Kourou:

NCR 4804 – Unexpected triggering of SPIRE_OPE_STOP OBCP after SPIRE STANDBY OBCP
NCR 4827 – IST-2: Recovery commands issued after SPIRE OBCP

NCRs requiring closeout verification by documentation update:

NCR 3512 – During RMS 48, SPIRE DPU reports missing Time Sync Pulse on MIL Bus 1553
NCR 3513 – During RMS 48 hrs, SPIRE TC sequence errors (TBC – AI on ESA)
NCR 4705 – TBTV SPIRE ? detector problem in spectroscopy
NCR 4725 – TBTV - VC1 Overflow During SPIRE TV Cold
NCR 4805 – IST2 FDIR OBCP: Nominal HK stops after SPIRE OBCP DRCU OFF

3.2 Requirements Verified

With the above CFT, the functional health-check of the SPIRE instrument after transport to CSG, Kourou, French Guiana and fitness for launch has been proven.

4 Appendix 1: Functional AIT Logbook Extract

The following observations were made during the test (extract from AIT logbook)**:**

Date	**26/02/2009**								
Operator	B. Chen, S. Ilsen								
Test Director/ Test Conductor	TD B. Collaudin/ TC S. Ilsen (Late), S. Hamer (Night)								
Shift Leader	C. Much								
QA	D. Hendry (Early), R. Goossens (Late), J. Rautakoski (Night)								
EGSE	L.Allegretti (late) I. Luck (early)								
Test Case	**SPIRE SFT**								
OBSW	CDMS 3.8.0.1, ACMS 4.0 B004								
HPSDB	HP-2-ASP-LI-1441 issue 28								
HPCCS Release	HPCCS_2.0-1317								
Test Environment / Version	HP_2_ASED_TP_0217_iss2_SPIRE_COLD_END_001								
Session ID	2009_02_26_22_55_hercdmu_hpws21_REALTIME_SPIRE_SFT								
Purpose of Test	Regression								
	Debugging								
	NCR Investigation								
	Calibration/Maintenance								
	Unit Integration Testing								
	~~Dry~~ / Formal								X
	S/W	~~PACS~~	~~SPIRE~~	~~HIFI~~	~~CDMS~~	~~ACMS~~	~~CCS~~	~~HPSDB~~	

Time/Date UTC	**Test Procedure / Step / Script / Command / Event / Anomaly**		**NCR'S/ SPR's**
	Thursday February 26th 2009		
	Environmental conditions: in ambient, T ?? gr C , RH ??%, S/c in S1B		
22:55	New session started for SPIRE SFT		
23:19	Captains Log, Stardate 2602092319	We have set on a new mission to the SPIRE System where we have traced a distress call from an unknown species called " The Planck"	
23:19	After we have setup the BoB's for the manual operation of the BDR's i.a.w. ACS SD-0471 iss 1 they where connected in between both Umbilicals by ASTRIUM/ A. Grasl; After verification of the setup we then followed both the ACS SD-0471and PR-0070 for the switch-on.		

23:42	The point in the switch-on script POWER_ON_HER_IST where the manual BDR switching has to be performed (step 6) is not as mentioned in the ACS as Luigi discovered (…until error message is displayed for the remote operation of BDR1 via SAS SCOE); Instead it shall be performed when error message " YM 664952 'LPS_bus_v_n_DAQ' TM isn't validated " is displayed		**PVS#7 SD-0471**
23:44	When BDR1 was switched it immediately triggered a safety loop	Luigi proposed a different approach by leaving BDR1 ON and BDR2 OFF, then acknowledging the safety loop on the Battery Simulator, then Switch the Battery SIM online; If this goes well then switch ON BDR2. After consultation with Engineering from TASF/YR we got the ok for go-ahead	**PVS#7 SD-0471**
23:55	The updates approach was successful, we have power for the S/C !!!!		
23:55	Continued with S/C power-on per TP-0070		
Friday February 27th 2009			
00:35	S/C power-on completed	CCU online, SSMM, MTL and OBCP loading skipped	**PVS#6 TP-0070**
00:41	Start with SPIRE Launch Lock verification i.a.w. PVS#3		**PVS#3 TP-0217**
00:49	Finished SPIRE Launch Lock check		
00:52	Start with SPIRE CFT !!!!!	Yihaw !!!	
01:09	SPIRE SWITCHED-ON in NOMINAL		
02:10	XPND-1 Uplink Part 1	WunderBra	
03:40	XPND-2 Uplink Part 1	Bravo!	
04:10	Command resetsccparams K* sent	To clear misleading information on CCU valve status VS504 and VS505	
04:14	SPIRE-IST-COLD-PDET-OFF-P.tcl failed	Mismatch between script expected value and EGSE value	**SPR-1187**
04:46	SPIRE-IST-COLD-PDET-OFF-P restarted	Successful	**PVS#8 TP-0217**
06:03	Running PVS#2 and HP-2-ASED-SD-0470 SPIRE Spectrometer switch on test		**PVS#2 TP-0217**
06:12	Running PVS#4		**PVS#4 TP-0217**
06:20	Switch off SPIRE		
06:20	Command completion failure on DCT85170(DisableActions)	Expected because EAT tables have not been loaded	
06:20	Command completion failure on DCT84170(EnableActions)	Expected because EAT tables have not been loaded	

06:22	Completed SPIRE nominal CFT	Successfully	
06:37	Switch On SPIRE redundant		
06:42	Command failed SCR01500 (CLEAR_HK_REPORT)	Expected because HKTM has been stopped	
06:42	Command failed SCR01500 (CLEAR_HK_REPORT)	Expected because HKTM has been stopped	
08:08	Skipped test scripts sections 7.2.3.21, 7.2.3.22, 7.2.3.23, 7.2.3.26, 7.2.3.27, 7.2.3.28		**PVS#9 TP-0217**
08:30	Running PVS#4		**PVS#4 TP-0217**
08:38	Switch off SPIRE		
08:41	Command completion failure on DCT85170(DisableActions)	Expected because EAT tables have not been loaded	
08:42	Command completion failure on DCT84170(EnableActions)	Expected because EAT tables have not been loaded	
08:57	Script Z010999MCVT002_POWER_OFF_HER_IST reports several errors as the SAS LPS SCOE is not switched on		
09:22	BDR opened manually and continue switch off script		
	Note that the power off script is trying to continue as normal and is now commanding a switch over to PM-B to check the EEPROM Therefore we aborted the call to …PM_SELECT and continued with the power off This MAY influence the next switch-on e.g. The Crome registers?		
09:46	SC Switched Off, Cryo SCOE monitoring disabled and SC handed over to AIT.		
09:49	Close test session.		

Table 2: Functional AIT Logbook Record

5 Appendix 2: SPIRE FM Cold Functional Test As-Run Procedure

(ref. HP-2-ASED-TP-0217, issue 2)

EADS astrium

Test Procedure

Herschel

AS RUN. 27/02/09.

Title: **IST Instrument Commissioning SPIRE FM Cold Functional Test**

CI-No: 125200

Prepared by:	S. Hamer	Date:	17.02.2009
Checked by:	A. Koppe		18.02.2009
Product Assurance:	R. Stritter		19.02.09
Configuration Control:	W. Wietbrock		20/02/2009
Project Management:	W. Fricke		19.02.09
TAS-F	D. Montet		19.02.09

Distribution: See Distribution List (last page)

Issue	Date	Sheet	Description of Change	Release
1	08.05.08	All	First Formal Issue	
1.1	30.05.08	All	Updates to reflect redlining from 1st SMEC test in Hel plus addition of LL latch relay status check for nominal and redundant. Minor typos + replacement of outstanding S/C level TBCs/TBDs	
1.2	01.07.08		Typo in I-EGSE connection cmd removed (**YC00X966)** **Update of power on/off details for CFT**	
1.3	03.07.08		Implementation of new issue (2.5) of RD2, SPIRE Cold Functional Test Procedures, SPIRE-RAL-PRC-2398	
1.4	23.07.08		Implementation of new issue (2.6) of RD2, SPIRE Cold Functional Test Procedures, SPIRE-RAL-PRC-2398	
2.0	17.02.09		Update power on/off sequence to handle standalone CFT Correct section 7.2.3.16 & 7.2.3.18 for SMECENCPWR Correct document references in section 2.2	

Table of Content

Table of Figures

No table of figures entries found.

List of Tables

1 Scope

This document describes the set of Cold Functional Tests (CFTs) to be performed on the SPIRE FM Instrument for IST Instrument Commissioning (refs. AD6 & AD9) in HeII conditions or as a standalone test in He1 conditions.

It also includes the SMEC Functional & Microvibration Tests. However, these have to be run independently of the other parts of the CFT, as they require a very specific test and satellite configuration and will be run in HeI conditions

Both redundancies are tested within this procedure.

Constraints General

- This procedure requires the presence of SPIRE personnel as the I-EGSE will be required to assess the results online as part of the pass/fail criteria.
- Before carrying out the next procedure within the test sequence always ask for the go ahead by the SPIRE staff.

Constraints Specific

- Specific constraints apply if Launch Lock Latch status monitoring EGSE is fitted, see section 5.4.3.
- The **CFT** part of the procedure run as part of SPIRE IST Commissioning **shall** only be performed in HeII conditions
- The **CFT** part run standalone can be performed in He1 conditions
- The **SMEC** part of the procedure **shall** only be performed in HeI conditions, with satellite Horizontal with +Y axis up, and a recommended Cryostat fill level at < 50%.
- **SMEC** Microvibration tests shall be performed with minimal external acoustic noise/vibration (e.g. at night)
- For **SMEC** Functional tests:
  - Level 1 temperature between 10 K and 20 K with a stability of ca. 2 K is tolerable, since the encoder is less sensitive as it gets warmer
  - For Level 0 and Level 2 section 5.2 applies

1.1 Objective

The objective of the test is to functionally check the FM instrument as much as feasibly possible in HeI or HeII conditions and in an AIT environment.

1.2 Test Flow

The CFT flow is as follows:

1. Power on and configure SPIRE I-EGSE for test
2. Power on and configure SVM for IST Instrument Commissioning (IST START)
3. Power on NOMINAL SPIRE Prime DPU & DRCU and enable Mil1553B-bus interface
4. Run Nominal CFT Procedures
5. Power off MCU Prime
6. Disable Mil1553B-bus interface and Power off SPIRE Prime DRCU & DPU
7. Repeat Steps 3 – 6 for Spire Redundant CFT Procedures
8. Power off SVM including CCU (IST END)
9. Switch off all EGSE

The SMEC flow is as follows:

1. Power on and configure SPIRE I-EGSE for test
2. Power on and configure SVM for test including CCU
3. Power on NOMINAL SPIRE Prime DPU & DRCU and enable Mil1553B-bus interface
4. Run SMEC CFT Nominal Procedures
5. Run SMEC Microvibration Procedures (on Nominal only)
6. Power off MCU Prime
7. Disable Mil1553B-bus interface and Power off SPIRE Prime DRCU & DPU
8. Repeat Steps 3, 4, 6 & 7 for Spire Redundant SMEC CFT Procedures
9. Power off SVM including CCU
10. Switch off all EGSE

2 Documents/Drawings

2.1 Applicable Documents

AD 1	FM SPIRE PFM Final Electrical Integration Procedure	HP-2-ASED-TP-0166
AD 2	Herschel PCDU & CDMS Nominal Switch On/Off Procedure	HP-2-ASED-PR-0070
AD 3	Herschel SAT Emergency Switch Off Procedure	HP-2-ASED-PR-0071
AD 4	PA Plan	HP-2-ASED-PL-0007
AD 5	I-EGSE Switch ON/OFF Procedure	TBI
AD 6	Test Specification for Herschel Instrument AVM & FM Tests Performed at Satellite Level, Issue 2	H-P-2-ASP-TS-1083
AD 7	H-P GDIR	H-P-1-ASPI-SP-0027
AD 8	SPIRE I-EGSE Set-Up, Issue 2.2	SPIRE-RAL-DOC-002841
AD 9	Herschel Integrated Satellite Test Specification, Issue 6	H-P-2-ASP-SP-0939
AD 10	Herschel IST Lead Procedure	HP-2-ASED-TP-0134
AD11	SPIRE SMEC Launch Lock Status EGSE, issue 3.0	SPIRE-RAL-NOT-003015
AD12	S/C Configuration for IST Instrument Commissioning, Issue 1	HP-2-ASED-TP-0237

2.2 Reference Documents

RD 1	Herschel Planck Central Checkout System System User Manual	H-P-4-TE-MA-0010
RD 2	SPIRE Cold Functional Test Procedures, Iss. 2.6	SPIRE-RAL-PRC-2398
RD 3	Herschel CDMU ASW S/W Interface	H-P-4-SSF-IC-0001

	Control Document	
RD 4	Herschel CDMU BSW S/W Interface Control Document	H-P-4-SES-NT-0076
RD 5	SPIRE IID-B	SCI-PT-IIDB/SPIRE-02124
RD 6	SPIRE Functional Test Specification Iss. 1.4	SPIRE-RAL-DOC-001652
RD 7	SPIRE Instrument User Manual Iss. 1.4	SPIRE-RAL-PRJ-002395
RD 8	H/P OBT-UTC Time Synchronisation Technical Note Iss. 1.3	PT-CMOC-OPS-TN-6604-OPS- OGH
RD 9	SPIRE IST SPT Procedure; Iss 3.4	SPIRE-RAL-PRC-2704

2.3 Other Documents

None

2.4 Acronyms & Abbreviations

1553	MIL-STD-1553B conform communication interface
AAD	Attitude Anomaly Detector
ACC	ACMS Control Computer
ACMS	Attitude Control and Measurement Subsystem
AD	Applicable Document
AIR	ACC In Reconfiguration
AIT	Assembly, Integration and Test
AIV	Assembly, Integration and Verification
APID	Application Process ID
ASW	Application Software
AVM	Avionics Model
BOLC	BOLometer Control unit (PACS)
BSW	Basic Software
CBH	Catalyst Bed Heater
CCS	Central Check-out System
CCSDS	Consultative Committee for Space Data Systems
CDMU	Control and Data Management Unit
CDMS	Control and Data Management Sub-system

CFT	Cold Functional Test
CIR	CDMU In Reconfiguration
CLCW	Command Link Control Word
CLTU	Command Link Transmission Unit
CPDU	Command Pulse Distribution Unit
CRS	Coarse Rate Sensor
CTR	Central on board Reference Time
DCU	Detector Control Unit (SPIRE)
DEC	Detectors Electronics Control unit (PACS)
DMC	Detector and Mechanism Control unit (PACS)
DPU	Digital Processing Unit
DRCU	Detector Readout & Control Unit (SPIRE)
EEPROM	Electrically Erasable PROM
EGSE	Electrical Ground Support Equipment
FCL	Fold-back Current Limiter
FCU	FPU Control Unit (Spire)
FCV	Flow Control Valves
FDIR	Failure Detection, Isolation, and Recovery
FPU	Focal Plane Unit
GDIR	General Design and Interface Requirement
GRP	Group Heaters Switch
HBR	High Bit Rate
HL/HLC	High Level command
HP/HPC	High Priority commands
HPLM	Herschel PayLoad Module
HPSDB	Herschel Planck System Data Base
HW	Hardware
i.a.w.	In accordance with
I/F	InterFace
I/O	Input/Output
ICD	Interface Control Document
IST	Integrated System Test

LCL	Latching Current Limiter
LV	Latching Valves
LBR	Low Bit Rate
MAP	Multiplexed Access Point
MBR	Medium Bit Rate
MCU	Mechanisms Control Unit (SPIRE)
MEC	Mechanisms Electronics Control unit (PACS)
ML 16	Memory Load command (ML 16)
MM	Memory Module
MOIS	Mission Operations Information System
MTL	Mission Timeline
NRZ-L	Non Return to Zero – Litton
OBCP	On-Board Control Procedure
OBDH	On-Board Data Handling
OBMF	On-Board Monitoring Function
OBRT/OBT	On-Board Reference Time
OIRD	Operation Interface Requirement Document
PACS	Photodetector Array Camera & Spectrometer
P/L	Payload
PCDU/PCS	Power Control Distribution Unit/Power Control Subsystem
PM	Processor Module
PROM	Programmable Read Only Memory
PSK	Phase Shift Keying
RA	Rate Anomaly
RAM	Random Access Memory
RCS	Reaction Control Subsystem
RD	Reference Document
RF	Radio Frequency
RM	Reconfiguration Module
RT	1553 Remote Terminal
RTU	RT Unit
RTA	RTU

RWL	Reaction Wheel Assembly
SA	1553 Remote Terminal Sub Address
SAS	Sun Acquisition Sensor
SCOE	Special Check-out Equipment
SCU	Subsytems Control Unit (SPIRE)
SIR	S/C In Reconfiguration
SIT	Subsystem Integrated Test
SP	Sun Pointing
SPIRE	Spectral & Photometric Imaging Receiver
SPU	Signal Processing Unit (PACS)
SSMM	Solid State Mass Memory
STR	Star Tracker
SVM	Service Module
SW	Software
TAI	International Atomic Time
TC	TeleCommand
TFG	Transfer Frame Generator
TM	TeleMetry
TTC	Telemetry Tracking & Command subsystem
TTR	Telemetry Telecommand and Reconfiguration
UFT	Unit Functional Test
VC	Virtual Channel
WD	Watchdog

3 Configuration

3.1 Satellite Configuration

The test requires use of the FM SVM powered on including the CCU (connected to cryostat temperature and pressure sensors). Note this also means that the cryostat valves (commandable from the CCS) may also be connected therefore this has to be considered as a SAFETY critical area to be addressed in section 5.

For the CFT in HeII the satellite configuration will be as per the IST SPIRE Commissioning Configuration ref. AD10.

For the CFT in He1 after shipping to CSG, French Guiana the S/C will be powered on in a minimum configuration i.a.w. AD2.

For SMEC parts of the CFT a minimum SVM configuration can be used as per AD2.

The Cryostat and therefore the satellite must be horizontal (+Y axis up) to perform the SMEC parts (section 7.2.6) of the CFT.

SPIRE FM units will be powered ON as per this procedure and assumes that FPU has already been successfully integrated to the warm units.

3.2 EGSE Configuration

This test requires the EGSE to be configured and elements powered on in accordance with AD 2.

I-EGSE shall be configured and connected to the HPCCS in accordance with AD 5 & AD 8.

3.3 Set-up

SPIRE Test Scripts for the test must be loaded on to the HPCCS and checked in prior to start of test.

4 Test Sequence

Ensure that the latest delivery of SPIRE CFT & SPT test scripts are installed on the CCS prior to start of test.

The SPIRE I-EGSE will be running the following software for the test:

I-EGSE Software	Version	Comment
SPIRE MIB version		
SPIRE CUS version		
SCOS version		

The HPCSS HPSDB must also include the same SPIRE MIB version.

5 Conditions

5.1 Personnel

Responsibility	Name / Organisation
Test Director	B. COLLAUDIN / TAS-F
Test Conductor	S. HAMER / ASED
EGSE Operator	S. HAMER / ASED
PA Responsible	J. RAUTAKOSKI / ESA
Instrument Representative	B. SWINYARD / RAL
Customer Representative	B. COLLAUDIN (TAS-F)
ESA Representative	C. SCHARMBERG

5.2 Environmental

The actual clean room and spacecraft environmental conditions for the test shall be recorded below.

Clean Room Conditions	Nominal	Actual
Clean Room Class	class 100000 or better	
Temperature	22°C ± 3°C	
Rel. Humidity	40 % - 60 %	
Pressure	Ambient	

S/C Environmental	Required	Actual
S/C Orientation	CFT: 20deg from Z, +Y down CFT-CSG: Vertical SMEC: Horizontal, +Y up	
Cryostat Status (HeI/HeII)	CFT: HeII CFT-CSG/SMEC: HeI	
Cryostat Level 0 Temp	CFT: T < 2.0K CFT-CSG/SMEC: 4.2K < T < 6.5K	
Cryostat Level 1 Temp (T235-T236)	CFT: T < 6.2K CFT-CSG/SMEC: 10K < T < 20K **	
Cryostat Level 2 Temp	CFT: T < 12K CFT-CSG/SMEC: 5K < T < 30K	
Cryostat Level 3 Temp	CFT-CSG/CFT: 5K < T < 50K SMEC: N/A	

** Stability of 2K/test period (ref. HP-2-ASED-MN-1528 10/04/08)

5.3 General Precautions and Safety

Non-test specific precautions and safety considerations are detailed in section 5.3 of AD 2. Specific safety issues and general precautions for the tests to be performed are detailed in the following sections.

5.3.1 General Safety Requirements, Precautions

In the event of unrecoverable anomaly requiring emergency switch off of the satellite, the switch off shall be performed in accordance with AD 3.

5.3.2 ESD constraints

Normal ESD constraints are to be observed during the test.

5.3.3 Cryo Specific Safety Requirements

During the test the CCU may be connected to the Cryostat sensors and valves. Although no valve operation is performed in this test all Cryogenic specific safety requirements shall be considered when running this procedure as indicated below.

Safety instruction for cryogenic hazards coming from the Helium system are as follows:

1	Helium itself is a non-toxic gas. The hazards to be expected are personal injuries from frostbites (cold surfaces, cold gas plumes), asphyxiation due to insufficient oxygen in the remaining air, loss of orientation due to dense fog generation and impacts of cold damaged structures.
2	Due to the amount of stored energy the Herschel cryostat is a pressure vessel and the general rules for pressure vessel design have to be followed. In addition to these general rules, the safety regulations at CSG launch site have to be considered. The application of these rules leads to a safety concept, which is based on the 'leak before burst' criterion. Herschel is based on the following safety and reliability philosophy: a. Two failure tolerant b. Three independent paths for overpressure relief c. Passive safety system for all operation modes (no active controls for monitoring is required at any time) As emergency situations may occur at unexpected points in time and typically need immediate action, the full hierarchy of the project cannot be deployed and consultation of all knowledgeable persons may not be possible.
3	The main intent of immediate actions will therefore be to ensure safety of personnel and to bring the S/C into a safe waiting condition. The priority of safeguarding is 1) Personnel 2) S/C 3) Facility 4) Support equipment The second aim is to keep the cryostat near the foreseen test conditions in order to continue the test without unnecessary time delay if the failure can be corrected.
4	The ASED test director (or his representative) will be informed by the test personnel of any non-conformances, alarm and unforeseen events that might lead to emergency situations. The ASED test director (or his representative) will initiate immediate steps and call the decision committee (ASED test director, ASED PA, ESA test director, ASP representative, ETS representative) if necessary.

5	Prior to begin a pre-task briefing shall be performed to inform all participants about purpose of operation, possible hazards and emergency shut down
6	In case of operation of the Cryostat safety system the following IMMEDIATE activities shall be performed: • Operation of the safety valve: EVERYBODY has to leave the test room, except test Conductor and necessary CVSE operations personnel • Operation of burst disc: EVERYBODY has to leave the test room

5.3.4 Special QA Requirements

None.

5.4 GSE

Non-test specific GSE details are provided in section 5.4 of AD 2. Specific GSE needs for the tests to performed are detailed in the following sections.

5.4.1 MGSE

None.

5.4.2 CVSE

None.

5.4.3 EGSE

The I-EGSE is required for this test and will be connected to the HPCCS in accordance with AD 5.

For SMEC tests the Launch Lock latch monitoring EGSE maybe fitted to the S/C according to AD11.

5.4.4 OGSE

None.

5.4.5 Special Equipment

None.

6 Verification Requirements and Test Criteria

This is a functional check of all SPIRE PFM subsystems in HeI or HeII conditions and AIT configuration as per AD6 and AD9.

Functional performance and status parameter actual values recorded will be checked during the test and must be the same as the nominal status value indicated.

The test will only be deemed successful once all offline analysis of the results has been performed. Typically, the PTR will be held before completion of this activity and therefore only a preliminary assessment of the test success can be provided to allow disconnection of any specific GSE required for the test and which needs to be removed before further activities can be performed.

Enter Start Date|Time:			

7 Test Procedure

7.1 Initial EGSE and Satellite Configuration for the Test

The Spire FM Final Integration according to the Test Procedure ref. AD 1 must be successfully completed before the execution of this procedure.

The EGSE and Satellite must be configured according to AD 2 prior to start of test.

In case of anomaly on SPIRE requiring immediate switch off as directed by SPIRE responsible supporting the test section 7.2.8 shall be executed.

In the event of emergency the Satellite SHALL be switched down according to AD 3.

Enter Date/Time:	27/02/09	00:00	Sign Off:	

Enter Start Date|Time:			

7.2 Step by Step Procedure

Test Location:	CSQ S1B
Test Session Id:	2009-02-26-22-55_Rerun_Apuse1_REALTIME-SPIRE-SFT
Test Environment:	HP_2_ASED_TP_0217-V02-SPIRE_COLD_END_001

7.2.1 EGSE & Satellite Switch On for CFT

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	Satellite & EGSE Switch On						
0	Confirm all constraints for the CFT as defined in Section 1 have been fulfilled prior to starting the test	OK		OK		✓	
1	Confirm I-EGSE physically connected to HPCCS	OK		OK		✓	
2	Switch on & configure SPIRE I-EGSE i.a.w. **AD5 & AD 8**	OK		OK		✓	
3	Confirm SPIRE I-EGSE is in the correct configuration as per AD5 & AD 8 and TIME synchronised with HPCCS	OK	time	sync	checked Cath	✓	
~~4a~~	If test is perform as part of SPIRE IST Commissioning then switch on HPCCS, SCOEs and Satellite/SVM i.a.w. AD 10 sections 7.1 and 7.2. In section 7.2.4 selecting the test case SPIRE Commissioning	OK		N/A		✓	

Enter Date/Time:	27/02/09	00:02	Sign Off:	[signature] / R. Goossens QA

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	5.8.4.5.1, in the Master GUI						
4b	If test is to be performed as a standalone CFT then switch on HPCCS, SCOEs and S/C and configure into Basic Test Mode, with SSMM/Packet Stores initialised and CCU monitoring set to Mode 2 i.a.w. AD2 section 7.5	OK		ok		✓	
5	Only if performing SPIRE IST Commissioning, configure the Satellite specifically i.a.w. with AD12 Section 7.2 continuing up to step 41	OK		N/A		✓	
6	Only if performing SPIRE IST Commissioning confirm that EGSE and Satellite are in the correct configuration as per AD 10	OK		N/A		✓	
7	Connect HPCCS to CRYOSCOE and verify CryoSCOE data is being received on the CCS by executing the following script: **K102999ECVT035_ASDGEN_SCOE_CCU_LOG**	OK		ok	Stopped CCU_log only	✓	
8	From HPCCS Test Conductor console issue command to connect to SPIRE I-EGSE **connect HSPIREEGSE**	OK		ok		✓	
9	Confirm from HPCCS and SPIRE I-EGSE that the connection has been established	YZS29940= CONNECTED		Connected	AND SYS_PARS	✓	
10	Verify that I-EGSE is receiving CCU Cryo packets	OK				✓	
11	On HPCCS start the following test script: **SPIRE_ALL_SubscribeParams**	OK		ok		✓	
12	Verify correct connection and time synchronisation with IEGSE: **Y102999ETVT036_ASDGEN_VERSPIREIEGSE**	OK		ok	time sync ok	✓	
13	If required load Synoptics INSTRUMENTS on HPCCS to display	OK		ok		✓	

PUS #5 + PUS #6

Enter Date/Time:	27/02/09	00:37	Sign Off:	R. Goossens QA

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	SPIRE status overview						
14	If not running already, start the instrument temperature logging: **Z102999SCVT025_ASDGEN_INSTTEMP_LOG**	OK		ok		✓	
	READY FOR START OF SPIRE CFT						

Enter Date/Time:	27/02/09	00:37	Sign Off:	/ R. Goossens QA

PUS #3 >

Enter Start Date|Time:			

7.2.2 *Cold Functional Tests - Nominal*

7.2.2.1 Switch ON SPIRE PRIME

The following will switch ON and configure SPIRE Prime instrument in REDY (Standby) mode. HKTM packets will be generated on APIDs 1280 and 1282 decimal (these can be observed using TMPH with corresponding filter – note however a limited number of TMPHs should be running at one time).

During power on of SPIRE a number of soft/hard OOLs are reported due to the sequential switch on of the units. This is expected and will clear when SPIRE is in REDY mode. When in REDY mode one parameter remains OOL (soft) namely SMD2V505 this is also expected.

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
1.	On HPCCS start Packet History displays for the following APIDs:1280,1282	OK	ok		✓	
2.	From the HPCCS test conductor console start the test script to power on SPIRE Prime: **S102999SCVT031_ASDCFTSPIR_PWR_ON_P**	OK	ok	AND: ZAD07999, ZAD14999 MIM: LCL_HERSCHEL	✓	

Enter Date/Time:	27/02/09	00:52	Sign Off:	R. Goossens QA

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
3.	On HPCCS when prompted: `“SPIRE Switch ON for Cold FT related tests in Hel/Hell conditions only - Select NO to abort TS if not correct”` **Select YES**	YES	YES		✓	
	If **YES** is selected the test script will go on to automatically power on all SPIRE warm units, force boot the DPU ASW and configure the instrument to Standby mode. Reply to prompts as indicated below.		ok		✓	
4.	On HPCCS when prompted: `"Check Telemetry Updating Correctly and OBT is Consistent with CDMU - OK to continue"` Select OK	OK	OK	**AND: SA_1_559**	✓	

Enter Date/Time:	27/02/09	01:04	Sign Off:	/ R. Goossens

Enter Start Date/Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
5.	If I-EGSE connected when prompted on HPCCS, perform check requested then select **OK**: `"Check IEGSE Time Consistent - OK to continue when RAL confirm"`	OK	ok		✓	
6.	On HPCCS when prompted: `"Check Telemetry No Longer Updating - OK to continue"` Check that parameters: THSK TM2N Select OK to continue	 Not refreshing Not incrementing OK	 Not refreshing Not refreshing ok	Note: Two TC failures on SCR00500 are expected because HKTM has been stopped	✓	
7.	On HPCCS when prompted: `"Check Telemetry Updating Correctly - OK to continue"` Check that parameters: THSK TM2N	 Refreshing @ 1Hz Incrementing by 1 @ 1Hz	 @ 1Hz @ 1Hz	AND: SA_1_559	✓	

Enter Date/Time:	27/02/09	01:08	Sign Off:	[signature] R. Goossens QA

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	Select OK to continue	OK	ok		✓	
8.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT031_ASDCFTSPIR_PWR_ON_P** it will prompt: "`Set Bus Profile Back to Original Setting?`" Select NO	NO	No		✓	
9.	At the prompt: "`Bus Profile left unchanged`" Select OK to continue	OK	ok		✓	
10.	Verify HK TM packets are being received on APIDs 1280 & 1282	OK	ok		✓	
	SPIRE DPU & DRCU powered					

Enter Date/Time:	27/02/09	01:09	Sign Off: R. Goossens QA

Enter Start Date|Time:	27/02/09	~~FB~~001117	

7.2.2.2 Procedure SPIRE-IST-COLD-FUNC-SCU-02-P

Version	2.4
Date	6th December 2007
Purpose	SCU Nominal Science Contents Check PRIME
Initial configuration	SPIRE DPU and DRCU PRIME are switched ON, SPIRE HK is being produced
Final configuration	Unchanged
Preconditions	• **SPIRE-IST-COLD-DPU-ON-P** and **SPIRE-IST-COLD-DRCU-ON-P** procedures have been executed. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • I-EGSE is up and running • DPU AND OBS PARAMETERS & FUNCTIONAL TEST PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK parameters have the expected values

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCU-02-P.tcl	SCUFRAMECNT TM5N	0/31 0x3FFF/1	0/31 0x3FFF/1	
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	01:19	Sign Off:	/ R. Goossens QA

Enter Start Date|Time:	27/02/09	01:20	

7.2.2.3 Procedure SPIRE-IST-COLD-FUNC-SCU-03-P

Version	2.4
Date	6th December 2007
Purpose	SCU DC thermometry check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and DC thermometry is ON
Constraints	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	8 minutes
Pass/Fail Criteria	SCU DC thermometry channels show temperature readings according to the actual instrument temperature

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCU-03-P.tcl	—	—	—	OK
2	**Wait for the parameter BBFULLTYPE to get set to SCU_DC_Therm**	—	—	—	OK.

Enter Date/Time:	27/02/09	01:20	Sign Off:	/ R. Goossens QA

Enter Start Date|Time:	27/02/09	01:22	

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
3	A few seconds later record the value of parameter SCUTEMPSTAT	SCUTEMPSTAT	0/0xFFFF/0xFFFF	0xFFF	OK
4	If the instrument is at He I temperatures check the values of SCU DC thermometry channels.	 PUMPHTRTEMP PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	(All Values TBC) ~4.2K ~4.4K ~4.3K ~4.2K ~4.8K ~4.2K ~4.2K ~4.8K ~4.8K ~4.7K ~4.8K ~4.8K ~4.8K ~4.7K ~4.7K ~4.8K	 6.617 9.555 8.992 5.428 14.458 5.454 5.552 14.507 15.070 14.639 14.542 14.356 14.634 14.257 14.334 12.801	OK
5	If the instrument is at He II temperatures check the values of	 PUMPHTRTEMP	(All Values TBC) -/~4.6K		

Enter Date/Time:	27/02/09	01:24	Sign Off:	R. Goossens QA

Enter Start Date|Time:	27/02/08	

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
	SCU DC thermometry channels.	PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	-/~3.0K -/~3.0K -/~1.7K -/~4.6K -/~1.7K -/~1.7K -/~4.6K -/~4.6K -/~4.5K -/~4.6K -/~4.6K -/~4.6K -/~4.6K -/~4.6K -/~4.5K	N/A	N/A
6	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/08	01.25	Sign Off:	/ R. Goossens QA

Enter Start Date/Time:	27/02/08	01:25	

7.2.2.4 Procedure SPIRE-IST-COLD-FUNC-SCU-06-P

Version	2.4
Date	6th December 2007
Purpose	SCU AC thermometry check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and DC thermometry is ON
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Constraints	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail Criteria	SCU AC thermometry channel shows temperature readings according to the actual instrument temperature

Enter Date/Time:	27/02/09.	01:25	Sign Off:	QA

Enter Start Date|Time:	27/02/09	01:25	

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCU-06-P.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	SUBKSTAT	0/1/1	01.	OK
4	If the instrument is at He I temperatures check the value of SCU AC thermometry channel.	SUBKTEMP	~4K	5.6	OK
5	If the instrument is at He II temperatures check the value of SCU AC thermometry channel.	SUBKTEMP	~1.7K	N/A	N/A
6	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	01:26	**Sign Off:**	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	01:29	

7.2.2.5 Procedure SPIRE-IST-COLD-FUNC-SCU-07-P

Version	2.4
Date	6th December 2007
Purpose	Sorption Cooler Heater Check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and DC thermometry is ON
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Constraints	**This test should not be performed at He II temperatures, unless specifically instructed to do so by the I-EGSE staff.**
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail Criteria	Sorption cooler heat switches and pump heater show expected voltages

Procedure Steps:

Step	Descripti n	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCU-07-P.tcl	—	—	—	Ok
2	Wait for the parameter BBFULLTYPE to get set to Cooler_Htr_Chk	BBFULLTYPE	Cooler_Htr_Chk		

Enter Date/Time:	27/02/09	01:29	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	01:30	

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
3	Record the value of parameter SPHSV – the Sorption Pump Heat Switch Voltage. This voltage stays on for ~20 seconds. Wait for the voltage to go to zero to continue.	SPHSV – mV	0/~323/0	324.18	OK
4	Record the value of parameter EVHSV – the Evaporator Heat Switch Voltage. This voltage stays on for ~20 seconds. Wait for the voltage to go to zero to continue.	EVHSV – mV	0/~323/0	324.02	OK
5	Record the value of parameter SPHTRV – the Sorption Pump Heater Voltage. This voltage stays on for ~20 seconds.Wait for the voltage to go to zero to continue.	SPHTRV – V	0/~8.8/0	8.85 V	OK
6	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
	Test Result (Pass/Fail):				

Enter Date/Time:	27/02/09	01:31	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	01:30	

7.2.2.6 Procedure SPIRE-IST-COLD-FUNC-PCAL-01-P

Version	1.0
Date	6th December 2007
Purpose	PCAL Characterisation Check (PRIME)
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Final configuration	Unchanged
Constraints	**This test should only be performed at He I or He II temperatures**
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail Criteria	PCAL voltage and current agree with expected values

Enter Date/Time:	27/02/09	01:30	Sign Off:	

Enter Start Date|Time:	27/02/09	01:35	

Procedure Steps:

Step	Description	Parameter Name – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-PCAL-01-P.tcl	—	—	—	Ok.
2	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Final Configuration: Unchanged

Enter Date/Time:	27/02/09	01:39	Sign Off:		QA

Enter Start Date|Time:	27/02/09	01:43	

7.2.2.7 Procedure SPIRE-IST-COLD-FUNC-SCAL-01-P

Version	1.0
Date	6th December 2007
Purpose	SCAL Characterisation Check (PRIME)
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Final configuration	Unchanged
Constraints	**This test should only be performed at He I or He II temperatures.** **If the test is to be performed at He II temperature then please confirm with I-EGSE staff first.**
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	18 minutes
Pass/Fail criteria	SCAL2 and SCAL4 voltage and currents agree with expected values

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCAL-01-P.tcl	—	—	—	OK
2	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	02:00.	Sign Off:	[signature] [signature] QA

Enter Start Date|Time:	27/02/09	02:07	

7.2.2.8 Procedure SPIRE-IST-COLD-FUNC-MCU-01-P

Version	2.4
Date	6th December 2007
Purpose	MCU (PRIME) Boot Check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCU voltages and board temperatures show expected 'ON' values

Enter Date/Time:	27/02/09	02:01	**Sign Off:**	[signature] Dataloch: QA

Enter Start Date|Time:	27/02/09	02:01	

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-MCU-01-P.tcl	—	—	—	OK
2	Check that the MCU is booted up successfully	MCUBITSTAT	0/1/1	1	OK
3	Check MCU HK parameter values and ensure that the values are refreshing	MCUP5V MCUP14V MCUM14V MCUP15V MCUM15V MCUMACTEMP MCUSMECTEMP MCUBSMTEMP	~ 5.0 ± 0.2V ~ 14.0 ± 0.5V ~ -14.0 ± 0.5V ~ 15.0 ± 0.5V ~ -15.0 ± 0.5V ~300K ~300K ~300K	5.01 14.15 -14.47 15.55 -15.63 294.44 299.43 298.92	OK
Test Result (Pass/Fail):					

RAL Confirm OK

Enter Date/Time:	27/02/09	02:05	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	02:06	

7.2.2.9 Procedure SPIRE-IST-COLD-FUNC-MCU-03-P

Version	2.4
Date	6th December 2007
Purpose	MCU Nominal Science Contents Check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	Unchanged.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified MCU HK parameters show expected increment

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-MCU-03-P.tcl	MCUFRAMECNT	0/-/297	0/297	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	02:08	Sign Off:	

Enter Start Date|Time:	27/02/09	02:09	

7.2.2.10 Procedure SPIRE-IST-COLD-FUNC-BSM-01-P

Version	2.4
Date	6th December 2007
Purpose	BSM (PRIME) Chop/Jiggle Sensor Check.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK Parameters CHOPSENSPWR and JIGGSENSPWR show expected ON values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-BSM-01-P.tcl	—	—	—	Ok
2	Check that the Chop and Jiggle sensors have switched on	CHOPSENSPWR JIGGSENSPWR	0/1/1 0/1/1	1 1	Ok.
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	02:14	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	02:15	

7.2.2.11 Procedure SPIRE-IST-COLD-FUNC-BSM-03-P

Version	2.4
Date	6th December 2007
Purpose	BSM (PRIME) Open Loop Dynamics Check.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	CHOPSENSSIG/JIGGSENSIG HK parameter evolve in the same direction as the commanded positions

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-BSM-03-P.tcl	—	—	—	OK
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	02:22	Sign Off:	[signatures] QA

Enter Start Date|Time:	27/02/09	02:22	

7.2.2.12 Procedure SPIRE-IST-COLD-FUNC-BSM-05A-P

Version	2.4
Date	6th December 2007
Purpose	BSM (PRIME) Open Loop Chop Test
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	The BSM Chops between the commanded positions

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-BSM-05A-P.tcl	—	—	—	OK
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	02:25	Sign Off:		QA

Enter Start Date|Time:	27/02/09	02:27	

7.2.2.13 Procedure SPIRE-IST-COLD-FUNC-BSM-05B-P

Version	2.4
Date	6th December 2007
Purpose	BSM (PRIME) Close Loop Chop Test
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	BSM is in closed loop mode
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • CHOP PARAMETERS and JIGGLE PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	The BSM Chops in between the commanded positions

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-BSM-INIT-P.tcl	CHOPLOOPMODE JIGGLOOPMODE	3/-/1 3/-/1	1 1	Ok
2	Execute TCL script SPIRE-IST-COLD-FUNC-BSM-05B-P.tcl	—	—	—	Ok
3	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	Ok
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	02:31	Sign Off:	[signature] [signature] QA

Enter Start Date|Time:	27/02/09	02:34	

7.2.2.14 Procedure SPIRE-IST-COLD-FUNC-BSM-06-P

Version	2.4
Date	6th December 2007
Purpose	BSM (PRIME) Closed Loop Operational Mode Chop Test
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON. BSM is in closed loop.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • CHOP PARAMETERS and JIGGLE PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	The BSM Chops between the commanded positions

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-BSM-06-P.tcl	CHOPLOOPMODE JIGGLOOPMODE	1/1/1 1/1/1	1 1	OK
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	02:36	Sign Off:	QA

Enter Start Date|Time:	27/02/09		

7.2.2.15 Procedure SPIRE-IST-COLD-BSM-OFF-P

Version	2.4
Date	6th December 2007
Purpose	BSM (PRIME) Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are OFF.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK Parameters CHOPSENSPWR and JIGGSENSPWR show expected OFF values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-BSM-OFF-P.tcl	—	—	—	OK
2	Check that the power to the BSM sensors is switched off	CHOPSENSPWR JIGGSENSPWR	1/-/0 1/-/0	1 / 0 1 / 0	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	02:39	Sign Off:		QA

Enter Start Date/Time:	27/02/09	02:40	

7.2.2.16 Procedure SPIRE-IST-COLD-FUNC-SMEC-01-P

Version	2.4
Date	6th December 2007
Purpose	SMEC (PRIME) Encoder/LVDT Sensor Check.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK Parameters SMECENCPWR and SMECLVDTPWR show expected ON values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-01-P.tcl	—	—	—	OK
2	Check that power to the SMEC LED and LVDT sensor is on	SMECENCPWR SMECLVDTPWR	0/-/1 0/-/1	1 1	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	02:41	Sign Off:	QA

Enter Start Date|Time:	27/02/09	02:44	

7.2.2.17 Procedure SPIRE-IST-COLD-FUNC-SMEC-03-P

Version	2.4
Date	6th December 2007
Purpose	SMEC (PRIME) Encoder Integrity Check.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCUENGSMECENCSIG1/2 increase as the encoder power is increased

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-03-P.tcl	—	—	—	OK
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	ok
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	02:46	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	02:47	

7.2.2.18 Procedure SPIRE-IST-COLD-SMEC-OFF-P

Version	2.4
Date	6th December 2007
Purpose	SMEC (PRIME) Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are OFF.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail criteria	HK Parameters SMECENCPWR and SMECLVDTPWR show expected OFF values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-SMEC-OFF-P.tcl	—	—	—	OK
2	Check that the power to the SMEC sensors is switched off	SMECENCPWR SMECLVDTPWR	1/-/0 1/-/0	1/0 1/0	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	02:47	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	02:49	

7.2.2.19 Procedure SPIRE-IST-COLD-FUNC-DCU-02-P

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	Cryostat Check Procedure for CFT						
2	**Prior to performing next step verify that Level 3 temperature is between 5K and 50K (sensors T246 & T247)**	OK		OK	0	OK	
3	Record Temperatures: T246: (KD223302 if connected to CCU) T247: (KD223303 if connected to CCU)	 >5K - <50K >5K - <50K		 26.82 26.82	 T247 T251	OK	
	End of Cryostat Check						

Version	2.4
Date	6th December 2007
Purpose	DCU Nominal Science Contents Check PRIME
Initial configuration	SPIRE DPU and DRCU PRIME are switched ON, SPIRE HK is being produced and MCU is booted.
Final configuration	Unchanged
Preconditions	• **SPIRE-IST-COLD-DPU-ON-P** and **SPIRE-IST-COLD-DRCU-ON-P** procedures have been executed. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • I-EGSE is up and running • DCU PARAMETERS display is selected on the CCS • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU HK parameters increment as expected

Enter Date/Time:	27/02/09	02:49	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	02:50	

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-02-P.tcl	DCUFRAMECNT	n/n+700	1200/1900	OK
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09,	02:53	Sign Off:		

Enter Start Date|Time:	27/02/09	03:00	

7.2.2.20 Procedure SPIRE-IST-COLD-FUNC-DCU-11-PHOT-P

Version	2.4
Date	6th December 2007
Purpose	Photometer BDAs switch ON check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Photometer BDAs are ON.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	7 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Enter Date/Time:	27/02/09	03:00	Sign Off:	QA

Enter Start Date|Time:	27/02/09	03:10	

Procedure Steps:

Flow Rate 22.6

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-11-PHOT-P.tcl	—	—	—	OK
2	Check that the Photometer detectors and LIAs are switched on	PSWJFETSTAT PMLWJFETSTAT PLIABITSTAT PLIAP5V PLIAP9V PLIAM9V	0/-/0x3F 0/-/0x7F 1 ~0/ ~+5.17 ± 0.1V ~0/ ~+11.53 ± 0.1V ~0/ ~-11.53 ± 0.1V	3F 7F 1 5.23 11.58 - 11.58	OK
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	03:14	Sign Off:		QA

Enter Start Date|Time:	27/02/09	03:16	

7.2.2.21 Procedure SPIRE-IST-COLD-FUNC-DCU-13-PHOT-P

Version	2.4
Date	6th December 2007
Purpose	Photometer BDAs integrity check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Photometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	15 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Check that Photometer LIAs and detectors are switched on	PLIABITSTAT PSWJFETSTAT PMLWJFETSTAT	1 0x3F 0x7F	1 3F 7F	OK
2	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-13-PHOT-P.tcl	—	—	—	OK
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	03:33	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	03:33	

7.2.2.22 Procedure SPIRE-IST-COLD-FUNC-DCU-14-PHOT-P

Version	2.4
Date	6th December 2007
Purpose	Photometer BDAs noise level check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Photometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Photometer BDA signals show no excess noise

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Check that Photometer LIAs and detectors are switched on	PLIABITSTAT PSWJFETSTAT PMLWJFETSTAT	1 0x3F 0x7F	1 0x3F 0x7F	OK
2	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-14-PHOT-P.tcl	—	—	—	OK
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	03:37	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	03:37	

7.2.2.23 Procedure SPIRE-IST-COLD -PHOT-VSS-P

Version	1.1
Date	10th July 2008
Purpose	Photometer BDAs Vss Test PRIME
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Photometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	40 minutes
Pass/Fail criteria	Photometer BDA Vss values are optimised

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Check that Photometer LIAs and detectors are switched on	PLIABITSTAT PSWJFETSTAT PMLWJFETSTAT	1 0x3F 0x7F	1 0x3F 0x7F	Ok
2	Execute TCL script SPIRE-IST-COLD - PHOT-VSS-P.tcl	—	—	—	Ok
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	04:13	Sign Off:		QA

Enter Start Date|Time:	27/02/09	04:14	

7.2.2.24 Procedure SPIRE-IST-COLD-PDET-OFF-P

Version	2.4
Date	6th December 2007
Purpose	Photometer BDAs Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Photometer BDAs are ON
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Photometer BDAs are OFF
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Enter Date/Time:	27/02/09	04:14	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	04:14	

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-PDET-OFF-P.tcl	—	—	—	~~NOK.~~ OK.
2	Check that the Photometer detectors are switched off	PSWJFETSTAT PMLWJFETSTAT	0x3F/-/0 0x7F/-/0	0x3F / 0 0x7F / 0	Ok
3	Check that the Photometer LIAs are switched off	PLIABITSTAT	1/-/0	1 / 0	OK
4	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

SPR 1187.
RVS # 8.

Enter Date/Time:	27/02/09	04:48.	Sign Off:		QA

Enter Start Date|Time:	27/02/09	04:52	

7.2.2.25 Procedure SPIRE-IST-COLD-FUNC-DCU-11-SPEC-P

Version	2.4
Date	6th December 2007
Purpose	Spectrometer BDAs switch ON check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Spectrometer BDAs are ON.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	7 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Enter Date/Time:	27/02/09	04:52	Sign Off:		QA

Enter Start Date/Time:	27/02/09	04:52	

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-11-SPEC-P.tcl	—	—	—	OK
2	Check that the Spectrometer detectors and LIAs are switched on	SPECJFETSTAT SLIABITSTAT SLIAP5V SLIAP9V SLIAM9V	0/-/7 1 ~0/ ~+5.23 ± 0.1 ~0/ ~+11.57 ± 0.1 ~0/ ~-11.54 ± 0.1	7 1 5.25 11.59 -11.56	OK.
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	04:58	Sign Off:	[signature] [signature] QA

Enter Start Date|Time:	27/02/09	04:59	

7.2.2.26 Procedure SPIRE-IST-COLD-FUNC-DCU-13-SPEC-P

Version	2.4
Date	6th December 2007
Purpose	Spectrometer BDAs integrity check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Spectrometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	12 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Check that the Spectrometer detectors and LIAs are switched on	SPECJFETSTAT SLIABITSTAT	7 1	7 1	OK
2	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-13-SPEC-P.tcl	—	—	—	OK
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	05:13	Sign Off:	[signature] [signature] QA

Enter Start Date|Time:	27/02/09	05:13	

7.2.2.27 Procedure SPIRE-IST-COLD-FUNC-DCU-14-SPEC-P

Version	2.4
Date	6th December 2007
Purpose	Spectrometer BDAs noise check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Spectrometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Spectrometer BDA signals show no excess noise

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Check that the Spectrometer detectors and LIAs are switched on	SPECJFETSTAT SLIABITSTAT	7 1	7 1	OK
2	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-14-SPEC-P.tcl	—	—	—	OK
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	05:16	Sign Off:	

Enter Start Date|Time:	27/02/09	05:17	

7.2.2.28 Procedure SPIRE-IST-COLD- SPEC-VSS-P

Version	2.5
Date	10th July 2008
Purpose	Spectrometer BDAs Vss Test PRIME
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Spectrometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	40 minutes
Pass/Fail criteria	Spectrometer BDA Vss values are optimised

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Check that the Spectrometer detectors and LIAs are switched on	SPECJFETSTAT SLIABITSTAT	7 1	7 1	OK
2	Execute TCL script SPIRE-IST-COLD-SPEC-VSS-P.tcl	—	—	—	OK
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	05:48	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	05:48	

7.2.2.29 Procedure SPIRE-IST-COLD-SDET-OFF-P

Version	2.4
Date	6th December 2007
Purpose	Spectrometer BDAs Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Spectrometer BDAs are ON
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Spectrometer BDAs are OFF
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Enter Date/Time:	27/02/09	05:48	Sign Off:		QA

Enter Start Date|Time:	27/02/09	05:51	

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-SDET-OFF-P.tcl	—	—	OK	OK
2	Check that the Spectrometer detectors are switched off	SPECJFETSTAT	7/-/0	7/0	OK
3	Check that the Spectrometer LIAs are switched off	SLIABITSTAT	1/-/0	1/0	OK
4	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	Cryostat Check Procedure for CFT						
5	Record Temperatures: T246: (KD223302 if connected to CCU) T247: (KD223303 if connected to CCU)	 >5K - <50K >5K - <50K		 26.77 26.46	 T249 T251	ok	
6	**Inform Cryo Engineers that Level 3 temperature no longer needs to be maintained between 5K and 50K**	OK		OK		OK	
	End of Cryostat Check						

Enter Date/Time:	27/02/09	05:53	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	05:59	

PUS #2 > OK

PUS #4

7.2.2.30 Procedure SPIRE-IST-COLD-MCU-OFF-P

Version	2.4
Date	6th December 2007
Purpose	MCU PRIME Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is OFF.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is ON. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified MCU HK Parameter shows expected value.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-MCU-OFF-P.tcl	—	—	—	OK
2	Check that the MCU is switched off	MCUBITSTAT	1/-/0	1/,0	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	06:17	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	06:19	

7.2.2.31 Procedure SPIRE-IST-COLD-SCU-OFF-P

Version	2.4
Date	6th December 2007
Purpose	SCU PRIME Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is OFF
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified SCU HK Parameters show expected value.

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-SCU-OFF-P.tcl	—	—	—	OK
2	A few seconds later record the value of parameter SCUTEMPSTAT	SCUTEMPSTAT	0xFFFF/-/0	0xFFFF / 0	OK.
3	A few seconds later record the value of parameter SUBKSTAT	SUBKSTAT	1/-/0	1 / 0	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	06:19.	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	06:20	

7.2.2.32 Switch OFF SPIRE PRIME

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
1.	From the HPCCS test conductor console start the test script to power OFF SPIRE Prime: **S102999SCVT032_ASDCFTSPIR_PWR_OFF_P**	OK	OK		OK	
2.	On HPCCS when prompted: "SPIRE Switch OFF for CFT related tests in Hel/Hell conditions only - Select NO to abort TS if not correct" **Select YES**	YES	YES		OK	
	If **YES** is selected the test script will go on to automatically power off all SPIRE warm units.					

Enter Date/Time:	27/02/09	06:21	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	06:21	

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	Note that during Switch OFF of SPIRE the following (5,2) and (5,4) event messages on APID 1280 may be expected and do not indicate a problem: a) EVID 1313 No_MCU_Response_Error b) EVID 21773 ALARM_LSMCU_DEAD **However, be aware that if FDIR is enabled for SPIRE in the CDMU then this may trigger an OBCP**					
3.	On HPCCS when prompted: `"Check Telemetry No Longer Updating - OK to continue"` Check that parameters:			AND: SA_1_559		
	THSK	Not refreshing	OK		OK	
	TM2N	Not incrementing	OK		OK	
4.	Select OK to continue	OK	OK		OK	

Enter Date/Time:	27/02/09	06:22	Sign Off:	[signature] [signature] QA

Enter Start Date|Time:	27/02/09	06:22

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
5.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT032_ASDCFTSPIR_PWR_OFF_P** it will prompt: `“Bus profile left as SPIRE PRIME, change manually after if required - OK to continue”`		OK		OK	
6.	Select OK to continue	OK	OK		OK	
7.	On HPCCS stop Packet History displays for the following APIDs:1280,1282	OK	OK		OK	
	SPIRE PRIME OFF					

Enter Date/Time:	27/02/09	06:26	Sign Off:	[signature]	[signature] QA

Enter Start Date/Time:	27/02/09	06:29	

7.2.3 *Cold Functional Tests – Redundant*

7.2.3.1 Switch ON SPIRE REDUNDANT

The following will switch ON and configure SPIRE Redundant instrument in REDY (Standby) mode. HKTM packets will be generated on APIDs 1281 dec and 1283 decimal (these can be observed using TMPH with corresponding filter – note however a limited number of TMPHs should be running at one time).

During power on of SPIRE a number of soft/hard OOLs are reported due to the sequential switch on of the units. This is expected and will clear when SPIRE is in REDY mode. When in REDY mode one parameter remains OOL (soft) namely SMD2V505 this is also expected.

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
1.	On HPCCS start Packet History displays for the following APIDs:1281,1283	OK	Ok		OK	
2.	From the HPCCS test conductor console start the test script to power on SPIRE Redundant: **S102999SCVT033_ASDCFTSPIR_PWR_ON_R**	OK	OK	AND: ZAD07999, ZAD14999 MIM: LCL_HERSCHEL	OK	

Enter Date/Time:	27/02/09	06:37	Sign Off:	

Enter Start Date|Time:	27/02/09	06:37	

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
3.	On HPCCS when prompted: "SPIRE Switch ON for Cold FT related tests in HeI/HeII conditions only - Select NO to abort TS if not correct" **Select YES**	YES	Yes		OK	
	If **YES** is selected the test script will go on to automatically power on all SPIRE warm units, force boot the DPU ASW and configure the instrument to Standby mode. Reply to prompts as indicated below.					
4.	On HPCCS when prompted: "Check Telemetry Updating Correctly and OBT is Consistent with CDMU - OK to continue" **Select OK**	OK	OK	**AND: SA_1_559**	OK	
5.	If I-EGSE connected when prompted on HPCCS, perform check requested then select **OK**: "Check IEGSE Time Consistent - OK to continue when RAL confirm"	OK	OK		OK	

Enter Date/Time:	27/02/09	06:41	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	06:41	

Step-No.	Test-Step-Description		Nominal Value	Actual Value	Remarks	P	N
6.	On HPCCS when prompted: "Check Telemetry No Longer Updating - OK to continue" Check that parameters:				Note: Two TC failures on SCR00500 are expected because HKTM has been stopped	OK	
		THSK	Not refreshing	OK			
		TM2N	Not incrementing	OK			
	Select OK to continue		OK	OK			
7.	On HPCCS when prompted: "Check Telemetry Updating Correctly - OK to continue" Check that parameters:				**AND: SA_1_559**	OK	
		THSK	Refreshing @ 1Hz	OK			
		TM2N	Incrementing by 1 @ 1Hz	OK			
	Select OK to continue		OK				

Enter Date/Time:	27/02/09	06:44	Sign Off:	[signature]	[signature]

Enter Start Date|Time:	27/02/09	06:44

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
8.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT033_ASDCFTSPIR_PWR_ON_R** it will prompt: `“Set Bus Profile Back to Original Setting?”` Select NO	NO	NO		ok	
9.	At the prompt: `“Bus Profile left unchanged”` Select OK to continue	OK	OK		OK	
10.	Verify HK TM packets are being received on APIDs 1281 & 1283	OK	ok		ok	
	SPIRE DPU & DRCU Redundant powered					

Enter Date/Time:	27/02/09	06:45	Sign Off:	[signature] [signature] QA

Enter Start Date|Time:	27/02/09	06:45	

7.2.3.2 Procedure SPIRE-IST-COLD-FUNC-SCU-02-R

Version	2.4
Date	6th December 2007
Purpose	SCU Nominal Science Contents Check REDUNDANT
Initial configuration	SPIRE DPU and DRCU REDUNDANT are switched ON, SPIRE HK is being produced
Final configuration	Unchanged
Preconditions	• **SPIRE-IST-COLD-DPU-ON-R** and **SPIRE-IST-COLD-DRCU-ON-R** procedures have been executed. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • I-EGSE is up and running • DPU AND OBS PARAMETERS & FUNCTIONAL TEST PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK parameters have the expected values

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCU-02-R.tcl	SCUFRAMECNT TM5N	0/31 0x3FFF/1	0/31 0x3FFF/1	ok
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	06:47	Sign Off:	

Enter Start Date|Time:	27/02/09	06:47

7.2.3.3 Procedure SPIRE-IST-COLD-FUNC-SCU-03-R

Version	2.4
Date	6th December 2007
Purpose	SCU DC thermometry check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and DC thermometry is ON
Constraints	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	8 minutes
Pass/Fail Criteria	SCU DC thermometry channels show temperature readings according to the actual instrument temperature

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCU-03-R.tcl	—	—	—	OK
2	**Wait for the parameter BBFULLTYPE to get set to SCU_DC_Therm**	—	—	—	OK

Enter Date/Time:	27/02/09	06:47	Sign Off:		

Enter Start Date|Time:	27/02/09	06:48	

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
3	A few seconds later record the value of parameter SCUTEMPSTAT	SCUTEMPSTAT	0/0xFFFF/0xFFFF	0xFFFF	OK
4	If the instrument is at He I temperatures check the values of SCU DC thermometry channels.		(All Values TBC)		
		PUMPHTRTEMP	~4.2K	6.975	
		PUMPHSTEMP	~4.4K	9.128	
		EVAPHSTEMP	~4.3K	8.715	
		SHUNTTEMP	~4.2K	5.450	
		EMCFILTEMP	~4.8K	13.690	
		SL0TEMP	~4.2K	5.531	
		PL0TEMP	~4.2K	5.560	
		OPTTEMP	~4.8K	13.810	
		BAFTEMP	~4.8K	14.338	
		BSMIFTEMP	~4.7K	13.782	
		SCAL2TEMP	~4.8K	13.527	
		SCAL4TEMP	~4.8K	13.537	
		SCALTEMP	~4.8K	13.581	
		SMECIFTEMP	~4.7K	13.447	
		SMECTEMP	~4.7K	13.126	
		BSMTEMP	~4.8K		
5	If the instrument is at He II temperatures check the values of		(All Values TBC)		
		PUMPHTRTEMP	-/~4.6K	N/A	

Enter Date/Time:	27/02/09	06:50	Sign Off:	[signature]	[signature]

Enter Start Date|Time:	27/02/09	06:50	

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
	SCU DC thermometry channels.	PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	-/~3.0K -/~3.0K -/~1.7K -/~4.6K -/~1.7K -/~1.7K -/~4.6K -/~4.6K -/~4.5K -/~4.6K -/~4.6K -/~4.6K -/~4.6K -/~4.6K -/~4.5K	N/A	N/A
6	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	06:50	Sign Off:	[signature]	[signature]

Enter Start Date/Time:	27/02/09	06:50	

7.2.3.4 Procedure SPIRE-IST-COLD-FUNC-SCU-06-R

Version	2.4
Date	6th December 2007
Purpose	SCU AC thermometry check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and DC thermometry is ON
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Constraints	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail Criteria	SCU AC thermometry channel shows temperature readings according to the actual instrument temperature

Enter Date/Time:	27/02/09	06:50	Sign Off:	[signature] [signature] QA

Enter Start Date/Time:	27/02/09	06:51	

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCU-06-R.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	SUBKSTAT	0/1/1	1	OK
4	If the instrument is at He I temperatures check the value of SCU AC thermometry channel.	SUBKTEMP	~4K	6.24	OK
5	If the instrument is at He II temperatures check the value of SCU AC thermometry channel.	SUBKTEMP	~1.7K	NA	NA
6	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	06:52	**Sign Off:**	[signature] [signature] QA

Enter Start Date|Time:	27/02/09	06:54	

7.2.3.5 Procedure SPIRE-IST-COLD-FUNC-SCU-07-R

Version	2.4
Date	6th December 2007
Purpose	Sorption Cooler Heater Check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and DC thermometry is ON
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Constraints	**This test should not be performed at He II temperatures, unless specifically instructed to do so by the I-EGSE staff.**
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail Criteria	Sorption cooler heat switches and pump heater show expected voltages

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCU-07-R.tcl	—	—	—	OK
2	Wait for the parameter BBFULLTYPE to get set to Cooler_Htr_Chk	BBFULLTYPE	Cooler_Htr_Chk	OK	OK

Enter Date/Time:	27/02/09	06:54	Sign Off:	[signature]	[signature]

Enter Start Date|Time:	27/02/09	06:54

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
3	Record the value of parameter SPHSV – the Sorption Pump Heat Switch Voltage. This voltage stays on for ~20 seconds. Wait for the voltage to go to zero to continue.	SPHSV – mV	0/~323/0	323.725	Ok
4	Record the value of parameter EVHSV – the Evaporator Heat Switch Voltage. This voltage stays on for ~20 seconds. Wait for the voltage to go to zero to continue.	EVHSV – mV	0/~323/0	324.786	OK
5	Record the value of parameter SPHTRV – the Sorption Pump Heater Voltage. This voltage stays on for ~20 seconds.Wait for the voltage to go to zero to continue.	SPHTRV – V	0/~8.8/0	8.85	OK
6	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	Ok
	Test Result (Pass/Fail):				

Enter Date/Time:	27/02/09	06:56	Sign Off:		QA

Enter Start Date|Time:	27/02/09	06:56	

7.2.3.6 Procedure SPIRE-IST-COLD-FUNC-PCAL-01-R

Version	1.0
Date	6th December 2007
Purpose	PCAL Characterisation Check (REDUNDANT)
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Final configuration	Unchanged
Constraints	**This test should only be performed at He I or He II temperatures**
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail Criteria	PCAL voltage and current agree with expected values

Enter Date/Time:	27/02/09	06:56	Sign Off:	[signature]	J. Dutchcall QA

Enter Start Date|Time:	27/02/09	06:56	

Procedure Steps:

Step	Description	Parameter Name – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-PCAL-01-R.tcl	—	—	—	OK
2	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Final Configuration: Unchanged

Enter Date/Time:	27/02/09	07:00	Sign Off:		QA

Enter Start Date|Time:	27/02/09	07:01	

7.2.3.7 Procedure SPIRE-IST-COLD-FUNC-SCAL-01-R

Version	1.0
Date	6th December 2007
Purpose	SCAL Characterisation Check (REDUNDANT)
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Final configuration	Unchanged
Constraints	**This test should only be performed at He I or He II temperatures.** **If the test is to be performed at He II temperature then please confirm with I-EGSE staff first.**
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	18 minutes
Pass/Fail criteria	SCAL2 and SCAL4 voltage and currents agree with expected values

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCAL-01-R.tcl	—	—	—	OK
2	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	07:18	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	07:18	

7.2.3.8 Procedure SPIRE-IST-COLD-FUNC-MCU-01-R

Version	2.4
Date	6th December 2007
Purpose	MCU (REDUNDANT) Boot Check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCU voltages and board temperatures show expected 'ON' values

Enter Date/Time:	27/02/09	07:18	Sign Off:		QA

Enter Start Date|Time:	27/02/09	07:18	

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-MCU-01-R.tcl	—	—	—	OK
2	Check that the MCU is booted up successfully	MCUBITSTAT	0/1/1	0 1 1	OK
3	Check MCU HK parameter values and ensure that the values are refreshing	MCUP5V MCUP14V MCUM14V MCUP15V MCUM15V MCUMACTEMP MCUSMECTEMP MCUBSMTEMP	~ 5.0 ± 0.2V ~ 14.0 ± 0.5V ~ -14.0 ± 0.5V ~ 15.0 ± 0.5V ~ -15.0 ± 0.5V ~300K ~300K ~300K	5.00 14.13 -14.49 15.50 -15.61 298.07 302.15 301.74	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	07:20	Sign Off:	[signature]	[signature]

Enter Start Date|Time:	27/02/09	07:21,	

7.2.3.9 Procedure SPIRE-IST-COLD-FUNC-MCU-03-R

Version	2.4
Date	6th December 2007
Purpose	MCU Nominal Science Contents Check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	Unchanged.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified MCU HK parameters show expected increment

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-MCU-03-R.tcl	MCUFRAMECNT	0/-/297	0/297	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	07:22	Sign Off:	[signature] [signature] QA

Enter Start Date|Time:	27/02/09	07:23	

7.2.3.10 Procedure SPIRE-IST-COLD-FUNC-BSM-01-R

Version	2.4
Date	6th December 2007
Purpose	BSM (REDUNDANT) Chop/Jiggle Sensor Check.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK Parameters CHOPSENSPWR and JIGGSENSPWR show expected ON values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-BSM-01-R.tcl	—	—	—	OK
2	Check that the Chop and Jiggle sensors have switched on	CHOPSENSPWR JIGGSENSPWR	0/1/1 0/1/1	1 1	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	07:24	**Sign Off:**	Re tarlod. QA

Enter Start Date|Time:	27/02/09	07:27	

7.2.3.11 Procedure SPIRE-IST-COLD-FUNC-BSM-03-R

Version	2.4
Date	6th December 2007
Purpose	BSM (REDUNDANT) Open Loop Dynamics Check.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	CHOPSENSSIG/JIGGSENSIG HK parameter evolve in the same direction as the commanded positions

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-BSM-03-R.tcl	—	—	—	OK
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	07:33	**Sign Off:**	[signature] K. Dentschnod QA

Enter Start Date|Time:	27/02/09	07:36	

7.2.3.12 Procedure SPIRE-IST-COLD-FUNC-BSM-05A-R

Version	2.4
Date	6th December 2007
Purpose	BSM (REDUNDANT) Open Loop Chop Test
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	The BSM Chops between the commanded positions

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-BSM-05A-R.tcl	—	—	—	OK
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	07:38	Sign Off:		QA

Enter Start Date|Time:	27/02/09,	07:38	

7.2.3.13 Procedure SPIRE-IST-COLD-FUNC-BSM-05B-R

Version	2.4
Date	6th December 2007
Purpose	BSM (REDUNDANT) Close Loop Chop Test
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	BSM is in closed loop mode
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • CHOP PARAMETERS and JIGGLE PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	The BSM Chops in between the commanded positions

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-BSM-INIT-R.tcl	CHOPLOOPMODE JIGGLOOPMODE	3/-/1 3/-/1	3/ 1 3/ 1	OK
2	Execute TCL script SPIRE-IST-COLD-FUNC-BSM-05B-R.tcl	—	—	—	OK
3	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	07:42	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	07:44	

7.2.3.14 Procedure SPIRE-IST-COLD-FUNC-BSM-06-R

Version	2.4
Date	6th December 2007
Purpose	BSM (REDUNDANT) Closed Loop Operational Mode Chop Test
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON. BSM is in closed loop.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • CHOP PARAMETERS and JIGGLE PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	The BSM Chops between the commanded positions

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-FUNC-BSM-06-R.tcl	CHOPLOOPMODE JIGGLOOPMODE	1/1/1 1/1/1	1 1	OK
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	07:45	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	07:46	

7.2.3.15 Procedure SPIRE-IST-COLD-BSM-OFF-R

Version	2.4
Date	6th December 2007
Purpose	BSM (REDUNDANT) Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are OFF.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK Parameters CHOPSENSPWR and JIGGSENSPWR show expected OFF values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-BSM-OFF-R.tcl	—	—	—	ok
2	Check that the power to the BSM sensors is switched off	CHOPSENSPWR JIGGSENSPWR	1/-/0 1/-/0	1/0 1/0	ok
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	07:47	Sign Off:		QA

Enter Start Date|Time:	27/02/09	07:48	

7.2.3.16 Procedure SPIRE-IST-COLD-FUNC-SMEC-01-R

Version	2.4
Date	6th December 2007
Purpose	SMEC (REDUNDANT) Encoder/LVDT Sensor Check.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK Parameters SMECENCPWR and SMECLVDTPWR show expected ON values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-01-R.tcl	—	—	—	OK
2	Check that power to the SMEC LED and LVDT sensor is on	SMECENCPWR SMECLVDTPWR	0/-/3 0/-/1	0/3 0/1	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	07:49	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	07:50	

7.2.3.17 Procedure SPIRE-IST-COLD-FUNC-SMEC-03-R

Version	2.4
Date	6th December 2007
Purpose	SMEC (REDUNDANT) Encoder Integrity Check.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCUENGSMECENCSIG1/2 increase as the encoder power is increased

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-03-R.tcl	—	—	—	OK
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	07:51	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	07:52	

7.2.3.18 Procedure SPIRE-IST-COLD-SMEC-OFF-R

Version	2.4
Date	6th December 2007
Purpose	SMEC (REDUNDANT) Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are OFF.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail criteria	HK Parameters SMECENCPWR and SMECLVDTPWR show expected OFF values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-SMEC-OFF-R.tcl	—	—	—	ok.
2	Check that the power to the SMEC sensors is switched off	SMECENCPWR SMECLVDTPWR	3/-/0 1/-/0	3/0 1/0	ok.
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	07:53	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	07:54	

7.2.3.19 Procedure SPIRE-IST-COLD-FUNC-DCU-02-R

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	Cryostat Check Procedure for CFT						
2	**Prior to performing next step verify that Level 3 temperature is between 5K and 50K (sensors T246 & T247)**	OK		OK		OK	
3	Record Temperatures: T246: (KD223302 if connected to CCU) T247: (KD223303 if connected to CCU)	 >5K - <50K >5K - <50K		 25.84 25.88	 T249 T251	OK	
	End of Cryostat Check						

Version	2.4
Date	6th December 2007
Purpose	DCU Nominal Science Contents Check REDUNDANT
Initial configuration	SPIRE DPU and DRCU REDUNDANT are switched ON, SPIRE HK is being produced and MCU is booted.
Final configuration	Unchanged
Preconditions	• **SPIRE-IST-COLD-DPU-ON-R** and **SPIRE-IST-COLD-DRCU-ON-R** procedures have been executed. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • I-EGSE is up and running • DCU PARAMETERS display is selected on the CCS • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU HK parameters increment as expected

Enter Date/Time:	27/02/09	07:54	Sign Off:	[signature]	[signature]

Enter Start Date|Time:	27/02/09	07:55	

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-02-R.tcl	DCUFRAMECNT	n/n+700	1200/1900	OK
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	07:58	Sign Off:	QA

Enter Start Date|Time:	27/02/09	07:58	

7.2.3.20 Procedure SPIRE-IST-COLD-FUNC-DCU-11-PHOT-R

Version	2.4
Date	6th December 2007
Purpose	Photometer BDAs switch ON check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Photometer BDAs are ON.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	7 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Enter Date/Time:	27/02/09	07:58	**Sign Off:**	QA

Enter Start Date|Time:	27/02/09	08:08	

7.2.3.21 Procedure SPIRE-IST-COLD-FUNC-DCU-13-PHOT-R

Version	2.4
Date	6th December 2007
Purpose	Photometer BDAs integrity check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Photometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	15 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Check that Photometer LIAs and detectors are switched on	PLIABITSTAT PSWJFETSTAT PMLWJFETSTAT	1 0x3F 0x7F	1 0x3F 0x7F	OK
2	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-13-PHOT-R.tcl	—	—	—	
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	— Skip	—	
Test Result (Pass/Fail):					

PVS#9

Enter Date/Time:	27/02/09	08:08	Sign Off:	[signature]	[signature]

Enter Start Date|Time:	27/02/09	07:59	

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-11-PHOT-R.tcl	—	—	—	OK
2	Check that the Photometer detectors and LIAs are switched on	PSWJFETSTAT PMLWJFETSTAT PLIABITSTAT PLIAP5V PLIAP9V PLIAM9V	0/-/0x3F 0/-/0x7F 1 ~0/ ~+5.19 ± 0.1V ~0/ ~+11.54 ± 0.1V ~0/ ~-11.53 ± 0.1V	0./0x3F 0/0x7F 1 5.24 11.60 -11.88	OK
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	08.03	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	08:08	

7.2.3.22 Procedure SPIRE-IST-COLD-FUNC-DCU-14-PHOT-R

Version	2.4
Date	6th December 2007
Purpose	Photometer BDAs noise level check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Photometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Photometer BDA signals show no excess noise

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Check that Photometer LIAs and detectors are switched on	PLIABITSTAT PSWJFETSTAT PMLWJFETSTAT	1 0x3F 0x7F		
2	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-14-PHOT-R.tcl	—	— Skip	—	
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	
Test Result (Pass/Fail):					

PRS #9

Enter Date/Time:	27/02/09	08:08	Sign Off:		QA

Enter Start Date|Time:	27/02/09		

7.2.3.23 Procedure SPIRE-IST-COLD -PHOT-VSS-R

Version	1.1
Date	10th July 2008
Purpose	Photometer BDAs Vss Test REDUNDANT
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Photometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	40 minutes
Pass/Fail criteria	Photometer BDA Vss values are optimised

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Check that Photometer LIAs and detectors are switched on	PLIABITSTAT PSWJFETSTAT PMLWJFETSTAT	1 0x3F 0x7F		
2	Execute TCL script SPIRE-IST-COLD - PHOT-VSS-R.tcl	—	—	—	
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	
Test Result (Pass/Fail):					

Skip 10

PVS#9

Enter Date/Time:	27/02/09		Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	08:11	

7.2.3.24 Procedure SPIRE-IST-COLD-PDET-OFF-R

Version	2.4
Date	6th December 2007
Purpose	Photometer BDAs Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Photometer BDAs are ON
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Photometer BDAs are OFF
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Enter Date/Time:	27/02/09	08:11	Sign Off:	

Enter Start Date|Time:	27/02/09	08:11	

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-PDET-OFF-R.tcl	—	—	—	OK
2	Check that the Photometer detectors are switched off	PSWJFETSTAT PMLWJFETSTAT	0x3F/-/0 0x7F/-/0	0x3F / 0 0x7F / 0	OK
3	Check that the Photometer LIAs are switched off	PLIABITSTAT	1/-/0	1/0	OK
4	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	08:11	Sign Off:	[signature]	[signature]

Enter Start Date|Time:	27/02/09	08:16	

7.2.3.25 Procedure SPIRE-IST-COLD-FUNC-DCU-11-SPEC-R

Version	2.4
Date	6th December 2007
Purpose	Spectrometer BDAs switch ON check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Spectrometer BDAs are ON.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	7 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Enter Date/Time:	27/02/09	08:16	Sign Off:		QA

Enter Start Date|Time:	27/02/09	08:16	

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-11-SPEC-R.tcl	—	—	—	OK
2	Check that the Spectrometer detectors and LIAs are switched on	SPECJFETSTAT SLIABITSTAT SLIAP5V SLIAP9V SLIAM9V	0/-/7 1 ~0/ ~+5.23 ± 0.1 ~0/ ~+11.57 ± 0.1 ~0/ ~-11.54 ± 0.1	0/7 0/1 5.25 11.59 -11.58	OK
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	08.24.	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	08:26	

7.2.3.26 Procedure SPIRE-IST-COLD-FUNC-DCU-13-SPEC-R

Version	2.4
Date	6th December 2007
Purpose	Spectrometer BDAs integrity check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Spectrometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	12 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Check that the Spectrometer detectors and LIAs are switched on	SPECJFETSTAT SLIABITSTAT	7 1		
2	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-13-SPEC-R.tcl	—	—	—	
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	08:28	Sign Off:	QA

Enter Start Date|Time:	27/02/09	08.26	

7.2.3.27 Procedure SPIRE-IST-COLD-FUNC-DCU-14-SPEC-R

Version	2.4
Date	6th December 2007
Purpose	Spectrometer BDAs noise check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Spectrometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Spectrometer BDA signals show no excess noise

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Check that the Spectrometer detectors and LIAs are switched on	SPECJFETSTAT SLIABITSTAT	7 1		
2	Execute TCL script SPIRE-IST-COLD-FUNC-DCU-14-SPEC-R.tcl	—	—	—	
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	
Test Result (Pass/Fail):					

Skip

Enter Date/Time:	27/02/09	08:26	Sign Off:		QA

Enter Start Date|Time:	27/02/09	08:26	

7.2.3.28 Procedure SPIRE-IST-COLD- SPEC-VSS-R

Version	1.1
Date	10th July 2008
Purpose	Spectrometer BDAs Vss Test REDUNDANT
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Spectrometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	40 minutes
Pass/Fail criteria	Spectrometer BDA Vss values are optimised

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Check that the Spectrometer detectors and LIAs are switched on	SPECJFETSTAT SLIABITSTAT	7 1		
2	Execute TCL script SPIRE-IST-COLD-SPEC-VSS-R.tcl	— S/F,10	—	—	
3	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	08:26	Sign Off:		

Enter Start Date|Time:	22/02/09	08:26	

7.2.3.29 Procedure SPIRE-IST-COLD-SDET-OFF-R

Version	2.4
Date	6th December 2007
Purpose	Spectrometer BDAs Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Spectrometer BDAs are ON
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Spectrometer BDAs are OFF
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Enter Date/Time:	27/02/09	08:26	Sign Off:		QA

Enter Start Date|Time:	27/02/09	08:27	

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-SDET-OFF-R.tcl	—	—		OK
2	Check that the Spectrometer detectors are switched off	SPECJFETSTAT	7/-/0	7/0	OK
3	Check that the Spectrometer LIAs are switched off	SLIABITSTAT	1/-/0	1/.0	OK
4	Wait for the I-EGSE staff to confirm the success or failure of this test	—	—	—	OK
Test Result (Pass/Fail):					

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	Cryostat Check Procedure for CFT						
5	Record Temperatures: T246: (KD223302 if connected to CCU) T247: (KD223303 if connected to CCU)	 >5K - <50K >5K - <50K		 25.91 25.91	 T249 T251	OK	
6	**Inform Cryo Engineers that Level 3 temperature no longer needs to be maintained between 5K and 50K**	OK		OK		OK	
	End of Cryostat Check						

Enter Date/Time:	27/02/09	08.39	Sign Off:	[signature]	[signature]

Enter Start Date|Time:	27/02/09	08:39	

PUS #4 ?

7.2.3.30 Procedure SPIRE-IST-COLD-MCU-OFF-R

Version	2.4
Date	6th December 2007
Purpose	MCU REDUNDANT Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is OFF.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is ON. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified MCU HK Parameter shows expected value.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-MCU-OFF-R.tcl	—	—	—	OK
2	Check that the MCU is switched off	MCUBITSTAT	1/-/0	1/0.	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	08.34	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	08:36	

7.2.3.31 Procedure SPIRE-IST-COLD-SCU-OFF-R

Version	2.4
Date	6th December 2007
Purpose	SCU REDUNDANT Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is OFF
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified SCU HK Parameters show expected value.

Procedure Steps:

Enter Date/Time:	27/02/09	08:36	Sign Off:		

Enter Start Date|Time:	27/02/09	08.36	

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-SCU-OFF-R.tcl	—	—	—	OK
2	A few seconds later record the value of parameter SCUTEMPSTAT	SCUTEMPSTAT	0xFFFF/-/0	0xFFFF / 0	OK
3	A few seconds later record the value of parameter SUBKSTAT	SUBKSTAT	1/-/0	1 / 0	OK
Test Result (Pass/Fail):					

Enter Date/Time:	27/02/09	08:37	Sign Off:		QA

Enter Start Date/Time:	27/02/09 -	08:37	

7.2.3.32 Switch OFF SPIRE REDUNDANT

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
1.	From the HPCCS test conductor console start the test script to power OFF SPIRE REDUNDANT: **S102999SCVT034_ASDCFTSPIR_PWR_OFF_R**	OK	OK		OK	
2.	On HPCCS when prompted: `"SPIRE Switch OFF for CFT related tests in Hel/Hell conditions only - Select NO to abort TS if not correct"` **Select YES**	YES	YES		OK	
	If **YES** is selected the test script will go on to automatically power off all SPIRE warm units.					

Enter Date/Time:	27/02/09	08:38	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09	08:38	

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	Note: During Switch OFF of SPIRE, the following (5,1) and (5,4) event messages on APID 1281 may be expected and do not indicate a problem: c) EVID 1313 No_MCU_Response_Error d) EVID 21773 ALARM_LSMCU_DEAD **However, be aware that if FDIR is enabled for SPIRE in the CDMU then this may trigger an OBCP**					
3.	On HPCCS when prompted: `"Check Telemetry No Longer Updating - OK to continue"` Check that parameters:			**AND: SA_1_559**		
	THSK	Not refreshing	OK			OK
	TM2N	Not incrementing	OK			
4.	Select OK to continue	OK	OK			OK

Enter Date/Time:	27/02/09	08:39	Sign Off:		

Enter Start Date/Time:	27/02/09	08:40	

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
5.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT034_ASDCFTSPIR_PWR_OFF_R** it will prompt: “Bus profile left as SPIRE PRIME, change manually after if required - OK to continue”		OK		OK	
6.	Select OK to continue	OK	OK		OK	
7.	On HPCCS stop Packet History displays for the following APIDs:1281,1283	OK	OK		OK	
	SPIRE REDUNDANT OFF					

Enter Date/Time:	27/02/09	08:43	Sign Off:	[signature]	[signature] QA

Enter Start Date/Time:	27/02/09	08:44	

7.2.4 *Satellite & EGSE Switch Off After CFT Tests*

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	Satellite & EGSE Switch Off						
	Initial Conditions: Nominal & Redundant SPIRE warm units OFF						
1	On HPCSS terminate **SPIRE_ALL_SubscribeParams.tcl** test script.	OK		OK		OK	
2	From HPCCS Test Conductor console issue command to disconnect from SPIRE I-EGSE **disconnect HSPIREEGSE**	OK		OK		OK	
3	Confirm from HPCSS and SPIRE I-EGSE that the disconnection was successful	YZS29940= DISCONNECTED		DISCONNECTED	**AND SYS_PARS**	OK	
4	If no longer required switch OFF I-EGSE i.a.w. AD 5	OK		N/A		OK	
5	Stop monitoring CryoSCOE data on the CCS by selecting Stop Record & Exit from the following script: **K102999ECVT035_ASDGEN_SCOE_CCU_LOG**	OK		OK		OK	
~~6a~~	If test is perform as part of SPIRE IST Commissioning then switch off S/C, HPCCS and SCOEs i.a.w. procedure AD12 Section 7.4 continuing from step 42, then return to lead procedure AD10 section 7.4 to complete the switch-off	OK		N/A		N/A	
6b	If test is to be performed as a standalone CFT then switch off S/C and if required downlink packet stores i.a.w. AD2 section 7.7	OK		OK		OK	
7	Confirm both Satellite and EGSE powered down	OK		OK		OK	
8	Stop the instrument temperature logging by terminating script:	OK		OK		OK	

PUS #5

Enter Date/Time:	27/02/09	09:25	Sign Off:	[signature]	[signature] QA

Enter Start Date|Time:	27/02/09		

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	Z102999SCVT025_ASDGEN_INSTTEMP_LOG					✓	
	End Conditions: Satellite and EGSE OFF					✓	
	END OF SPIRE CFT TEST						

Enter Date/Time:	27/02/		Sign Off:	

Enter Start Date/Time:			

7.2.5 EGSE & Satellite Switch On for SMEC Tests

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	Satellite & EGSE Switch On						
0	Confirm all constraints for the SMEC Test as defined in Section 1 have been fulfilled prior to starting the test	OK					
1	Confirm I-EGSE physically connected to HPCCS	OK					
2	Switch on & configure SPIRE I-EGSE i.a.w. **AD5 & AD 8**	OK					
3	Confirm SPIRE I-EGSE is in the correct configuration as per AD5 & AD 8 and TIME synchronised with HPCCS	OK					
4	Switch on HPCCS, SCOEs and Satellite/SVM and configure into Basic Test Mode i.a.w. AD 2 Section 7.1 to 7.5.	OK					
5	Confirm that EGSE and Satellite are in the correct configuration as per AD 2	OK					
6	If not already on, from HPCCS power ON CCU A & CCU B by executing test script: **K102999ECVT001_ASDGENCCU_ABPWRON**	OK					
7	If not already enabled, from HPCCS enable Monitoring Mode 1 (512sec cycle) for CCU A & B by executing test script: **K102999ECVT001_ASDGENCCU_MnEBOTH1**	OK					
8	Connect HPCCS to CRYOSCOE and verify CryoSCOE data is being received on the CCS by executing the following script: **K102999ECVT035_ASDGEN_SCOE_CCU_LOG**	OK					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
9	From HPCCS Test Conductor console issue command to connect to SPIRE I-EGSE **connect HSPIREEGSE**	OK					
10	Confirm from HPCCS and SPIRE I-EGSE that the connection has been established	YZS29940= CONNECTED			**AND SYS_PARS**		
11	Verify that I-EGSE is receiving CCU Cryo packets	OK					
12	On HPCCS start the following test script: **ALL_SubscribeParams.tcl**	OK					
13	Verify HPCCS-IEGSE connection by sending test command: **YC00X966** From the manual command stack (repeater value of "0")	OK					
14	If required load Synoptics INSTRUMENTS on HPCCS to display SPIRE status overview						
	READY FOR START OF SPIRE SMEC TESTS						

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6 SMEC Tests

7.2.6.1 Verify Nominal Latch Command Relay Status

Verify launch lock relays are positioned to allow SMEC launch lock to be unlatched.

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	All TCs to be sent from the Manual Command Stack					
1.	*Send* ***DC904180*** *and verify from the resulting (14,4) packet that packet 120 (dec) is not already enabled (i.e. NOT present in the list). If present skip steps 2 – 4*	120 not present		Step 1 to 5 only required on CDMS ASW 3.4		
2.	*Send* ***ZCB00999*** *to allocate new diagnostic packet*	OK				
3.	*Send* ***DC900180*** *with repeater value 1 and parameters: DH019180 = 26, DH020180=120*	OK				
4.	*Send* ***DC904180*** *and verify from the resulting (14,4) packet that packet 120 (dec) is nowenabled (i.e. present in the list)*	120 present				
5.	*From TMPH verify that packets with SPID =* ***264000999*** *are cyclically arriving on the CCS*	Packets Arriving				
6.	Close LCL25, by sending **DC25D170**	OK		State of LCL #25 switches to ON		
7.	Verify LCL25 closed: **WM12B565** =	ON				
8.	Record Current **WM107565**	N/A				

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
9.	Send HLC 5 to switch relays to LCL position **DCT01170, DHT01170="CMD_ID_HLC5"**	OK				
10.	Verify Current **WM107565 =**	130-180 mA		Current between 130-180mA		
11.	Send HLC 6 to switch relays to MCU position **DCT01170, DHT01170="CMD_ID_HLC6"**	OK				
12.	Verify Current **WM107565 =**	0 mA		Current off		
13.	Open LCL25, by sending **DC25B170**	OK		State of LCL #25 switches to OFF		
14.	Verify LCL25 open: **WM12B565** =	OFF				
	SMEC Nominal LL latch relay position verification complete					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.2 Switch ON for SPIRE PRIME SMEC

The following will switch ON and configure SPIRE Prime instrument in REDY (Standby) mode. HKTM packets will be generated on APIDs 1280 dec and 1282 decimal (these can be observed using TMPH with corresponding filter – note however a limited number of TMPHs should be running at one time).

During power on of SPIRE a number of soft/hard OOLs are reported due to the sequential switch on of the units. This is expected and will clear when SPIRE is in REDY mode. When in REDY mode one parameter remains OOL (soft) namely SMD2V505 this is also expected.

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
1.	On HPCCS start Packet History displays for the following APIDs:1280,1282	OK				
2.	From the HPCCS test conductor console start the test script to power on SPIRE Prime: **S102999SCVT031_ASDCFTSPIR_PWR_ON_P**	OK		AND: ZAD07999, ZAD14999 MIM: LCL_HERSCHEL		

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
3.	On HPCCS when prompted: `“SPIRE Switch ON for Cold FT related tests in Hel/Hell conditions only - Select NO to abort TS if not correct”` **Select YES**	YES				
	If **YES** is selected the test script will go on to automatically power on all SPIRE warm units, force boot the DPU ASW and configure the instrument to Standby mode. Reply to prompts as indicated below.					
4.	On HPCCS when prompted: `"Check Telemetry Updating Correctly and OBT is Consistent with CDMU - OK to continue"` Select OK	OK		**AND: SA_1_559**		

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
5.	If I-EGSE connected when prompted on HPCCS, perform check requested then select **OK**: `"Check IEGSE Time Consistent - OK to continue when RAL confirm"`	OK				
6.	On HPCCS when prompted: `"Check Telemetry No Longer Updating - OK to continue"` Check that parameters: THSK TM2N Select OK to continue	 Not refreshing Not incrementing OK		Note: Two TC failures on SCR00500 are expected because HKTM has been stopped		
7.	On HPCCS when prompted: `"Check Telemetry Updating Correctly - OK to continue"` Check that parameters: THSK TM2N	 Refreshing @ 1Hz Incrementing by 1 @ 1Hz		**AND: SA_1_559**		

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	Select OK to continue	OK				
8.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT031_ASDCFTSPIR_PWR_ON_P** it will prompt: `“Set Bus Profile Back to Original Setting?”` Select NO	NO				
9.	At the prompt: `“Bus Profile left unchanged”` Select OK to continue	OK				
10.	Verify HK TM packets are being received on APIDs 1280 & 1282	OK				
	SPIRE DPU & DRCU powered					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.3 Procedure SPIRE-IST-COLD-FUNC-SCU-03-P

Version	2.4
Date	6th December 2007
Purpose	SCU DC thermometry check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and DC thermometry is ON
Constraints	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	8 minutes
Pass/Fail Criteria	SCU DC thermometry channels show temperature readings according to the actual instrument temperature

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCU-03-P.tcl	—	—	—	
2	**Wait for the parameter BBFULLTYPE to get set to**	—	—	—	

Enter Start Date|Time:			

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
	SCU_DC_Therm				
3	A few seconds later record the value of parameter SCUTEMPSTAT	SCUTEMPSTAT	0/0xFFFF/0xFFFF		
4	If the instrument is at He I temperatures check the values of SCU DC thermometry channels.	PUMPHTRTEMP PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	(All Values TBC) ~4.2K ~4.4K ~4.3K ~4.2K ~4.8K ~4.2K ~4.2K ~4.8K ~4.8K ~4.7K ~4.8K ~4.8K ~4.8K ~4.7K ~4.7K ~4.8K		
5	If the instrument is at He II		(All Values TBC)		

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
	temperatures check the values of SCU DC thermometry channels.	PUMPHTRTEMP PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	-/~4.6K -/~3.0K -/~3.0K -/~1.7K -/~4.6K -/~1.7K -/~1.7K -/~4.6K -/~4.6K -/~4.5K -/~4.6K -/~4.6K -/~4.6K -/~4.6K -/~4.6K -/~4.5K		
6	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

7.2.6.4 Procedure SPIRE-IST-COLD-FUNC-SCU-06-P

Version	2.4
Date	6th December 2007
Purpose	SCU AC thermometry check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and DC thermometry is ON
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Constraints	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail Criteria	SCU AC thermometry channel shows temperature readings according to the actual instrument temperature

Enter Start Date|Time:			

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCU-06-P.tcl	—	—	—	
2	**Wait for the parameter BBFULLTYPE to get set to SCU_AC_Therm**	—	—	—	
3	A few seconds later record the value of parameter SUBKSTAT	SUBKSTAT	0/1/1		
4	If the instrument is at He I temperatures check the value of SCU AC thermometry channel.	SUBKTEMP	~4K		
5	If the instrument is at He II temperatures check the value of SCU AC thermometry channel.	SUBKTEMP	~1.7K		
6	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.5 Procedure SPIRE-IST-COLD-FUNC-MCU-01-P

Version	2.4
Date	6th December 2007
Purpose	MCU (PRIME) Boot Check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCU voltages and board temperatures show expected 'ON' values

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-MCU-01-P.tcl	—	—	—	
2	Check that the MCU is booted up successfully	MCUBITSTAT	0/1/1		
3	Check MCU HK parameter values and ensure that the values are refreshing	MCUP5V MCUP14V MCUM14V MCUP15V MCUM15V MCUMACTEMP MCUSMECTEMP MCUBSMTEMP	~ 5.0 ± 0.2V ~ 14.0 ± 0.5V ~ -14.0 ± 0.5V ~ 15.0 ± 0.5V ~ -15.0 ± 0.5V ~300K ~300K ~300K		
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.6 Procedure SPIRE-IST-COLD-FUNC-MCU-03-P

Version	2.4
Date	6th December 2007
Purpose	MCU Nominal Science Contents Check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	Unchanged.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified MCU HK parameters show expected increment

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-MCU-03-P.tcl	MCUFRAMECNT	0/-/297		
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.7 Procedure SPIRE-IST-COLD-FUNC-SMEC-01-P

Version	2.4
Date	6th December 2007
Purpose	SMEC (PRIME) Encoder/LVDT Sensor Check.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK Parameters SMECENCPWR and SMECLVDTPWR show expected ON values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-01-P.tcl	—	—	—	
2	Check that power to the SMEC LED and LVDT sensor is on	SMECENCPWR SMECLVDTPWR	0/-/1 0/-/1		
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.8 Procedure SPIRE-IST-COLD-FUNC-SMEC-03-P

Version	2.4
Date	6th December 2007
Purpose	SMEC (PRIME) Encoder Integrity Check.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCUENGSMECENCSIG1/2 increase as the encoder power is increased

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-03-P.tcl	—	—	—	
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.9 Procedure SPIRE-IST-COLD-FUNC-SMEC-02A-P

Version	2.5
Date	3rd July 2008
Purpose	Open the SMEC Launch Latch Prime (Unlatch it)
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and SMEC is latched
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and SMEC is ON and Unlatched
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	20 minutes
Pass/Fail criteria	The SMEC latch is open.

Procedure Steps:

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-02A-P.tcl	—	—	—	
2	**Wait for the I-EGSE staff to confirm the success or failure of this test** **The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.10 Procedure SPIRE-IST-COLD-FUNC-SMEC-FFOFFSET-P

Version	1.2
Date	10th July 2008
Purpose	SMEC (PRIME) Open Loop Feed Forward Offset Test
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • SMEC PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	60 minutes
Pass/Fail criteria	Optimum SMEC Feed Forward Offset is determined

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-FFOFFSET-P.tcl	—	—	—	
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
3	Based on the results of this test it may be necessary to set the SMEC FF Offset manually. **SPIRE_SEND_DRCU_COMMAND** • **param 1 = 0x9055xxxx** • **param 2 = 0** **I-EGSE staff will supply the 16-bit parameter value xxxx to this command.**	SMECFFOFFSET	-/ - /xxxx		
4	Based on the results of this test it may be necessary to set the SMEC FF Gain manually. **SPIRE_SEND_DRCU_COMMAND** • **param 1 = 0x9054xxxx** • **param 2 = 0** **I-EGSE staff will supply the 16-bit parameter value xxxx to this command.**	SMECFFGAIN	-/ - /xxxx		

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
5	A manual reset of the encoder signals 1 and 2 offsets may be required. If this is the case Two MANUAL commands will be required to be sent from the CCS: **SPIRE_SEND_DRCU_COMMAND** • **param 1 = 0x9058xxxx** • **param 2 = 0** **SPIRE_SEND_DRCU_COMMAND** • **param 1 = 0x905Axxxx** • **param 2 = 0** **The 16 bit parameters xxxx will be provided by I-EGSE staff**	SMECENCSIG1OFF SMECENCSIG2OFF	-/-/~ Commanded Value -/-/~ Commanded Value		
6	**Note that it may be necessary to repeat this test to fine tune the Feed Forward Offset** **The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.11 Procedure SPIRE-IST-COLD-FUNC-SMEC-04A-P

Version	2.5
Date	3rd July 2008
Purpose	SMEC (PRIME) Open Loop Positioning Test.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	30 minutes
Pass/Fail criteria	SMEC moves to the commanded positions

Procedure Steps:

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-04A-P.tcl	—	—	—	
2	**Wait for the I-EGSE staff to confirm the success or failure of this test** **The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.12 Procedure SPIRE-IST-COLD-FUNC-SMEC-09-P

Version	2.5
Date	3rd July 2008
Purpose	SMEC (PRIME) Open Loop Scan Test.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • SMEC PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	30 minutes
Pass/Fail criteria	SMEC performs a scan between the commanded positions

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	A manual reset of the encoder signals 1 and 2 offsets may be required. If this is the case Two MANUAL commands will be required to be sent from the CCS: **SPIRE_SEND_DRCU_COMMAND** • **param 1 = 0x9058xxxx** • **param 2 = 0** **SPIRE_SEND_DRCU_COMMAND** • **param 1 = 0x905Axxxx** • **param 2 = 0** **The 16 bit parameters xxxx will be provided by I-EGSE staff**	SMECENCSIG1OFF SMECENCSIG2OFF	-/-/~ Commanded Value -/-/~ Commanded Value		
2	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-09-P.tcl	—	—	—	
3	**Wait for the I-EGSE staff to confirm the success or failure of this test** **The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	

Test Result (Pass/Fail):

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.13 Procedure SPIRE-IST-COLD-FUNC-SMEC-07-P

Version	2.5
Date	3rd July 2008
Purpose	SMEC (PRIME) Close Loop Scan Test.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Final configuration	SMEC is in closed loop
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	60 minutes
Pass/Fail criteria	SMEC performs a scan between the commanded positions and the loop remains closed

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	**Before this test a SMEC calibration table on the I-EGSE may have to be changed. Please confirm with the I-EGSE staff before continuing with the next test.**	—	—	—	
2	Execute TCL script SPIRE-IST-COLD-SMEC-INIT-P.tcl	SMECLOOPMODE	6/-/1		
3	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-07-P.tcl	—	—	—	
4	**Wait for the I-EGSE staff to confirm the success or failure of this test The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	
Test Result (Pass/Fail):					

Enter Start Date|Time:			

7.2.6.14 Procedure SPIRE-IST-COLD-FUNC-SMEC-04B-P

Version	2.5
Date	3rd July 2008
Purpose	SMEC (PRIME) Close Loop Positioning Test.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON. SMEC is in closed loop.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	20 minutes
Pass/Fail criteria	SMEC moves to the commanded positions and remains in closed loop

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-04B-P.tcl	SMECLOOPMODE	1/1/1		
2	**Wait for the I-EGSE staff to confirm the success or failure of this test The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.15 Procedure SPIRE-IST-COLD-FUNC-SMEC-LVDT-P

Version	1.1
Date	10th July 2008
Purpose	SMEC (PRIME) Backup LVDT Close Loop Check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON. SMEC is in closed loop.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	90 minutes
Pass/Fail criteria	SMEC remains in closed loop on LVDT

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	**Manual commanding may be necessary during this test. Details to be specified** **Change downlink data rate to 1.5 Mbps** **Send command** **DC27F170**	—	—	—	

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
2	**Wait for the I-EGSE staff to confirm the success or failure of this test. The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.16 SMEC Microvibration Pre-Test Configuration

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	ACMS Switch ON						
1	From Test Conductor Console, execute script: 'A102109SPVT003_ACMS_CONFIG25'	OK					
2	At the following main menu: HERSCHEL/PLANCK - MAIN MENU 1.0 - INIT PHASE == **1. Select/Load ACMS_CONFIG Input File** 2. Perform LAUNCH CONFIGURATION 3. On Board SW Updates 4. ACMS Power ON (in Pre-Sep configuration) 5. Modify ACC SGM/RM CONTENT (Enter sub-menu 1.1) 6. ACMS SCOE Configuration 77. JUMP to another Entry Point 88. Continue ACMS_CONFIG to menu 2.0 STBY/PRE-SEP 99. Terminate ACMS_CONFIG	Select option 1 and click OK then Continue					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	select the point number 1 and press the relevant button:"CONTINUE".						
3	Sequence pops-up asking for the input file. Write SPIRE_UV and press OK	Write "SPIRE_UV" and press OK					
4	At sequence completion, the same main menu appears. *Select point number 6* **to switch on the ACMS SCOE then click OK, Continue**	Select Option 6 and click OK, Continue			ACMS SCOE is switched-on in 'executing' mode. Note: Until ACC is not fully powered-on, some WARNING ALARMS might come down in the On-Board Event History.		
5	On AND YA001939 'AMCS SCOE - AS_PSEUDO 1 of 1' check that parameters: YMACT939 (ACMS SCOE state) YMASE939 (Simulator stata) YMAMS939 (MILFE state) YMAUS939 (UIFE state) Turned to: 'executing'	Parameters set to 'executing'					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
6	At sequence completion, the same main menu appears. *Select point number 4* **to switch on the ACC then click OK, Continue**	Select Option 4 and click OK, Continue			Expected Out of Limit of AEYYY109 (synchronisation). ACC may become INVALID for a short time. SPR 245: Out of Limit of HKA_ANTHx_Data		
7	From a Packet History tool, select filter 'APID 512' and check that ACMS HK and ETM is correctly flowing down.	OK					
8	From On-Board Event History Display check that no 'NO-GO' are present.	OK					
9	From ACMS MASTER (ACMS_CONFIG25) sequence, move to Menu 3 (if not already there) with option 88. Click OK and then Confirm	OK					
10	From ACMS_CONFIG25, Menu 3, select option 1: 'Override Separation Flag' then Click button OK and then Confirm	Select 1, then OK and Continue			ACC goes in SAM Mode		

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
11	Sequence A102109SPVT034_ACMS_SAM_MON shall pop-up following the opening of separation straps, at prompt: 'Do you want to continue to monitor Sam Sun Pointing mode ? Enter your choice: no Then click OK	no			ACMS SAM Point Coarse is reached		
12	From ACMS_CONFIG25 Master Sequence, Menu 4.0, select option 6 'Transition to OCM' **Click OK and then Confirm**	Select 6, then OK and Continue					
13	Sequence 'A102109SPVT036_ACMS_STR_ON' shall pop-up. At prompt: 'Do You want to change current Str in Use' check if STR already selected is the correct one and answer **'no'**	no			STR-1 is switched ON and put in ATFAD mode		
14	When scripts are completed, From ACMS synoptic check that ACC Mode is turned to: 'OCM pnt fine'	OK					
	Synchronise CCS Time With ETS for Accelerometer Measurement Timing						

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
15	For correlation of test results, record time of ETS Accelerometer Test Equipment and at the same time record the CCS time:						
	ETS Time (Accelerometer Measurement T.E. Clock):						
	CCS Time:						
16	If not already active request ETS to start accelerometer acquisitions as per Appendix 2						

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.17 Reaction Wheel Operation for Variable Frequency Microvibration

This section should be performed in parallel with section 7.2.6.18 step 2. It takes approximately 40 mins to run.

Step	Reaction Wheel Activation	Nominal Value	Tolerance	Actual Value	Remark	P	N
1	From Test Conductor Console, execute script: 'A102109SPVT213_ACMS_RWL_SPIRE_uVIB'	OK					
2	Setup the 'TM Plotting Tool' to follow RWL spinning for the followiing monitoring parameters: AEWR1002 AEWR2002 AEWR3002 AEWR4002	OK					
3	At the following prompt: 'Positive Spin. Click OK' Check from ACMS Synoptic that RWL 1-2-3-4 are ON. Then Click OK to start positive spinning	Click OK					
	On the 'TM Plotting Tool' follow RWL positive spinning						
4	At the following prompt: 'Negative Spin. Click OK' Click OK to start negative spinning	Click OK					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Reaction Wheel Activation	Nominal Value	Tolerance	Actual Value	Remark	P	N
	On the 'TM Plotting Tool' follow RWL negative spinning						
6	At the following prompt: 'Click OK to spin-down RWL to 0 [Nms]' Click OK to bring RWLs to 0 [Nms]	Click OK					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.18 SMEC Variable Frequency Microvibration Test

The previous section (7.2.6.17) must be performed in parallel with this section step 2, which is assumed to take around 40 mins to run. Make sure that for this micro-vibration test the accelerometer acquisition has been activated before continuing.

Step	Description	Parameters	Expected Values	Actual Values	Success/ Failure
1	Execute stand alone script SPIRE-IST-SMEC-RAMP-MICROVIBRATION.tcl Generate high rate MCU engineering data – we are looking for fluctuations in SMEC velocity Set SMEC continuously scanning at 0.5 mm/s (TBC) over full range Number of scans set to make this a 1 hour test [redacted]	N/A	N/A	N/A	
	When given the go-ahead from SPIRE I-EGSE Operator, perform the following step				
2	Perform Section 7.2.6.17 to start reaction wheel operation i.a.w. agreed profile (see Appendix 2)	N/A	N/A	N/A	
Test Result (Pass/Fail):					

Enter Start Date|Time:			

~~7.2.6.19 Reaction Wheel Operation for Spot Frequency Microvibration~~

~~This section should be performed in parallel with section 7.2.6.20 step 3. It takes approximately 40 mins to run.~~

~~Step~~	~~Reaction Wheel Activation~~	~~Nominal Value~~	~~Tolerance~~	~~Actual Value~~	~~Remark~~	~~P~~	~~N~~
~~1~~	~~From Test Conductor Console, execute script:~~ ~~'A102109SPVT213_ACMS_RWL_SPIRE_uVIB'~~	~~OK~~					
~~2~~	~~Setup the 'TM Plotting Tool' to follow RWL spinning for the followiing monitoring parameters:~~ ~~AEWR1002~~ ~~AEWR2002~~ ~~AEWR3002~~ ~~AEWR4002~~	~~OK~~					
~~3~~	~~At the following prompt:~~ ~~'Positive Spin. Click OK'~~ ~~Check from ACMS Synoptic that RWL 1-2-3-4 are ON. Then Click OK to start positive spinning~~	~~Click OK~~					
	~~On the 'TM Plotting Tool' follow RWL positive spinning~~						
4	~~At the following prompt:~~ ~~'Negative Spin. Click OK'~~ ~~Click OK to start negative spinning~~	~~Click OK~~					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

~~Step~~	~~Reaction Wheel Activation~~	~~Nominal Value~~	~~Tolerance~~	~~Actual Value~~	~~Remark~~	~~P~~	~~N~~
	~~On the 'TM Plotting Tool' follow RWL negative spinning~~						
~~6~~	~~At the following prompt:~~ ~~'Click OK to spin-down RWL to 0 [Nms]'~~ ~~Click OK to bring RWLs to 0 [Nms]~~	~~Click OK~~					

Enter Date/Time:			Sign Off:	

Enter Start Date/Time:			

~~7.2.6.20 SMEC Spot Frequency Microvibration Test~~

~~The previous section (7.2.6.17) must be performed in parallel with this section step 3, which is assumed to take around 40 mins to run. Make sure that for this micro-vibration test the accelerometer acquisition has been activated before continuing.~~

~~Step~~	~~Description~~	~~Parameters~~	~~Expected Values~~	~~Actual Values~~	~~Success/ Failure~~
~~1~~	~~On HPCCS execute test script SPIRE-IST-SMEC-SPOT-MICROVIBRATION~~ ~~Generate high rate data – we are looking for fluctuations in SMEC velocity~~ ~~Scan SMEC at 0.1 mm/s over full range for four scans~~	~~N/A~~	~~N/A~~	~~N/A~~	
	~~The following 2 steps shall be run in parallel~~				
~~2~~	~~Perform Section 7.2.6.17 to start reaction wheel operation i.a.w. agreed profile (see Appendix 2)~~	~~N/A~~	~~N/A~~	~~N/A~~	
~~3~~	~~On HPCCS execute test script SPIRE-IST-SMEC-SPOT-MICROVIBRATION~~ ~~Generate high rate data – we are looking for fluctuations in SMEC velocity~~ ~~Scan SMEC at 0.1 mm/s over full range for four scans~~	~~N/A~~	~~N/A~~	~~N/A~~	
~~Test Result (Pass/Fail):~~					

Enter Start Date|Time:			

7.2.6.21 Microvibration Post-Test Configuration

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	ACMS Switch OFF						
7.5.5.12.1	Ensure RWLs have spun down before switching OFF						
7.5.5.12.2	From ACMS_CONFIG25 main menu: • **Select the point number 99** and confirm the selection pressing the relevant button "CONTINUE".	Continue					
7.5.5.12.3	The following menu will appear: HERSCHEL/PLANCK - MAIN MENU 9.0 - ACMS OFF PHASE === ***select the point number 1*** 'Switch Off ACMS' and confirm the selection pressing the relevant button "CONTINUE".	Continue					
7.5.5.12.4	Check the "ACMS_OFF" Test Sequence has been successfully ended.	OK					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
7.5.5.12.5	By the same above menu, ***select the point number 99*** to end the ACMS_CONFIG25 Master Sequence". Click OK to Confirm	OK					
	Re-Synchronise Time With ETS for Accelerometer Measurement Timing						
7.5.5.12.6	For correlation of test results re-record time of ETS Accelerometer Test Equipment and at the same time record the CCS time:						
	ETS Time (Accelerometer Measurement T.E. Clock):						
	CCS Time:						
7.5.5.12.7	Notify ETS that accelerometer acquisitions can be stopped						

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.22 Procedure SPIRE-IST-COLD-FUNC-SMEC-02B-P

Version	2.5
Date	3rd July 2008
Purpose	Close the SMEC Launch Latch (Latch it)
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and SMEC is ON and unlatched
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and SMEC is ON and Latched
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	30 minutes
Pass/Fail criteria	The SMEC latch is closed

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-02B-P.tcl	—	—	—	
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date/Time:			

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.23 Procedure SPIRE-IST-COLD-SMEC-OFF-P

Version	2.4
Date	6th December 2007
Purpose	SMEC (PRIME) Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are OFF.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail criteria	HK Parameters SMECENCPWR and SMECLVDTPWR show expected OFF values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-SMEC-OFF-P.tcl	—	—	—	
2	Check that the power to the SMEC sensors is switched off	SMECENCPWR SMECLVDTPWR	1/-/0 1/-/0		
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.24 Procedure SPIRE-IST-COLD-MCU-OFF-P

Version	2.4
Date	6th December 2007
Purpose	MCU PRIME Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is OFF.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is ON. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified MCU HK Parameter shows expected value.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-MCU-OFF-P.tcl	—	—	—	
2	Check that the MCU is switched off	MCUBITSTAT	1/-/0		
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date/Time:			

7.2.6.25 Procedure SPIRE-IST-COLD-SCU-OFF-P

Version	2.4
Date	6th December 2007
Purpose	SCU PRIME Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is OFF
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified SCU HK Parameters show expected value.

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-SCU-OFF-P.tcl	—	—	—	
2	A few seconds later record the value of parameter SCUTEMPSTAT	SCUTEMPSTAT	0xFFFF/-/0		
3	A few seconds later record the value of parameter SUBKSTAT	SUBKSTAT	1/-/0		
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.26 Switch OFF After SPIRE PRIME SMEC

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
8.	From the HPCCS test conductor console start the test script to power OFF SPIRE Prime: **S102999SCVT032_ASDCFTSPIR_PWR_OFF_P**	OK				
9.	On HPCCS when prompted: `“SPIRE Switch OFF for CFT related tests in Hel/Hell conditions only - Select NO to abort TS if not correct”` **Select YES**	YES				
	If **YES** is selected the test script will go on to automatically power off all SPIRE warm units.					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	Note that during Switch OFF of SPIRE the following (5,2) and (5,4) event messages on APID 1280 may be expected and do not indicate a problem: e) EVID 1313 No_MCU_Response_Error f) EVID 21773 ALARM_LSMCU_DEAD **However, be aware that if FDIR is enabled for SPIRE in the CDMU then this may trigger an OBCP**					
10.	On HPCCS when prompted: `"Check Telemetry No Longer Updating - OK to continue"` Check that parameters: THSK TM2N	 Not refreshing Not incrementing		**AND: SA_1_559**		
11.	Select OK to continue	OK				

Enter Start Date|Time:				

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
12.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT032_ASDCFTSPIR_PWR_OFF_P** it will prompt: "Bus profile left as SPIRE PRIME, change manually after if required - OK to continue"					
13.	Select OK to continue	OK				
14.	On HPCCS stop Packet History displays for the following APIDs:1280,1282	OK				
	SPIRE PRIME OFF					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.27 Verify Redundant Latch Command Relay Status

Verify launch lock relays are positioned to allow SMEC launch lock to be unlatched.

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	All TCs to be sent from the Manual Command Stack					
1.	*Send **DC904180** and verify from the resulting (14,4) packet that packet 120 (dec) is not already enabled (i.e. NOT present in the list). If present skip steps 2 – 4*	120 not present		Step 1 to 5 only required on CDMS ASW 3.4		
2.	*Send **ZCB00999** to allocate new diagnostic packet*	OK				
3.	*Send **DC900180** with repeater value 1 and parameters: DH019180 = 26, DH020180=120*	OK				
4.	*Send **DC904180** and verify from the resulting (14,4) packet that packet 120 (dec) is nowenabled (i.e. present in the list)*	120 present				
5.	*From TMPH verify that packets with SPID = **264000999** are cyclically arriving on the CCS*	Packets Arriving				
6.	Close LCL26, by sending **DC26D170**	OK		State of LCL #26 switches to ON		
7.	Verify LCL26 closed: **WMA2B565** =	ON				
8.	Record Current **WMA07565**	N/A				
9.	Send HLC 5 to switch relays to LCL position **DCT01170, DHT01170="CMD_ID_HLC21"**	OK				

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
10.	Verify Current **WMA07565 =**	130-180 mA		Current between 130-180mA		
11.	Send HLC 6 to switch relays to MCU position **DCT01170, DHT01170="CMD_ID_HLC22"**	OK				
12.	Verify Current **WMA07565**	0 mA		Current off		
13.	Open LCL26, by sending **DC26B170**	OK		State of LCL #26 switches to OFF		
14.	Verify LCL26 open: **WMA2B565** =	OFF				
	SMEC Redundant LL latch relay position verification complete					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.28 Switch ON for SPIRE REDUNDANT SMEC

The following will switch ON and configure SPIRE Redundant instrument in REDY (Standby) mode. HKTM packets will be generated on APIDs 1281 dec and 1283 decimal (these can be observed using TMPH with corresponding filter – note however a limited number of TMPHs should be running at one time).

During power on of SPIRE a number of soft/hard OOLs are reported due to the sequential switch on of the units. This is expected and will clear when SPIRE is in REDY mode. When in REDY mode one parameter remains OOL (soft) namely SMD2V505 this is also expected.

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
11.	On HPCCS start Packet History displays for the following APIDs:1281,1283	OK				
12.	From the HPCCS test conductor console start the test script to power on SPIRE Redundant: **S102999SCVT033_ASDCFTSPIR_PWR_ON_R**	OK		AND: ZAD07999, ZAD14999 MIM: LCL_HERSCHEL		

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
13.	On HPCCS when prompted: "SPIRE Switch ON for Cold FT related tests in Hel/Hell conditions only - Select NO to abort TS if not correct" **Select YES**	YES				
	If **YES** is selected the test script will go on to automatically power on all SPIRE warm units, force boot the DPU ASW and configure the instrument to Standby mode. Reply to prompts as indicated below.					
14.	On HPCCS when prompted: "Check Telemetry Updating Correctly and OBT is Consistent with CDMU - OK to continue" **Select OK**	OK		**AND: SA_1_559**		
15.	If I-EGSE connected when prompted on HPCCS, perform check requested then select **OK**: "Check IEGSE Time Consistent - OK to continue when RAL confirm"	OK				

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
16.	On HPCCS when prompted: `"Check Telemetry No Longer Updating - OK to continue"` Check that parameters: THSK TM2N Select OK to continue	 Not refreshing Not incrementing OK		Note: Two TC failures on SCR00500 are expected because HKTM has been stopped		
17.	On HPCCS when prompted: `"Check Telemetry Updating Correctly - OK to continue"` Check that parameters: THSK TM2N Select OK to continue	 Refreshing @ 1Hz Incrementing by 1 @ 1Hz OK		**AND: SA_1_559**		

Enter Date/Time:			Sign Off:	

Enter Start Date/Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
18.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT033_ASDCFTSPIR_PWR_ON_R** it will prompt: `“Set Bus Profile Back to Original Setting?”` Select NO	NO				
19.	At the prompt: `“Bus Profile left unchanged”` Select OK to continue	OK				
20.	Verify HK TM packets are being received on APIDs 1281 & 1283	OK				
	SPIRE DPU & DRCU Redundant powered					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.29 Procedure SPIRE-IST-COLD-FUNC-SCU-03-R

Version	2.4
Date	6th December 2007
Purpose	SCU DC thermometry check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and DC thermometry is ON
Constraints	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	8 minutes
Pass/Fail Criteria	SCU DC thermometry channels show temperature readings according to the actual instrument temperature

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCU-03-R.tcl	—	—	—	
2	**Wait for the parameter BBFULLTYPE to get set to SCU_DC_Therm**	—	—	—	

Enter Date/Time:			Sign Off:	

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
3	A few seconds later record the value of parameter SCUTEMPSTAT	SCUTEMPSTAT	0/0xFFFF/0xFFFF		
4	If the instrument is at He I temperatures check the values of SCU DC thermometry channels.	 PUMPHTRTEMP PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	(All Values TBC) ~4.2K ~4.4K ~4.3K ~4.2K ~4.8K ~4.2K ~4.2K ~4.8K ~4.8K ~4.7K ~4.8K ~4.8K ~4.8K ~4.7K ~4.7K ~4.8K		
5	If the instrument is at He II temperatures check the values of	 PUMPHTRTEMP	(All Values TBC) -/~4.6K		

Enter Start Date|Time:			

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
	SCU DC thermometry channels.	PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	-/~3.0K -/~3.0K -/~1.7K -/~4.6K -/~1.7K -/~1.7K -/~4.6K -/~4.6K -/~4.5K -/~4.6K -/~4.6K -/~4.6K -/~4.6K -/~4.6K -/~4.5K		
6	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.30 Procedure SPIRE-IST-COLD-FUNC-SCU-06-R

Version	2.4
Date	6th December 2007
Purpose	SCU AC thermometry check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and DC thermometry is ON
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Constraints	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail Criteria	SCU AC thermometry channel shows temperature readings according to the actual instrument temperature

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SCU-06-R.tcl	—	—	—	
2	**Wait for the parameter BBFULLTYPE to get set to SCU_AC_Therm**	—	—	—	
3	A few seconds later record the value of parameter SUBKSTAT	SUBKSTAT	0/1/1		
4	If the instrument is at He I temperatures check the value of SCU AC thermometry channel.	SUBKTEMP	~4K		
5	If the instrument is at He II temperatures check the value of SCU AC thermometry channel.	SUBKTEMP	~1.7K		
6	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	
Test Result (Pass/Fail):					

7.2.6.31 Procedure SPIRE-IST-COLD-FUNC-MCU-01-R

Version	2.4
Date	6th December 2007
Purpose	MCU (REDUNDANT) Boot Check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCU voltages and board temperatures show expected 'ON' values

Enter Start Date|Time:			

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-MCU-01-R.tcl	—	—	—	
2	Check that the MCU is booted up successfully	MCUBITSTAT	0/1/1		
3	Check MCU HK parameter values and ensure that the values are refreshing	MCUP5V MCUP14V MCUM14V MCUP15V MCUM15V MCUMACTEMP MCUSMECTEMP MCUBSMTEMP	~ 5.0 ± 0.2V ~ 14.0 ± 0.5V ~ -14.0 ± 0.5V ~ 15.0 ± 0.5V ~ -15.0 ± 0.5V ~300K ~300K ~300K		
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.32 Procedure SPIRE-IST-COLD-FUNC-MCU-03-R

Version	2.4
Date	6th December 2007
Purpose	MCU Nominal Science Contents Check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	Unchanged.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified MCU HK parameters show expected increment

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-MCU-03-R.tcl	MCUFRAMECNT	0/-/297		
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.33 Procedure SPIRE-IST-COLD-FUNC-SMEC-01-R

Version	2.4
Date	6th December 2007
Purpose	SMEC (REDUNDANT) Encoder/LVDT Sensor Check.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK Parameters SMECENCPWR and SMECLVDTPWR show expected ON values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-01-R.tcl	—	—	—	
2	Check that power to the SMEC LED and LVDT sensor is on	SMECENCPWR SMECLVDTPWR	0/-/1 0/-/1		
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.34 Procedure SPIRE-IST-COLD-FUNC-SMEC-03-R

Version	2.4
Date	6th December 2007
Purpose	SMEC (REDUNDANT) Encoder Integrity Check.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCUENGSMECENCSIG1/2 increase as the encoder power is increased

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-03-R.tcl	—	—	—	
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date/Time:			

7.2.6.35 Procedure SPIRE-IST-COLD-FUNC-SMEC-02A-R

Version	2.5
Date	3rd July 2008
Purpose	Open the SMEC Launch Latch REDUNDANT (Unlatch it)
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and SMEC is latched
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and SMEC is ON and Unlatched
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	20 minutes
Pass/Fail criteria	The SMEC latch is open.

Procedure Steps:

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-02A-R.tcl	—	—	—	
2	**Wait for the I-EGSE staff to confirm the success or failure of this test** **The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	
Test Result (Pass/Fail):					

Enter Start Date|Time:			

7.2.6.36 Procedure SPIRE-IST-COLD-FUNC-SMEC-FFOFFSET-R

Version	1.2
Date	10th July 2008
Purpose	SMEC (REDUNDANT) Open Loop Feed Forward Offset Test
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • SMEC PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	60 minutes
Pass/Fail criteria	Optimum SMEC Feed Forward Offset is determined

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-FFOFFSET-R.tcl	—	—	—	
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
3	Based on the results of this test it may be necessary to set the SMEC FF Offset manually. **SPIRE_SEND_DRCU_COMMAND** • **param 1 = 0x9055xxxx** • **param 2 = 0** **I-EGSE staff will supply the 16-bit parameter value xxxx to this command.**	SMECFFOFFSET	-/ - /xxxx		
4	Based on the results of this test it may be necessary to set the SMEC FF Gain manually. **SPIRE_SEND_DRCU_COMMAND** • **param 1 = 0x9054xxxx** • **param 2 = 0** **I-EGSE staff will supply the 16-bit parameter value xxxx to this command.**	SMECFFGAIN	-/ - /xxxx		

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
5	A manual reset of the encoder signals 1 and 2 offsets may be required. If this is the case Two MANUAL commands will be required to be sent from the CCS: **SPIRE_SEND_DRCU_COMMAND** • **param 1 = 0x9058xxxx** • **param 2 = 0** **SPIRE_SEND_DRCU_COMMAND** • **param 1 = 0x905Axxxx** • **param 2 = 0** **The 16 bit parameters xxxx will be provided by I-EGSE staff**	SMECENCSIG1OFF SMECENCSIG2OFF	-/-/~ Commanded Value -/-/~ Commanded Value		
6	**Note that it may be necessary to repeat this test to fine tune the Feed Forward Offset** **The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.37 Procedure SPIRE-IST-COLD-FUNC-SMEC-04A-R

Version	2.5
Date	3rd July 2008
Purpose	SMEC (REDUNDANT) Open Loop Positioning Test.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	30 minutes
Pass/Fail criteria	SMEC moves to the commanded positions

Procedure Steps:

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-04A-R.tcl	—	—	—	
2	**Wait for the I-EGSE staff to confirm the success or failure of this test** **The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	
Test Result (Pass/Fail):					

7.2.6.38 Procedure SPIRE-IST-COLD-FUNC-SMEC-09-R

Version	2.5
Date	3rd July 2008
Purpose	SMEC (REDUNDANT) Open Loop Scan Test.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • SMEC PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	30 minutes
Pass/Fail criteria	SMEC performs a scan between the commanded positions

Enter Start Date|Time:			

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	A manual reset of the encoder signals 1 and 2 offsets may be required. If this is the case Two MANUAL commands will be required to be sent from the CCS: **SPIRE_SEND_DRCU_COMMAND** • **param 1 = 0x9058xxxx** • **param 2 = 0** **SPIRE_SEND_DRCU_COMMAND** • **param 1 = 0x905Axxxx** • **param 2 = 0** **The 16 bit parameters xxxx will be provided by I-EGSE staff**	SMECENCSIG1OFF SMECENCSIG2OFF	-/-/~ Commanded Value -/-/~ Commanded Value		
2	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-09-R.tcl	—	—	—	
3	**Wait for the I-EGSE staff to confirm the success or failure of this test** **The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.39 Procedure SPIRE-IST-COLD-FUNC-SMEC-07-R

Version	2.5
Date	3rd July 2008
Purpose	SMEC (REDUNDANT) Close Loop Scan Test.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Final configuration	SMEC is in closed loop
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	60 minutes
Pass/Fail criteria	SMEC performs a scan between the commanded positions and the loop remains closed

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	**Before this test a SMEC calibration table on the I-EGSE may have to be changed. Please confirm with the I-EGSE staff before continuing with the next test.**	—	—	—	
2	Execute TCL script SPIRE-IST-COLD-SMEC-INIT-R.tcl	SMECLOOPMODE	6/-/1		
3	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-07-R.tcl	—	—	—	
4	**Wait for the I-EGSE staff to confirm the success or failure of this test** **The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	
Test Result (Pass/Fail):					

Enter Start Date|Time:			

7.2.6.40 Procedure SPIRE-IST-COLD-FUNC-SMEC-04B-R

Version	2.5
Date	3rd July 2008
Purpose	SMEC (REDUNDANT) Close Loop Positioning Test.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON. SMEC is in closed loop.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	20 minutes
Pass/Fail criteria	SMEC moves to the commanded positions and remains in closed loop

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-04B-R.tcl	SMECLOOPMODE	1/1/1		
2	**Wait for the I-EGSE staff to confirm the success or failure of this test** **The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.41 Procedure SPIRE-IST-COLD-FUNC-SMEC-LVDT-R

Version	1.1
Date	10th July 2008
Purpose	SMEC (REDUNDANT) Backup LVDT Close Loop Check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON. SMEC is in closed loop.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	90 minutes
Pass/Fail criteria	SMEC remains in closed loop on LVDT

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	**Manual commanding may be necessary during this test. Details to be specified** **Change downlink data rate to 1.5 Mbps** **Send command** **DC27F170**	—	—	—	
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.42 Procedure SPIRE-IST-COLD-FUNC-SMEC-02B-R

Version	2.5
Date	3rd July 2008
Purpose	Close the SMEC Launch Latch (Latch it)
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and SMEC is ON and unlatched
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and SMEC is ON and Latched
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	30 minutes
Pass/Fail criteria	The SMEC latch is closed

Procedure Steps:

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-FUNC-SMEC-02B-R.tcl	—	—	—	
2	**Wait for the I-EGSE staff to confirm the success or failure of this test** **The I-EGSE staff will need to analyse the test data before continuing the test sequence.**	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.43 Procedure SPIRE-IST-COLD-SMEC-OFF-R

Version	2.4
Date	6th December 2007
Purpose	SMEC (REDUNDANT) Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are OFF.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail criteria	HK Parameters SMECENCPWR and SMECLVDTPWR show expected OFF values.

Procedure St ps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-SMEC-OFF-R.tcl	—	—	—	
2	Check that the power to the SMEC sensors is switched off	SMECENCPWR SMECLVDTPWR	1/-/0 1/-/0		
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.44 Procedure SPIRE-IST-COLD-MCU-OFF-R

Version	2.4
Date	6th December 2007
Purpose	MCU REDUNDANT Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is OFF.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is ON. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified MCU HK Parameter shows expected value.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-IST-COLD-MCU-OFF-R.tcl	—	—	—	
2	Check that the MCU is switched off	MCUBITSTAT	1/-/0		
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.45 Procedure SPIRE-IST-COLD-SCU-OFF-R

Version	2.4
Date	6th December 2007
Purpose	SCU REDUNDANT Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is OFF
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified SCU HK Parameters show expected value.

Procedure Steps:

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-IST-COLD-SCU-OFF-R.tcl	—	—	—	
2	A few seconds later record the value of parameter SCUTEMPSTAT	SCUTEMPSTAT	0xFFFF/-/0		
3	A few seconds later record the value of parameter SUBKSTAT	SUBKSTAT	1/-/0		
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.6.46 Switch OFF After SPIRE REDUNDANT SMEC

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
8.	From the HPCCS test conductor console start the test script to power OFF SPIRE REDUNDANT: **S102999SCVT034_ASDCFTSPIR_PWR_OFF_R**	OK				
9.	On HPCCS when prompted: `“SPIRE Switch OFF for CFT related tests in Hel/Hell conditions only - Select NO to abort TS if not correct”` **Select YES**	YES				
	If **YES** is selected the test script will go on to automatically power off all SPIRE warm units.					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	Note: During Switch OFF of SPIRE, the following (5,1) and (5,4) event messages on APID 1281 may be expected and do not indicate a problem: g) EVID 1313 No_MCU_Response_Error h) EVID 21773 ALARM_LSMCU_DEAD **However, be aware that if FDIR is enabled for SPIRE in the CDMU then this may trigger an OBCP**					
10.	On HPCCS when prompted: `"Check Telemetry No Longer Updating - OK to continue"` Check that parameters: THSK TM2N	 Not refreshing Not incrementing		**AND: SA_1_559**		
11.	Select OK to continue	OK				

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
12.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT034_ASDCFTSPIR_PWR_OFF_R** it will prompt: “Bus profile left as SPIRE PRIME, change manually after if required - OK to continue”					
13.	Select OK to continue	OK				
14.	On HPCCS stop Packet History displays for the following APIDs:1281,1283	OK				
	SPIRE REDUNDANT OFF					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.7 Satellite & EGSE Switch Off After SMEC Tests

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	Satellite & EGSE Switch Off						
	Initial Conditions: Nominal & Redundant SPIRE warm units OFF						
1	On HPCSS terminate **ALL_SubscribeParams.tcl** test script.	OK					
2	From HPCCS Test Conductor console issue command to disconnect from SPIRE I-EGSE **disconnect HSPIREEGSE**	OK					
3	Confirm from HPCSS and SPIRE I-EGSE that the disconnection was successful	YZS29940= DISCONNECTED			**AND SYS_PARS**		
4	Switch OFF I-EGSE i.a.w. AD 5	OK					
5	Stop monitoring CryoSCOE data on the CCS by selecting Stop Record & Exit from the following script: **K102999ECVT035_ASDGEN_SCOE_CCU_LOG**	OK					
6	From HPCCS disable Monitoring Mode 1 (512sec cycle) for CCU A & B by executing test script: **K102999ECVT001_ASDGENCCU_MnDBOTH1**	OK					
7	From HPCCS power OFF CCU A & CCU B by executing test script: **K102999ECVT001_ASDGENCCU_ABPWROFF**	OK					
8	Switch OFF Satellite/SVM, HPCCS and SCOEs i.a.w. procedure	OK					

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	AD 2 Sections 7.7 to 7.11.						
9	Confirm both Satellite and EGSE powered down	OK					
	End Conditions: Satellite and EGSE OFF						
	END OF SMEC TESTS						

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.8 SPIRE SAFE Switch Off

The following procedure describes the necessary steps to safely switch off SPIRE when directed by RAL personnel if an anomaly should occur.

Version	2.4
Date	6th December 2007
Purpose	To switch OFF the SPIRE instrument if an anomaly should occur
Initial configuration	SPIRE can be in ANY configuration as specified in the test sequence in section 4.1
Final configuration	SPIRE is OFF
Preconditions	• SPIRE FM DPU is electrically integrated with the Herschel Satellite • SPIRE MIB is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	~5-8 minutes
Pass/Fail Criteria	SPIRE is OFF. All instrument subsystems are completely powered OFF.

Notes:

1. **All HK parameters relevant to this procedure can be located on the FUNCTIONAL TEST PARAMETERS CCS display**

2. **The expected values of HK parameters before the execution of a switch-off script are not indicated in the table below because the scripts can be run from any instrument configuration without harming the instrument.**

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

Step	Description	Parameter - Unit	Expected value before/after	Actual value before/after
1.	Execute Procedures: ▪ SPIRE-IST-COLD-PDET-OFF-P/R ▪ SPIRE-IST-COLD-BSM-OFF-P/R	PLIABITSAT PSWJFETSTAT PMLWJFETSTAT CHOPSENSPWR JIGGSENSPWR	- / 0 - / 0 - / 0 - / 0 - / 0	
2.	Execute Procedures: ▪ SPIRE-IST-COLD-SDET-OFF-P/R ▪ SPIRE-IST-COLD-SMEC-OFF-P/R	SLIABITSAT SPECJFETSTAT SMECENCPWR SMECLVDTPWR	- / 0 - / 0 - / 0 - / 0	
3.	Execute Procedures: ▪ SPIRE-IST-COLD-MCU-OFF-P/R ▪ SPIRE-IST-COLD-SCU-OFF-P/R	MCUBITSTAT SCUTEMPSTAT SUBKSTAT	- / 0 - / 0 - / 0	
4.	Power off according to procedure 7.2.2.32 for PRIME and 7.2.3.32 for REDUNDANT			

Enter Date/Time:			Sign Off:	

Enter Start Date|Time:			

7.2.9 SPIRE SAFE Switch Off for Standalone SMEC Test Sequence

The following procedure describes the necessary steps to safely switch off SPIRE when directed by RAL personnel if an anomaly should occur.

Version	1.0
Date	6th December 2007
Purpose	To switch OFF the SPIRE instrument if an anomaly should occur
Initial configuration	SPIRE can be in ANY configuration as specified in the test sequence in section 7.2.6
Final configuration	SPIRE is OFF
Preconditions	• SPIRE FM DPU is electrically integrated with the Herschel Satellite • SPIRE MIB is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	~5-10 minutes
Pass/Fail Criteria	SPIRE is OFF. All instrument subsystems are completely powered OFF.

Notes:

3. **All HK parameters relevant to this procedure can be located on the FUNCTIONAL TEST PARAMETERS CCS display**

4. **The expected values of HK parameters before the execution of a switch-off script are not indicated in the table below because the scripts can be run from any instrument configuration without harming the instrument.**

Enter Date/Time:			Sign Off:	

Enter Start Date/Time:			

	Description	Parameter - Unit	Expected value before/after	Actual value before/after
1.	Execute Procedures: ▪ SPIRE-IST-COLD-SMEC-02B-P/R ▪ SPIRE-IST-COLD-BSM-OFF-P/R	- CHOPSENSPWR JIGGSENSPWR	- - / 0 - / 0	
2.	Execute Procedures: ▪ SPIRE-IST-COLD-SMEC-OFF-P/R	SMECENCPWR SMECLVDTPWR	- / 0 - / 0	
3.	Execute Procedures: ▪ SPIRE-IST-COLD-MCU-OFF-P/R	MCUBITSTAT	- / 0	
4	Power off according to procedure 7.2.6.26 for PRIME and 7.2.6.46 for REDUNDANT			

Enter Date/Time:			Sign Off:	

8 Summary Sheets

8.1 Procedure Variation Summary

	Test Change	Curr. No.: Date Page of	
Test designation	Test Procedure	Issue	Rev.
Test step changed	Reason for Change		

PVS Summary
#1: S/C Left Powered on after test (overruled)
#2: SPIRE Spectrometer switch on test
#3: Functional Part of LL-check.
#4: Switch to Bus B and back to Bus A
#5: Different Power on/off ACS-471
#6: No SSMM, no MTL, No OBCP upload
#7 ~~[illegible]~~ Not Applicable to this procedure
#8: SPR 1187 PDET-P switch off
#9: Skip test steps to reduce test time.

Prepared by:	Resp. Test Leader	Project Engineer
PA/QA	Prime	Customer

Table 8.1-1: Procedure Variation Sheet

	Test Change	Curr. No.: 1 Date: 26/02/2009 Page: 1 of 1	
Test designation SPIRE CFT	**Test Procedure** TP-0217	**Issue** 2	**Rev.** -
Test step changed	**Reason for Change** S/C left powered ON for further testing		

The SVM should NOT be switched OFF. (To be Discussed at end of test with AIT if still required)

Other tests will take over from this point.

Prepared by: S. Ilsen	Resp. Test Leader	Project Engineer
PA/QA R. Goossens	Prime :	Customer

	Test Change	Curr. No.: 2 Date: 26/02/2009 Page: 1 of	
Test designation SPIRE CFT at He1	Test Procedure TP-021~~7~~	Issue 2	Rev. -
Test step changed After 7.2.2.29	Reason for Change SPIRE Spectrometer switch ON test		

Run HP-2-ASED-SD-0470

Completed
27/02/09 06:10

Prepared by: S. Ilsen	Resp. Test Leader	Project Engineer
PA/QA R. Goossens	Prime	Customer

	Test Change	Curr. No.: 3 Date: 26/02/2009 Page: 1 of

Test designation	Test Procedure	Issue	Rev.
SPIRE CFT at He1	TP-021~~9~~7	2	-

Test step changed	Reason for Change
Prior to 7.2.2	Functional part of LL check

Run HP-2-ASED-SD-0469 steps 23 to and including 30

Completed on 27/02/09 00:49

Prepared by: S. Ilsen	Resp. Test Leader	Project Engineer
PA/QA R. Goossens	Prime	Customer

	Test Change	Curr. No.: 4 Date: 26/02/2009 Page: 1 of	
Test designation SPIRE CFT at He1	Test Procedure TP-0219	Issue 2	Rev. -
Test step changed After 7.2.2.30 / after 7.2.3.30	Reason for Change Switch to bus B + back to bus A		

Perform a test of 2 minutes on bus B: 27/02/09

	SPIRE NOM	SPIRE RED
• Callasync D102159SCVT174_IST_REDUNDANT_CONF B 0 0 0 0 0 0	OK	OK
• Check whether SPIRE telemetry is still received	OK.	OK
• Send SPIRE Test TC: SCL00500	OK.	OK
• Check correct TC acknowledgements	OK.	OK
• Callasync D102159SCVT174_IST_REDUNDANT_CONF A 0 0 0 0 0 0	OK	OK
• Check whether SPIRE telemetry is still received	OK	OK
• Send SPIRE Test TC: SCL00500	OK	OK
• Check correct TC acknowledgements	OK	OK

27/02/09 06:15 Nom. Completed

27/02/09 08:33 Red Completed

Prepared by: S. Ilsen	Resp. Test Leader	Project Engineer
PA/QA R. Goossens	Prime	Customer

	Test Change	Curr. No.: 5 Date: 26/02/2009 Page: 1 of

Test designation	Test Procedure	Issue	Rev.
SPIRE CFT at He1	TP-021~~9~~7	2	-

Test step changed	Reason for Change
Chapter 7.2.1 4b + Chapter 7.2.4 6b	Different power ON/OFF – ACS-SD471

Power ON/OFF the S/C using HP-2-ASED-SD-0471 because of NCR 4913

Prepared by: S. Ilsen	Resp. Test Leader	Project Engineer
PA/QA R. Goossens	Prime	Customer

	Test Change	Curr. No.: #7 Date 260209 Page 1 of 1	
Test designation SPIRE CFT/SFT	Test Procedure SD-0471	Issue 1	Rev. –
Test step changed 6 + 7	Reason for Change Redmark to special Switch-on proc.		

1) at step 6 change the error message to wait for in:

"YM 664952 'LPS_bus_v_n_DAQ' TM isn't validated"

then perform step 7.

2) Due to a safety loop triggering the switch-on is changed to:

- Leave BDR 1 ON and BDR 2 OFF,
- acknowledge safety loop on BSIM
- SWITCH BSIM ONLINE
- if ok then switch BDR 2 ON

Prepared by: R. Goossens	Resp. Test Leader P/o Y. Roche by phone	Project Engineer
PA/QA R. Goossens	Prime	Customer

	Test Change	Curr. No.: 6 Date 27/02/09 Page 1 of 1

Test designation	Test Procedure	Issue	Rev.
SPIRE CFT nom	TP-0217	2	—

Test step changed	Reason for Change
46	No SSMM nor MTL nor OBCP

Skip chapter 7.5.3 (SSMM on, MTL on + OBCP loading)

Prepared by:	Resp. Test Leader	Project Engineer
PA/QA R. Goossens	Prime	Customer

	Test Change	Curr. No.: #8. Date 27/02/09 Page 1 of 1	

Test designation	Test Procedure	Issue	Rev.
SPIRE CFT CSCG.	TP-0217	2	—

Test step changed	Reason for Change
7.2.2.24 Step 1	SPR1187 – PDET_P switch off

Repeat step 1 after SPIRE IGGSE database change

Completed 27/02/09 04:48.

Prepared by:	Resp. Test Leader	Project Engineer
PA/QA	Prime	Customer

	Test Change	Curr. No.: #9 Date 27/02/09 Page 1 of 1	
Test designation SPIRE CFT	Test Procedure TP-0217	Issue 2	Rev. -
Test step changed See below	Reason for Change Skip steps to reduce test time		

Skip sections 7.2.3.21, 7.2.3.22 & 7.2.3.23

Skip sections 7.2.3.26, 7.2.3.27, 7.2.3.28.

27/02/09 08:26

Prepared by: S. HAMER	Resp. Test Leader	Project Engineer
PA/QA	Prime	Customer

8.2 Non Conformance Report (NCR) Summary

~~NCR~~ - No. SPR	~~NCR~~ - Title SPR.	Date	Open Closed	PA sig.
1187	SPIRE-IST-COLD-PDET-OFF-P TC Mismatch.	27/02/09	OPEN	

Table 8.2-1: Non-Conformance Record Sheet

8.3 Sign-off Sheet

	Date	Signature
Test Director	27/2/09	[signature]
Operator	27/02/09	[signature]
PA Responsible	27/2/2009	[signature]
ESA Representative	27/2/2009	[signature]

SPIRE CFT

APPENDIX 1

Actual SCOE cable connection (to be confirmed by AIT)

SCOE CABLES CONNECTION to HERSCHEL S/C

SKIN-01 PWR Panel (PCDU)

	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-01	BS Nom Power	SK01BJ09	PCDU	BS SCOE Cable Plugged ✓	
	BS Red Power	SK01BJ10	PCDU	BS SCOE Cable Plugged ✓	
	BDR1 AIT	SK01BJ11	PCDU	LPS SCOE Cable Plugged ✓	
	BDR2 AIT	SK01BJ12	PCDU	LPS SCOE Cable Plugged ✓	
	SA Nom Power	SK01AJ01	PCDU	POWER SCOE Cable Plugged ✓	
	SA Nom Power	SK01AJ02	PCDU	POWER SCOE Cable Plugged ✓	
	SA Nom Power	SK01AJ03	PCDU	POWER SCOE Cable Plugged ✓	
	SA Nom Power	SK01AJ04	Battery	EMC Dust Cap ✓	
	SA Red Power	SK01AJ05	PCDU	POWER SCOE Cable Plugged ✓	
	SA Red Power	SK01AJ06	PCDU	POWER SCOE Cable Plugged ✓	
	SA Red Power	SK01AJ07	PCDU	POWER SCOE Cable Plugged ✓	

SKIN-02 PWR Panel (ACC, CDMU, RCS, 1553 & Thruster)

	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-02	DMS 1553 Bus_A	J01	CDMU	Bus Monitor Cable Plugged ✓	
SKIN-02	DMS 1553 Bus_B	J02	CDMU	Bus Monitor Cable Plugged ✓	
SKIN-02	ACMS 1553 Bus_A	J03	ACC	ACMS SCOE Cable Plugged ✓	
SKIN-02	ACMS 1553 Bus_B	J04	ACC	ACMS SCOE Cable Plugged ✓	
SKIN-02	LV1/FCV 20N CMD S/A M	J05	ACC/RCS	ACMS SCOE Cable Plugged ✓	

17.12.-16 Fl. Mj
25.2.09 18:55

SKIN-02	LV2/FCV 20N CMD S/A R	J06	ACC/RCS	ACMS SCOE Cable Plugged	
SKIN-02	RCS Press/Tank Temp/PT Pwr	J07	ACC/PT&TH	ACMS SCOE Cable Plugged	
SKIN-02	Thruster Temp M/LV1 Sts	J08	ACC/RCS	ACMS SCOE Cable Plugged	
SKIN-02	CDMU and ACC EEPROM reprogramming input	J09	ACC/CDMU		Flight Plug SK02P09 Plugged
SKIN-02	CDMU and ACC EEPROM reprogramming input	J10	ACC/CDMU		Flight Plug SK02P10 Plugged
SKIN-02	Thruster Temp R/LV2 Sts	J11	ACC/RCS	ACMS SCOE Cable Plugged	
SKIN-02	Thruster C/B Heaters M	J12	ACC/CBH	ACMS SCOE Cable Plugged	
SKIN-02	Thruster C/B Heaters R	J13	ACC/CBH	ACMS SCOE Cable Plugged	
SKIN-02	Str1/2 On/Off Cmd M/Str1 Sts	J14	ACC/STR-1		ACMS Flight Plug SK02P14 Plugged
SKIN-02	Str1/2 On/Off Cmd R/Str2 Sts	J15	ACC/STR-2		ACMS Flight Plug SK02P15 Plugged
SKIN-02	Gyro A On/Off Cmd	J16	ACC/GYRO-E1		ACMS Flight Plug SK02P16 Plugged
SKIN-02	Gyro B On/Off Cmd	J17	ACC/GYRO-E2		ACMS Flight Plug SK02P17 Plugged
SKIN-03	TTC Panel				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-03	Test point TC + protection jumper EPC1	SK03J01	XPND1/EPC1		~~Plastic cap~~ Flight
SKIN-03	Test point TC + protection jumper EPC2	SK03J02	XPND2/EPC2		~~Plastic cap~~ Flight
	RF LINK				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
	RF link for antenna LGA1	N/A	LGA1	RF SCOE LGA1 Plugged	LGA1 Anechoic Cap
	RF link for antenna LGA2	N/A	LGA2	RF SCOE LGA2 Plugged	LGA2 Anechoic Cap
	RF link for antenna MGA	N/A	MGA	RF SCOE MGA Plugged	MGA Anechoic Cap
SKIN-04	ACMS Panel (RWE)				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-04	RWL1 Sgn	J01	ACC/RWL-1		ACMS Flight Plug SK04P01 Plugged
SKIN-04	RWL2 Sgn	J02	ACC/RWL-2		ACMS Flight Plug SK04P02 Plugged

25.02.09
18:35

SKIN-04	RWL3 Sgn	J03	ACC/RWL-3		ACMS Flight Plug SK04P03 Plugged
SKIN-04	RWL4 Sgn	J04	ACC/RWL-4		ACMS Flight Plug SK04P04 Plugged
SKIN-05	GYR/QRS Panel				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-05	CRS1 AOCS Sgn	J01	CRS-1/ACC		ACMS Flight Plug
SKIN-05	CRS2 AOCS Sgn	J02	CRS-2/ACC		ACMS Flight Plug
SKIN-05	GYRO RS422 / Test	J03	GYRO	ACMS SCOE Cable Plugged	
SKIN-05	CRS 1/2 Stimuli	J04	CRS-1,2	ACMS SCOE Cable Plugged	
SKIN-05	AAD Sgn M	J05	AAD/ACC	ACMS SCOE Cable Plugged	
SKIN-05	SAS1/2 Sgn M	J06	SAS/ACC	ACMS SCOE Cable Plugged	
SKIN-05	SAS1/2 Sgn R	J07	SAS/ACC	ACMS SCOE Cable Plugged	
SKIN-05	AAD Sgn R	J08	AAD/ACC	ACMS SCOE Cable Plugged	
SKIN-06	STR Panel				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-06	STR1 Stimuli	J01	STR1	ACMS SCOE Cable Plugged	
SKIN-06	STR2 Stimuli	J02	STR2	ACMS SCOE Cable Plugged	
	UMBILICAL				
	Connector Function	Connector	S/C unit	SCOE CABLE	
	Power/Data	HU1J01	SYSTEM	SCOEs cable Plugged	
	Power/Data	HU2J01	SYSTEM	SCOEs cable Plugged	

25.02.09
18:35

APPENDIX 2

Accelerometer Measurement & ACMS Reaction Wheel Profile for Microphonics Test

During reaction wheel activation the accelerometers on OBA and reaction wheel panel according to the Table A4-1 below shall be read. NB: The measurement precision is given by the type of accelerometers used for the test, which is in the order of a few milli-g.

ZONE	CHANNELS ID	DESCRIPTION
OPTICAL BENCH	PACRYO201X	OBA
	PACRYO202Y	OBA
	PACRYO203Z	OBA
	PACRYO204X	OBA
	PACRYO205Z	OBA
	PACRYO206Y	OBA
-Y+Z PANEL	381X	RWL#4 to bracket I/F
	381Y	RWL#4 to bracket I/F
	381Z	RWL#4 to bracket I/F
	382X	RWL#4/RWL#2 to bracket I/F
	382Y	RWL#4/RWL#2 to bracket I/F
	382Z	RWL#4/RWL#2 to bracket I/F
	386X	RWL#3 to bracket I/F
	386Y	RWL#3 to bracket I/F
	386Z	RWL#3 to bracket I/F
	384X	RWL#1 to bracket I/F
	384Y	RWL#1 to bracket I/F
	384Z	RWL#1 to bracket I/F
	383X	RWL#2 to bracket I/F
	383Y	RWL#2 to bracket I/F
	383Z	RWL#2 to bracket I/F

Table A4--1: Measurement Channels for Micro-vibration Test (RD8)

It should be noted that the test configuration, as required in chapter 4.1 of RD8, can not be achieved and the test has to be performed under the conditions of this procedure.

Hmax	25	N.m.s
Tmax	0,05	N.m
Friction	0,005	N.m
DT	10	Min

time (min)	H (N.m.s)
-10	0
0	0
9,25925926	25
10	25
28,5185185	-25
30	-25
39,2592593	0
50	0

Table A4-2: Reaction Wheel Profile

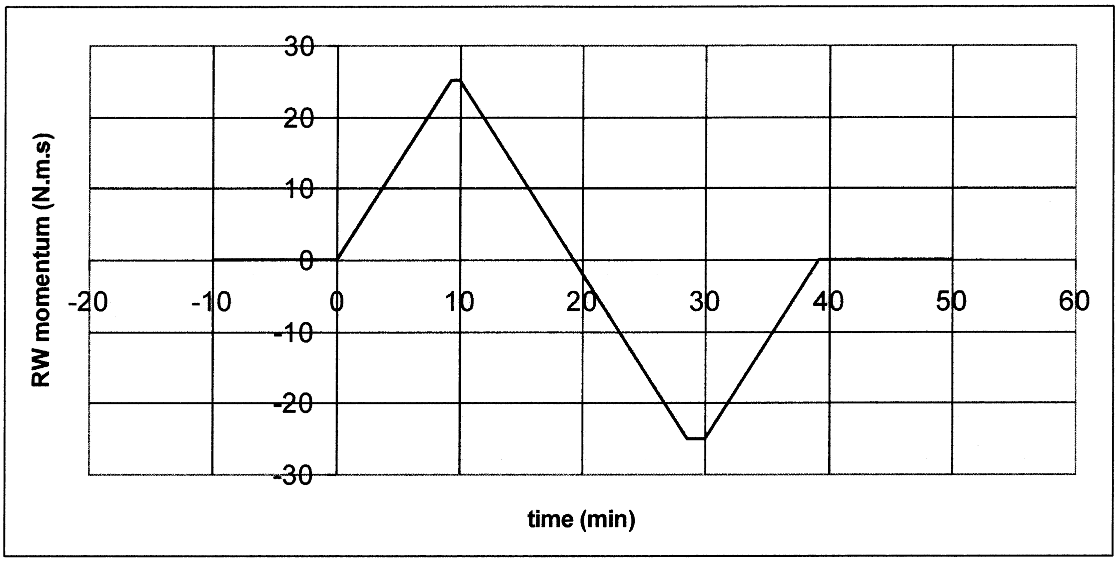
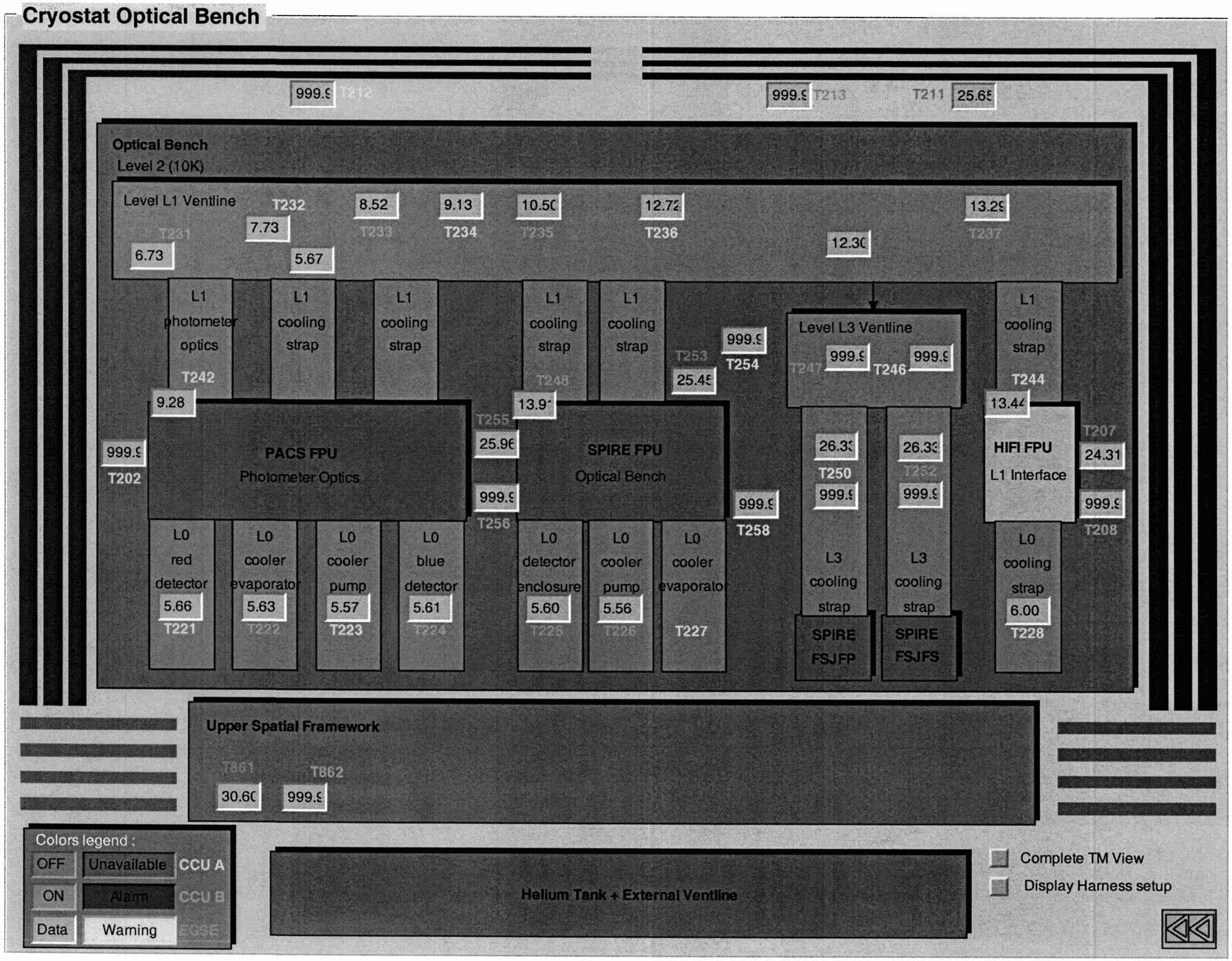


Figure A4-1: Reaction Wheel Profile Graphically

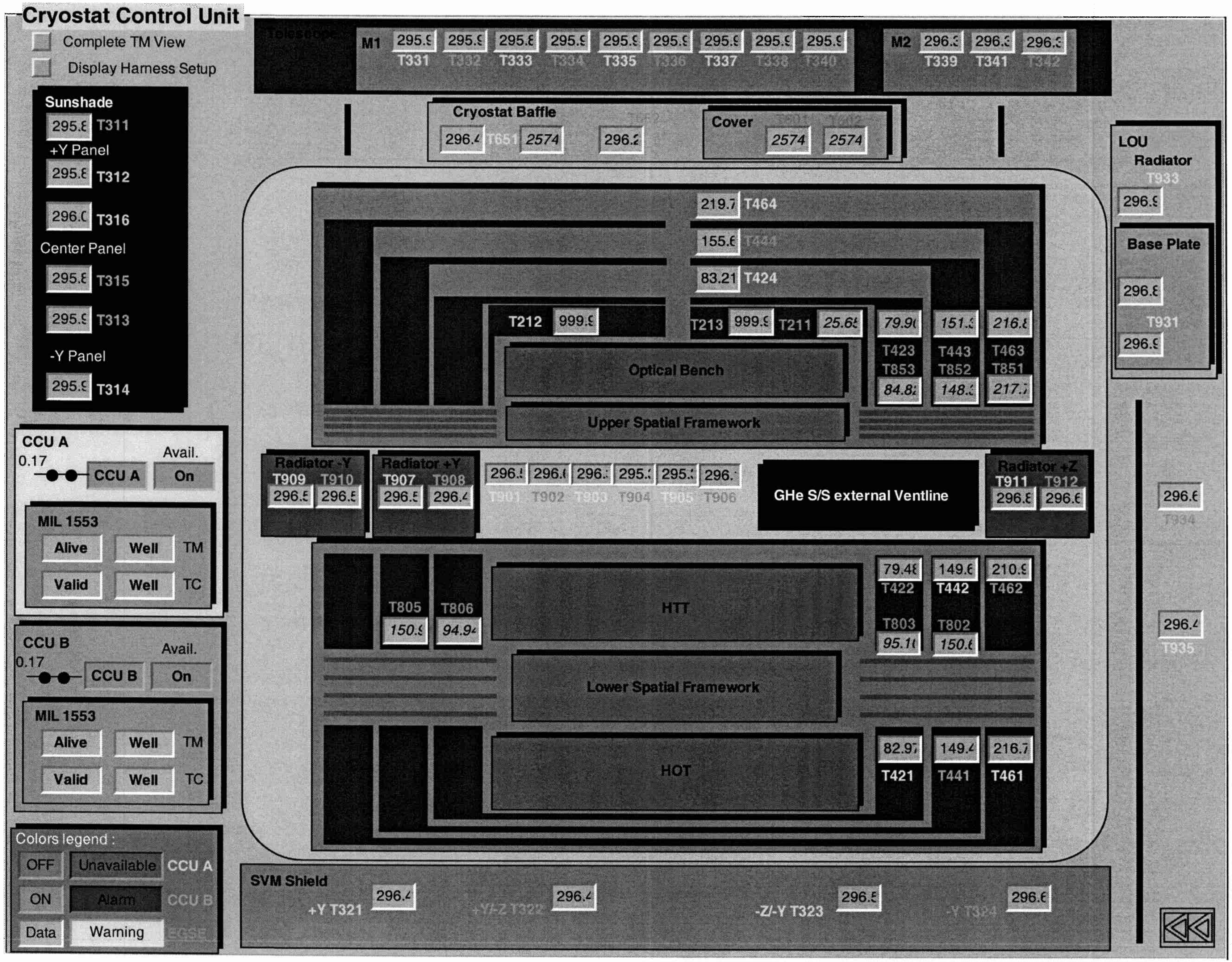
END OF DOCUMENT

	Name	Dep./Comp.		Name	Dep./Comp.
	Alberti von Mathias Dr.	ASG22		Schweickert Gunn	ASG22
	Baldock Richard	FAE12	X	Sonn Nico	ASG51
	Barlage Bernhard	AED13		Steininger Eric	AED32
	Bayer Thomas	ASA42	X	Stritter Rene	AED11
	Brune Holger	ASA45		Suess Rudi	OTN/ASA44
	Edelhoff Dirk	AED2		Wagner Klaus	ASG22
	Fehringer Alexander	ASG13	X	Wietbrock Walter	AET12
X	Fricke Wolfgang Dr.	AED 65		Wöhler Hans	ASG22
	Geiger Hermann	ASA42		Wössner Ulrich	ASE252
	Grasl Andreas	OTN/ASA44	X	Theunissen Martijn/Dutch Space	ASA43
	Grasshoff Brigitte	AET12	X	Martin Olivier	ASA43
X	Hamer Simon	Terma			
X	Hendry David	Terma			
	Hengstler Reinhold	ASA42			
	Hinger Jürgen	ASG22			
X	Hohn Rüdiger	AED65			
	Hölzle Edgar Dr.	AED32			
	Huber Johann	ASA42			
	Hund Walter	ASE252			
	Idler Siegmund	AED312			
	Ivády von András	FAE12			
	Jahn Gerd Dr.	ASG22			
	Kalde Clemens	ASM2			
	Kameter Rudolf	OTN/ASA42			
	Kettner Bernhard	AET42			
	Knoblauch August	AET32	X	Alcatel Alenia Space Cannes	AAS-F
X	Koelle Markus	ASA43		Alcatel Alenia Space Torino	AAS-I
X	Koppe Axel	AED312	X	ESA/ESTEC	ESA
X	Kroeker Jürgen	AED65			
X	La Gioia Valentina	Terma		**Instruments:**	
	Lang Jürgen	ASE252		MPE (PACS)	MPE
	Langenstein Rolf	AED15	X	RAL (SPIRE)	RAL
	Langfermann Michael	ASA41		SRON (HIFI)	SRON
X	Maukisch Jan	ASA43			
X	Much Christoph	ASA43			
	Müller Jörg	ASA42		**Subcontractors:**	
X	Müller Martin	ASA43		Alcatel Alenia Space Antwerp	ABSP
	Peltz Heinz-Willi	ASG13		Austrian Aerospace	AAE
	Pietroboni Karin	AED65		Austrian Aerospace	AAEM
	Platzer Wilhelm	AED2		BOC Edwards	BOCE
	Reichle Konrad	ASA42		Dutch Space Solar Arrays	DSSA
	Runge Axel	OTN/ASA44		EADS Astrium Sub-Subsyst. & Equipment	ASSE
	Schink Dietmar	AED32		EADS CASA Espacio	CASA
	Schlosser Christian	OTN/ASA44		EADS CASA Espacio	ECAS
	Schmidt Rudolf	FAE12		European Test Services	ETS
	Schmidt Thomas	ASA42		Patria New Technologies Oy	PANT
	Schuler Günter	ASA42		SENER Ingenieria SA	SEN

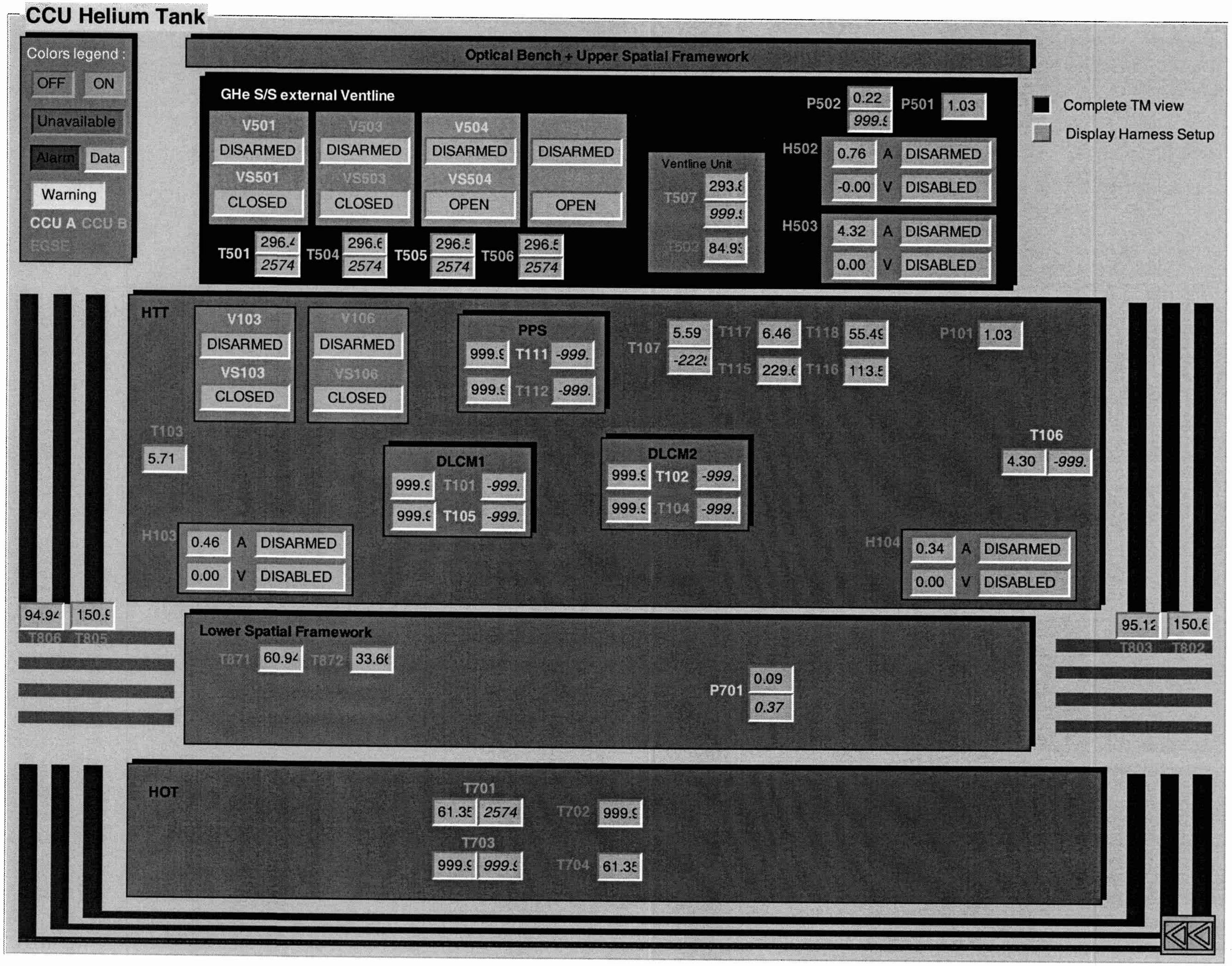
DS: 65535 ID: CCU_OP Title: MIMICS DISPLAY Sample Time: 2009.058.00.38.15.011 Workstation: hpws25



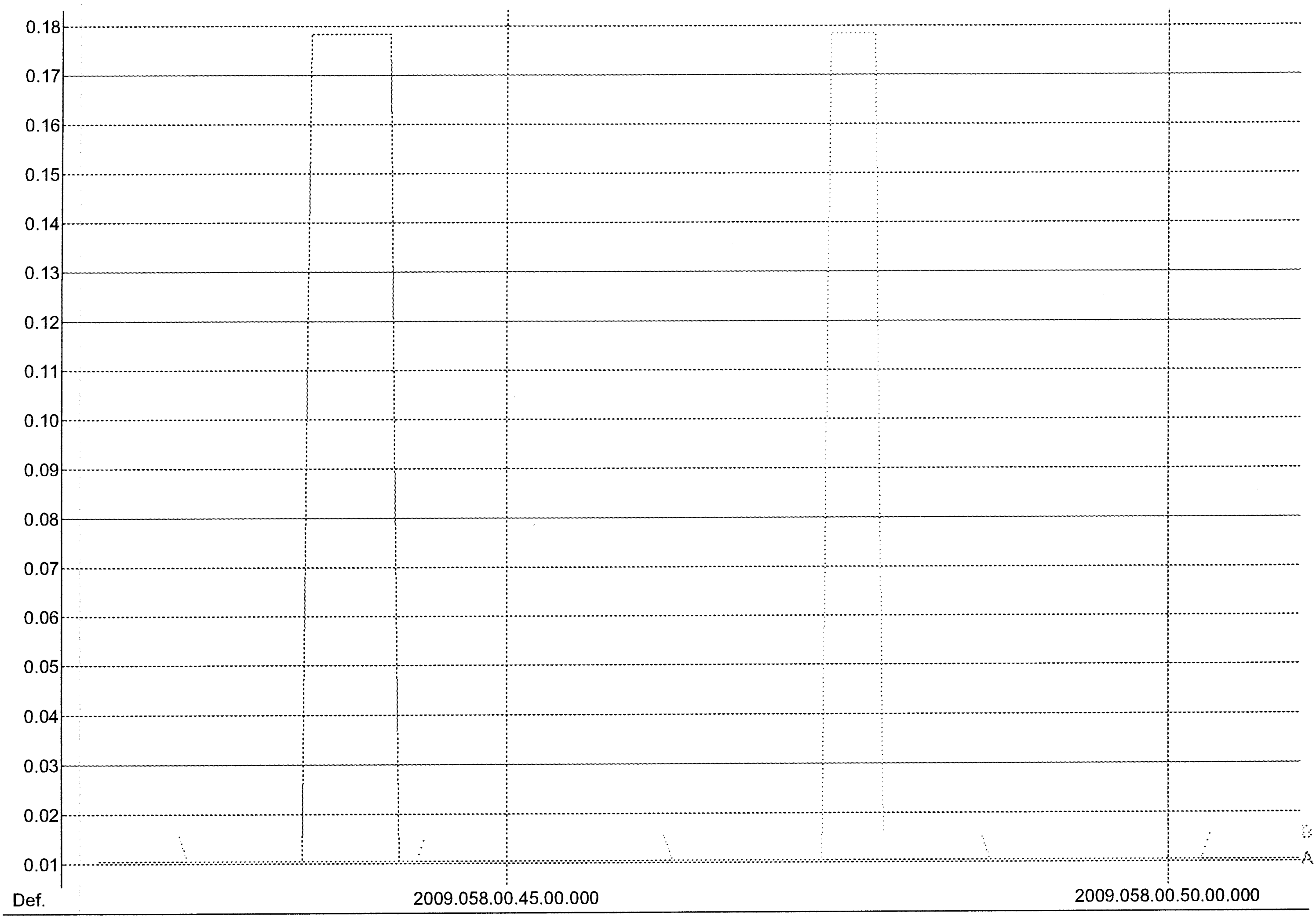
DS: 65535 ID: CCU Title: MIMICS DISPLAY Sample Time: 2009.058.00.38.35.011 Workstation: hpws25



DS: 65535 ID: CCU_HE Title: MIMICS DISPLAY Sample Time: 2009.058.00.38.45.011 Workstation: hpws25



nominal redundant



Quick ID	Plotted Parameter	Value	Timestamp	Validity	Axis	Pen style
A	WM107565 (Eng)	0.01049	2009.058.00.51.18.971	Valid	Def.	
B	[illegible] (Eng)	[illegible]	[illegible]	Valid	Def	

during Spire SFT. 26-27/2/09

Connectors that are shaded YELLOW are connected to the CCU.
Connectors with no shading are connected to the Cryo SCOE

	SCOE Connector	Spacecraft Connector	CCU	Sensors Allocated to the Spacecraft Connectors															
X	J07, J15	315100-J01	Cryo-SCOE Cryo-SCOE	T117 (C100)	T118 (C100)	T207 (PT1000)	T211 (PT1000)	T238 (PT1000)	T239 (PT1000)	T249 (PT1000)	T251 (PT1000)	T253 (PT1000)	T255 (PT1000)	T423 (PT1000)	T443 (PT1000)	T463 (PT1000)	T851 (PT1000)	T852 (PT1000)	T853 (PT1000)
X	J01, J17	315100-J03	Cryo-SCOE Cryo-SCOE	T702 (C100)	T872 (C100)	P101	T103 (PT1000)	T115 (PT1000)	T116 (PT1000)	T704 (PT1000)	T802 (PT1000)	T803 (PT1000)	T805 (PT1000)	T806 (PT1000)	T871 (PT1000)				
	J14	315100-J05	CCU-A	T331 (PT1000)	T333 (PT1000)	T335 (PT1000)	T337 (PT1000)	T339 (PT1000)	T341 (PT1000)										
	J10	315100-J06	CCU-B	T332 (PT1000)	T334 (PT1000)	T336 (PT1000)	T338 (PT1000)	T340 (PT1000)	T342 (PT1000)										
	J20	316100-J01	CCU-A	VS501	VS504	V501	V504												
	J20	316100-J02	CCU-B	VS503	VS505	V503	V505												
	J11	321100-J01		L701	H701	V105	V701												
	J03	321100-J02		L702	H702	V702													
	J06	321100-J03		H502	H503														
	J01	321100-J04		P501															
X	J11	321100-J05	Cryo-SCOE Cryo-SCOE	H103	H701	L102	VT102 (PT1000)	VT103 (PT1000)	VT105 (PT1000)	VT701 (PT1000)	VH102	VH103	VH105	VH701	VS102	VS105	VS701	V102	
X	J03	321100-J06	Cryo-SCOE Cryo-SCOE	H104	H702	L101	VT104 (PT1000)	VT106 (PT1000)	VT702 (PT1000)	VH104	VH106	VH702	VS104	VS702	V104				
	J06	321100-J07		H501															
	J01	321100-J08		T502 (PT1000)															
	J05	????		T601 (PT1000)	T602 (PT1000)														
	J08	321200-J01	CCU-A	T202 (C100)	T212 (C100)	T221 (C100)	T223 (C100)	T227 (C100)	T228 (C100)	T232 (C100)	T234 (C100)	T236 (C100)	T242 (C100)	T244 (C100)	T246 (C100)	T250 (C100)	T254 (C100)	T258 (C100)	T424 (PT1000)
	J04	321200-J02		T102 (C100)	T105 (C100)	T106 (C100)	T111 (C100)	PR_P701	T421 (PT1000)	T442 (PT1000)	T461 (PT1000)	H101							
	J09	321200-J03		T321 (PT1000)	T323 (PT1000)	T501 (PT1000)	T505 (PT1000)	T651 (PT1000)	T901 (PT1000)	T903 (PT1000)	T907 (PT1000)	T911 (PT1000)							
	J09	321200-J04		T312 (PT1000)	T314 (PT1000)	T316 (PT1000)	T905 (PT1000)	T909 (PT1000)	T931 (PT1000)	T933 (PT1000)	T935 (PT1000)								
	J04	321200-J05		VS103	H101	V103													
	J02	321300-J01	CCU-B	T208 (C100)	T213 (C100)	T222 (C100)	T224 (C100)	T225 (C100)	T226 (C100)	T231 (C100)	T233 (C100)	T235 (C100)	T237 (C100)	T247 (C100)	T248 (C100)	T252 (C100)	T256 (C100)	T862 (C100)	T444 (PT1000)
	J04	321300-J02		T101 (C100)	T104 (C100)	T107 (C100)	T112 (C100)	T703 (C100)	T422 (PT1000)	T441 (PT1000)	T462 (PT1000)	T701 (PT1000)	H102						
	J18	321300-J03		P502	T322 (PT1000)	T324 (PT1000)	T504 (PT1000)	T506 (PT1000)	T507 (PT1000)	T652 (PT1000)	T902 (PT1000)	T908 (PT1000)	T912 (PT1000)						
	J14	321300-J04		T311 (PT1000)	T313 (PT1000)	T315 (PT1000)	T904 (PT1000)	T906 (PT1000)	T910 (PT1000)	T932 (PT1000)	T934 (PT1000)								
	J04	321300-J05		VS106	H102	V106													
X	J18	CVSE I/F	Cryo-SCOE	CVSE I/F	CVSE I/F	CVSE I/F	CVSE I/F	CVSE I/F	CVSE I/F	CVSE I/F	CVSE I/F	CVSE I/F							

6 Appendix 3: Herschel PCDU & CDMS Nominal Switch On/Off Procedure As-Run Procedure

(re

f. HP-2-ASED-PR-0070, issue 5 + ACS: HP-2-ASED-SD-0471 Issue 1)

EADS astrium **Procedure** **Herschel**

AS RUN COPY
26/02/09
SPIRE CFT/SFT

Title: **Herschel PCDU & CDMS nominal switch on / off procedure**

CI-No:

Prepared by:	Functional AIT Team	Date 17th February 2009
Checked by:	C. Much C. Much	18/02/09
Product Assurance:	J. Hall	18/2/2009.
Configuration Control:	W. Wietbrock	
TASF Engineering	F. Chatte	19/2/2009
TASF Test Director	N/A	
Project Management:	Dr. W. Fricke / R. Hohn	19.02.09
Project Management:	D. Montet	19.02.09

Distribution: See Distribution List (last page)

Issue	Date	Sheet	Description of Change	Release
1	22.05.2007	All	Initial version	
2	17.07.2008	All	Cover page - new Section 7.5 – Power On Update Section 7.7 – Power Off Update Distribution list – new	
3	19.08.2008	All	Location / Operator / PA / Date footer added Section 7.5 - Power On GUI added Section 7.7 – Power Off Update	
4	27.01.2009	All	Section 7.5 – Added Critical Param Check CCU switch on SSMM Option Section 7.7 – Added CCU & SSMM Off	
5	17.02.2009	All	Section 7.5 – Add options to define packet store, load OBCPs and initialise OBQ Section 7.7 – Add options to dump packet stores, delete packet store, and stop MTL	

Table of Content

1 Scope

1.1 Objective

This Procedure represents the nominal Herschel PCDU & CDMS switch on / off procedure to support electrical integrations and electrical tests.

1.2 Operational Flow

In paragraph 7 is provided the detailed step-by-step test procedure.

2 Documents/Drawings

2.1 Applicable Documents

The following documents form a part of this document to the extent specified herein. Unless an issue is quoted for a document, the current issue is deemed to apply. When an issue is quoted, this issue and no other must be used.

AD-1	Herschel / Planck EGSE – Service Module Configuration Commissioning Procedure	H-P-2-PR-AI-0039

2.2 Reference Documents

N/A

2.3 Other Documents

N/A

2.4 Acronyms

The following terms and definitions are specific to this document and to Herschel Project.

1553	MIL-STD-1553B conform communication interface
AAD	Attitude Anomaly Detector
ACC	ACMS Control Computer
ACMS	Attitude Control and Measurement Subsystem
AIR	ACC In Reconfiguration
AIT	Assembly, Integration and Test
AIV	Assembly, Integration and Verification
APID	Application Process ID
ASW	Application Software
AVM	Avionics Model

BSW	Basic Software
CBH	Cathalyst Bed Heater
CCS	Central Check-out System
CCSDS	Consultative Committee for Space Data Systems
CDMU	Control and Data Management Unit
CDMS	Control and Data Management Sub-system
CIR	CDMU In Reconfiguration
CLCW	Command Link Control Word
CLTU	Command Link Transmission Unit
CPDU	Command Pulse Distribution Unit
CRS	Coarse Rate Sensor
CTR	Central on board Reference Time
EEPROM	Electrically Erasable PROM
EGSE	Electrical Ground Support Equipment
FCL	Fold-back Current Limiter
FCV	Flow Control Valves
FDIR	Failure Detection, Isolation, and Recovery
GDIR	General Design and Interface Requirement
GRP	Group Heaters Switch
HBR	High Bit Rate
HL/HLC	High Level command
HP/HPC	High Priority commands
HPSDB	Herschel Planck System Data Base
HW	Hardware
I/F	InterFace
I/O	Input/Output
ICD	Interface Control Document
IST	Integrated System Test
LV	Latching Valves
LBR	Low Bit Rate
MAP	Multiplexed Access Point
MBR	Medium Bit Rate

ML 16	Memory Load command (ML 16)
MM	Memory Module
MOIS	Mission Operations Information System
MTL	Mission Timeline
NRZ-L	Non Return to Zero – Litton
OBCP	On-Board Control Procedure
OBDH	On-Board Data Handling
OBMF	On-Board Monitoring Function
OBRT/OBT	On-Board Reference Time
OIRD	Operation Interface Requirement Document
P/L	Payload
PCDU/PCS	Power Control Distribution Unit/Power Control Subsystem
PM	Processor Module
PROM	Programmable Read Only Memory
PSK	Phase Shift Keying
RA	Rate Anomaly
RAM	Random Access Memory
RCS	Reaction Control Subsystem
RF	Radio Frequency
RM	Reconfiguration Module
RT	1553 Remote Terminal
RWL	Reaction Wheel Assebly
SA	1553 Remote Terminal Sub Address
SAS	Sun Acquisition Sensor
SCOE	Special Check-out Equipment
SIR	S/C In Reconfiguration
SIT	Subsystem Integrated Test
SP	Sun Pointing
SSMM	Solid State Mass Memory
STR	Star Tracker
SVM	Service Module
SW	Software

TAI	International Atomic Time
TC	TeleCommand
TFG	Transfer Frame Generator
TM	TeleMetry
TTC	Telemetry Tracking & Command subsystem
TTR	Telemetry Telecommand and Reconfiguration
UFT	Unit Functional Test
VC	Virtual Channel
WD	Watchdog

3 Requirements to be verified

N/A

4 Configuration

4.1 Herschel S/C Configuration

4.1.1 Hardware Configuration

The activities described in this test procedure require the complete SVM configuration.

4.1.2 Software Configuration

The PCDU & CDMS Switch On / Off will be run with the following on-board software configuration:

- CDMS OBSW: the actual SW version shall be used

4.1.3 Test Configuration

N/A

4.1.4 Simulated Equipments

N/A

4.2 Set-up

N/A

5 Conditions

5.1 Personnel

Responsibility	Name / Organization
EGSE Operator	

5.2 Environmental

N/A

5.3 General Precautions and Safety

5.3.1 General Safety Requirements, Precautions

Special condition and hazards

The following Operational restrictions shall be carefully taken into account:

- In case of any failure, the activities shall be stopped until troubleshooting plan is generated and approved.

5.3.2 ESD constraints

N/A

5.3.3 Special QA Requirements

N/A

5.4 GSE

5.4.1 MGSE

N/A

5.4.2 CVSE

N/A

5.4.3 EGSE

5.4.3.1 EGSE Hardware Configuration

S/S	Unit	Configuration			SCOE simulated eqpts	Remarks
		Herschel				
EGSE	CCS	1				
	TM/TC DFE	1				
	POWER SCOE	1				

5.4.3.2 EGSE User Software

- CCS the actual SW version shall be used
- TMTC DFE the actual SW version shall be used
- BS SOE the actual SW version shall be used
- LPS/SAS SCOE the actual SW version shall be used
- HPSDB the actual SW version shall be used

5.4.3.3 Grounding Configuration

N/A

5.4.3.4 Test Equipment

N/A

5.4.3.5 Data Acquisition System

N/A

5.4.4 OGSE

N/A

5.4.5 Special Equipment

N/A

6 Verification Requirements and Test Criteria

N/A

7 Step by Step Procedure

7.1 CCS login, session start up and standard operator HCI set up

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
10	Verify the S/C Switch-On sheet (at the window), if S/C (PCDU & CDMS) is allowed to be switched on	Pass					
20	Make initial entries into the Logbook • Page • Date • Operator name • Test Session – and Test Environment Name should be added during step 60 • Planned activity incl. procedure reference number	Pass					
30	Verify "Red Hat Login window" is displayed and ready for login at • on both operator double screen workstations	Pass					
	At rightmost double screen workstation (left screen)						
40	Perform Log on as Test Conductor to the CCS system at both operator double screen workstations and write into the "Remarks" column • Username: heregse or hercdmu (during IST) • Password: hertest hertest	Pass					

Test location:	Operator	Product-Assurance:	Date: Time:

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
50	Open the "Session Manager System Window" HPCSS • click (1x) on the desktop icon "Start MMi" • verify if a.m. window appears	Pass					
60	Open the "Session Manager Execution Window" REALTIME for starting a Test Session • from "Session Manager System Window" HPCSS Execution → Start • verify if a.m. window appears.	Pass					
70	Prepare start of a Test Session in the "REALTIME Window" • select in field "Test Environment Name" the default Test Environment "HEAD" or • another Test Environment name if required for the specific Integration or Test	Pass					
80	Start the Test Session in the "REALTIME Window" • Click on "Start" button • Update logbook with Test Session and Environment name • Wait for ca. 4 minutes • verify Status in "Session Manager System Window" HPCSS changes from INIT to RUN	Pass					
90	Verify Session Status in the "REALTIME Window" • RUN and NOT	Pass					

Test location:	Operator	Product-Assurance:	Date:	Time:

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
100	Connect to an already running Test Session • in the "REALTIME Window" click on Join button • verify on the CCS Desktop that a top banner SCOS 2000 and a bottom LOG window appears • verify Session Status in the "REALTIME Window" RUN-RUN	Pass					
110	To avoid unintentionally stop a the running test session • minimize the "Session Manager System Window" HPCSS	Pass					
120	Configure the HCI: From the "Session Manager Execution Window" REALTIME • open "HPCSS Test Conductor Console Window" with Desktop -> Test Sequences -> Console and move window to upper left corner • open the "SCOS 2000 Command History Window" with Desktop -> Commanding -> Command History, resize the window (smaller) and put it at the bottom	Pass					

Test location:	Operator	Product-Assurance:	Date: Time:

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	At rightmost double screen workstation (right screen)						
130	Configure the HCI From the "Session Manager Execution Window" REALTIME • open "Telemetry Packet History Display" with Desktop -> Monitoring -> Packet History -> LIVE, resize window (smaller) and put at top of screen • open "Telemetry Packet History Display" with Desktop -> Monitoring -> Packet History -> STOP, Set Filter APID=16 -> LIVE, resize window (smaller) and put at middle of screen • open "Onboard Event Display Window" with Desktop -> Monitoring -> Onboard Event History -> LIVE, resize window (smaller) and put at bottom of screen	Pass					
	At leftmost double screen workstation (left screen)						
140	Perform Join to a running Test Session (1) • Open the "Session Manager System Window" HPCSS by click (1x) on the desktop icon "Start Mmi" • verify if a.m. window appears	Pass					

Test location:	Operator	Product-Assurance:	Date: Time:

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
150	Join a running Test Session (2) • from "Session Manager System Window" HPCSS with Execution -> Join • minimize HPCSS window to avoid unintended stop of session	Pass					
160	Join a running Test Session (3) • From the "Session Manager Execution Window" REALTIME click on Join • Wait for Session Status RUN-RUN	Pass					
170	Configure the HCI From the "Session Manager Execution Window" REALTIME • open "Telemetry Desktop Window" with Desktop -> Monitoring -> Monitoring Desktop -> MIM (Synoptics) • select Power (UL) GEN_POWER -> Apply • select LCL (UR) LCL_HERSCHEL -> Apply • select Heaters & FCL (LL) HEATERS -> Apply • select SAT (LR) SAT -> OK • click on Resize -> Large medium • click on List -> available synoptics shown • click on 4 (right of List) • click on List • resize 4 Large	Pass					

Test location:	Operator	Product-Assurance:	Date: Time:

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	At leftmost double screen workstation (right screen)						
180	Configure the HCI From the "Session Manager Execution Window" REALTIME • open "Telemetry Window" with Desktop -> Monitoring -> Monitoring Desktop -> AND (Alpha Numeric) and select all essential low / high HK • select TM/TC DFE HK parameters 1-3: YAHK 1946, 2946, 3946 -> Apply • select BS SCOE HK parameters: YAHK1956 -> Apply • select LPS SCOE HK parameters 1-2, 2-2: YAHK1952, 2952 -> OK • click on List • Resize 4 large	Pass					

Test location:	Operator	Product-Assurance:	Date: Time:

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
190	Switch on Bus Monitor at CDMU SCOE Workstation (set-3) Verify at TM/TC rack in MIL-1553B BUS if Monitor is switched on (green light)? User H-P_user Password H-P IF Monitor not already running, click 2x on Shortcut to StartBM.bat Verify that MIL-STD-1553b Bus Monitor and Raw Data windows appear MIL-STD -> Mode -> On-line Mode MIL-STD -> Mode -> Start New Acquisition						

Test location:	Operator	Product-Assurance:	Date: Time:

7.2 TM/TC DFE nominal switch on

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	At the TM/TC DFE rack						
10.	Switch on the "Insulation Transformer" (at bottom left, if not already ON) Note: Sometimes it is necessary to switch on also the bottom mid breaker	Pass					
	At the TM/TC DFE PC						
20.	Switch on the "User Workstation" (black button) Verify the boot is successfully completed	Pass					
	At the TM/TC DFE rack						
30.	Switch on the External Interface Unit „EIU".	Pass					
40.	During system power-up verify the LED's on the EIU Front Panel come on and He TM/TC EIU … at screen	LED's On					
50.	Switch on the TM/TC "Baseband Processor" and wait for it to boot. (Kippschalter)	Pass					

Test location:	Operator	Product-Assurance:	Date:	Time:

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
60.	During system power-up verify that multiple LED's on the TM/TC "Baseband Processor Front Panel" will light. Wait until number of lighting LED`s is reduced.	LED's On					
	At the TM/TC DFE PC						
70.	Log-on as User: H-P_User Password: H-P	Pass					
80.	Start ikon SysCtrl.exe Verify that the TM/TC DFE CMS software is automatically started.	Started					
90.	Bring "System Status Window" into front. From the "System Status Window" → System Page → System State Box → Operation Mode Verify that this label is set to 'Off-line'.	Offline					
100.	From the "System Status Window" → System Page → System State Box → Control Mode Verify that this label is set to 'Remote'.	Remote					
110.	From the "System Status Window" → System Page → System State Box → Last System BIST Result, Verify that this label is set to 'Passed'.	Passed					

Test location:	Operator	Product-Assurance:	Date: Time:

7.3 BS SCOE nominal switch on => in Cleanroom

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	At the BS SCOE rack (right)						
10.	Switch on the SCOE rack power (key, down left)	OK					
	At the BS SCOE PC (left)						
20.	Switch on the SCOE controller and wait until the boot of the operating system is finished	OK					
30.	Log in as SCOE user. Username: hpp Password: HPP_us -> GO	OK					
40.	Start the SCOE application by clicking on the SCOE icon (H-P BS) (1x)	OK					
50.	On the popped up H-P BS SCOE window "Startup parameters" select the value for • Payload Model: HERSCHEL • Startup method: NORMAL -> OK	Pass					
60.	Verify in the H-P BS SCOE window the SCOE State is "LOCAL"	OK					

Test location:	Operator	Product-Assurance:	Date: Time:

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
70.	Verify in the H-P BS SCOE window the S/C interface is "OFFLINE" Wait for 100 % Selftest: PASSED	OK					

7.4 LPS/SAS SCOE nominal switch on => in Cleanroom

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	At the SAS SCOE rack						
10.	Switch on the MITU on front panel of the rack 1 (black button, down left)	OK					
20.	Switch on the rack 2 and the rack 3, pressing the green button on the front side of the racks (bottom of 2, top of 3)	OK					
30.	Switch on the ELGAR SAS controller Slave (bottom) and wait 20 sec. Draw and open the rack 2 ELGAR Monitorscreen at rack 2 (mid)	OK					
40.	Switch on the ELGAR SAS controller Master (up)	OK					

Test location:	Operator	Product-Assurance:	Date: Time:

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	At the SAS SCOE PC						
50.	Switch on the PC workstation Note: sometimes it may take longer, due to scan disc	OK					
60.	Login as "Normal LPS SCOE operator" User: hpp Password: HPP_us -> GO	OK					
70.	Verify at the ELGAR Master PC Monitor (rack 2) if LPS/SAS SCOE is started. Application is correct when screen shows all values in a matrix.	OK					
80.	Start the LPS/SAS SCOE Application SW by clicking on the "H-P LPS" icon (1x)	OK					
90.	Into the "Startup Parameter" window select • Payload model: Herschel • Startup method: NORMAL -> OK.	OK					
100.	Into the "Operator Comment" window confirm the installed harness is the same of the S/C model selected, type in "yes" -> OK	OK					
110.	Verify the SelfTest, connections, etc. is started and wait until it is 100% finished. (ca. 10 min)	OK					

Test location:	Operator	Product-Assurance:	Date:	Time:

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
120.	Verify into the "H-P LPS SAS SCOE" main window the following fields: • Selftest State: Passed (green coloured). • SCOE State: LOCAL • SCOE activity: IDLE • S/C interface: ISOLATED	OK					

Test location:	Operator	Product-Assurance:	Date: Time:

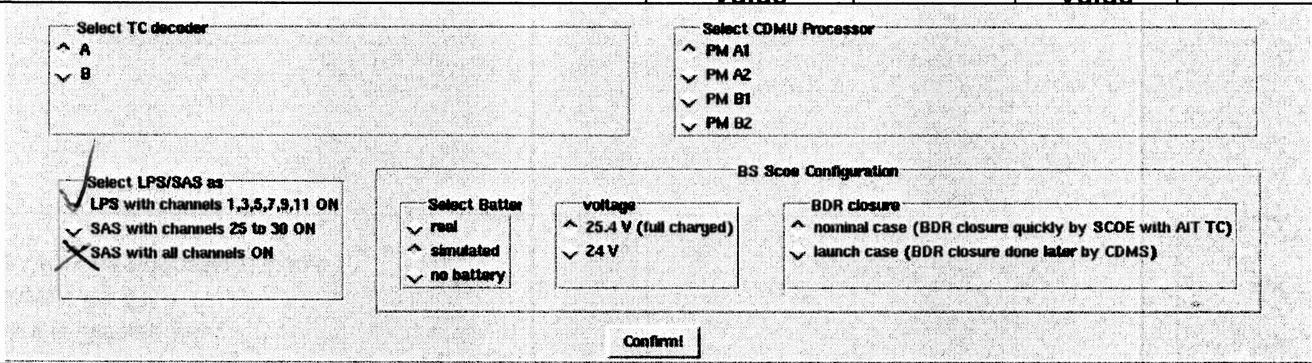
7.5 S/C Power ON

7.5.1 PCDU & CDMS Power ON

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
10.	From "HPCCS Conductor Console" window select File -> Start -> Select -> **Z010999MCVT001_POWER_ON_HER_IST** Select the following on the GUI: • TC Decoder = A • CDMU Processor = PM A1 • LPS/SAS = ~~SAS with all channels ON~~ LPS MODE • Battery = Simulated • Voltage = 25.4V • BDR Closure = Nominal Case	Confirm			changes as per ACS SD-0471	✓	

23:19

Test location: CSG	Operator: B. Chen	Product-Assurance: R. Goossens	Date: 260209	Time: 23:19

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
						✓	
20.	**Z010999MCVT001_POWER_ON_HER_IST** A Popup window occurs asking to verify data reception on TM/TC Data Front End workstation: In window "System Status", check following panels ➔ TM chain / TM Acquisition synchronised and locked Status expected ➔ View / TM Transfer Frame Monitor TM frame data should be received before few minutes ➔ click the button "OK" to proceed	OK				✓	

Test location:	Operator	Product Assurance:	Date:	Time:
CSG	B. Che	R. Goossens	26/2/09	23:58

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
30.	**Z010999MCVT001_POWER_ON_HER_IST** A Popup Window occurs asking to start a new acquisition in Bus Monitor with name IST on the CDMU SCOE: - start a new acquisition by clicking "Menu Mode/Start new Acquisition" If an acquisition is already started, please stop and restart ➔ click the button "OK" to proceed After few minutes Data transfer should be visible on the Bus Monitor.	OK				✓	
40.	**D102159SCVT001_GET_ALARM_STATUS** Check that both DOD ext1 and ext2 are "Not Asserted". Otherwise execute Operator Note 8 ➔ Click the button "End TS!" to proceed	End TS		End TS		✓	
50.	**D102159SCVT001_GET_ALARM_STATUS** Check that both DOD ext1 and ext2 are "Not Asserted". Otherwise execute Operator Note 8 ➔ Click the button "End TS!" to proceed	End TS		End TS		✓	

00:02

00:03

Test location:	Operator	Product Assurance:	Date:	Time:
CSG	B. Chen	R. Goossens	26/02/09	23:58

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N	
60.	**Z010999MCVT001_POWER_ON_HER_IST** ➔ click the button "YES" to proceed	YES		yes		✓		
70.	**Z010999MCVT001_POWER_ON_HER_IST** ➔ Click the button "End TS!" to proceed	End TS		end TS		✓		00:05
80.	**D102159SCVT032TIMESYNCRO** Wait until the synchronization between CDMS On-board Time and CCS is finished ➔ Click the button "End TS!" to proceed	End TS		End TS		✓		0:12
90.	From "HPCCS Conductor Console" window select File -> Start -> Select -> **Z010999MCVT 097_ASDGEN_CRIT_PARS_CHECK**	OK		OK	Script will continue to monitor in the background	✓		0:15

Test location:	Operator	Product-Assurance:	Date:	Time:
CSG	B Chen	R. Goossens	27.02.09	10:0

7.5.2 CCU Power ON

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
10.	If required, perform the following to switch on the CCU From "HPCCS Conductor Console" window select File -> Start -> Select -> **K102999ECVT001_ASDGENCCU_ABPWRON**	OK		OK	If this step has been performed then step 20 & 30 must be performed also.	✓	
20.	If the CCU is on, the required monitoring mode should be enabled by calling **K102999ECVT001_ASDGENCCU_MnEBOTH1** **(For Mode 1 – 512secs)** or **K102999ECVT001_ASDGENCCU_MnEBOTH2** **(For Mode 2 – 8secs)**	OK		OK		✓	

0:20

0:32

Test location:	Operator	Product Assurance:	Date:	Time:
	B. ch	R. Goossens	27/2/09	0:32

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
30.	If the CCU is on, perform the following script to log temperatures **K102999ECVT031_ASDGEN_CCU_LOG**	OK		OK	Script will continue to log in the background	✓		0:33
40.	If required, connect to the CRYO SCOE by executing the following command from the Test Conductor Console connect PFM_CRYO	OK		OK		✓		0:35

Test location:	Operator	Product-Assurance:	Date:	Time:
CGS	B. che	R. Goossens	27/2/09	0:34

7.5.3 SSMM Power ON

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
10.	If required, perform the following to initialise the SSMM From "HPCCS Conductor Console" window select File -> Start -> Select -> **Z010999MCVT005_IST_START_SSMM** **Option 0 (A0 & B0)**	OK 0 Confirm			If performed then the Pkt Store Definition must be run in step 50		
20.	**D102159SCVT186_IST_SSMM_ON** **Reply to the prompt "Do you want to continue" "with such configuration?"** Click the button "Continue" to proceed	Continue					
30.	**D102159SCVT186_IST_SSMM_ON** ➔ Click the button "End TS!" to proceed	End Ts					

N/A

Test location:	Operator	Product-Assurance:	Date: Time:

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
40.	**Z010999MCVT005_IST_START_SSMM** **If Required the upload the OBCPs** Reply to the prompt: **"OBCP UPLOADING"** ➔ Click the button "Confirm" to proceed	Confirm			occurrence of 2 BSW problems EvtID 30738 expected when starting OBCP Management for the 1st time.		
50.	**Z010999MCVT005_IST_START_SSMM** Reply to the prompt: **"Definition of the Packet Store"** Click the button "Confirm" to proceed				Must be performed if the Mass Memory is on		
60.	If only 1 Bank (bank 0, 1, 2 or 3) is initialised on each SSMM **D102159SCVT185_IST_PACKET_STORE_DEF** When the requested SSMM bank are initialised Click the button "Yes" to proceed						
80	**Z010999MCVT005_IST_START_SSMM** Reply to the prompt: **"Initialise MTL Service Buffers"** Click the button "Confirm" if required otherwise "Skip"						
90	**D102159SCVT209_START_ON_BOARD_SCHEDULE** Click the button "End TS!" to proceed						

Test location:	Operator	Product-Assurance:	Date: Time:

100	**D102159SCVT193_IST_UPLOAD_OBCP** ➔ Click the button "End TS!" to proceed						
110	**Z010999MCVT005_IST_START_SSMM** Click the button "End TS!" to proceed						

Test location:	Operator	Product-Assurance:	Date: Time:

7.6 Perform Corresponding Procedure

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
10.	Perform corresponding procedure and then return here to switch off	OK		OK		OK	

Test location:	Operator	Product-Assurance:	Date:	Time:
CSG S1			27/02/09	08:47

7.7 S/C Power OFF

7.7.1 CCU Power OFF

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
10.	If the CCU has been switched on From "HPCCS Conductor Console" window select File -> Start -> Select -> **K102999ECVT001_ASDGENCCU_ABPWROF**	OK		OK		OK	

Test location:	Operator	Product-Assurance:	Date:	Time:
ESG S1.			27/02/09	08:53

7.7.2 SSMM Power OFF

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
10	Verify the MTL is stopped by checking TM DEH26170 If "Running" send the following TC **DC91F170 : StopOnBoardSched**						
20	Verify the OBCP is stopped by checking TM DEH36170 If "Running" send the following TC **DCN04170 : StopObcpManager**						
30	If the SSMM has been switched on From "HPCCS Conductor Console" type the following to dump the Pkt stores **D102159SCVT188_IST_DUMP_PKT_STORE 0 80 1 81 2 82 3 83 CEL_A CEL_B**	OK			Tm Rate can be increased to 1.5Mbps by sending DC27F170 To save redundant packet stores (80, 81, 82, 83) can be omitted if not required.		

Test location:	Operator	Product-Assurance:	Date:	Time:

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
40	If the SSMM has been switched on From “HPCCS Conductor Console” window select File -> Start -> Select -> **D102159SCVT181_DISABLE_PKT_STORE**	Continue EndTs					
50	If the SSMM has been switched on From “HPCCS Conductor Console” window select File -> Start -> Select -> **D102159SCVT187_IST_SSMM_OFF**	Continue EndTs					

N A

Test location:	Operator	Product-Assurance:	Date: Time:

7.7.3 CDMS & PCDU Power OFF

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
10	From “HPCCS Conductor Console” window select File -> Start -> Select -> **Z010999MCVT002_POWER_OFF_HER_IST**	Pass		Pass		OK	
20	**D012159SCVT001_PM_SELECT** Click the button "End TS!" to proceed	End TS		ETS		OK	
30	**Z010999MCVT001_POWER_ON_HER_IST** ➔ Click the button "End TS!" to proceed	End TS		ETS	9:46	OK	

Test location:	Operator	Product-Assurance:	Date:	Time:
CSG	WS DAVIS	[illegible]	27-2-09	9:46

7.8 LBS/SAS SCOE nominal switch off => in Clean-room

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	At the LBS/SAS SCOE PC (right)						
10.	Verify into the "H-P LPS SAS SCOE" main window the following fields: • SCOE State: LOCAL • SCOE activity: IDLE • S/C interface: ISOLATED	OK					
20.	Into the "H-P LPS SAS SCOE" main window select the menu option File → RackShutdownExit	OK					
30.	Into the "Logout confirmation" window select "Go OFFLINE/Isolate S/C" and click "Logout". Press Shutdown. (Note: This takes a while to complete, ca. 5 min)	OK					
40.	Verify the application is stopped.	OK					
	At the LBS/SAS SCOE rack						
50.	After the monitor in the rack is switched off, switch off both the ELGAR controller PCs.	OK					
60.	Shutdown and switch off the PC workstation.	OK					
70.	Switch off the rack 3 (button at top of rack – also switches off rack 2)	OK					
80.	Switch off the rack 1 (the MITU), button at bottom left	OK					

Test location:	Operator	Product-Assurance:	Date:	Time:

7.9 BS SCOE nominal switch off => in Clean-room

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	At the BS SCOE PC (left)						
10.	Verify the BS SCOE is in OFFLINE mode.	OK	OK				
20.	Verify the BS SCOE is in LOCAL mode.	OK					
30.	Stop the application, selecting the menu File → Exit, from the BS SCOE main window.	OK					
40.	On the popped up window “Log out confirmation” select the button “Go OFFLINE / Isolate S/C” and then click the “Log out” button.	Pass					
50.	Verify the main window disappears.	OK					
60.	Log off the system.	OK					
	At the BS SCOE rack						
70.	Switch off the BS rack by turning key at bottom left	OK					

Test location:	Operator	Product-Assurance:	Date: Time:

7.10 TM/TC DFE nominal switch off

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	At the TM/TC DFE PC						
10.	From the "System Status Window" → System Page → System State Box → Control Mode Verify that this label is set to 'Local'. If not, command it (password: H-P).	Local					
20.	From the System Status Window → System Page → System State Box → Operation Mode Verify that this label is set to 'Offline'. If not, command it.	Offline					
30.	Stop the CMS application, from the menu File → Exit.	Pass					
40.	The Exit System window appears.	Pass					
50.	Select Platform Shutdown, CMS Shutdown and click OK.	Pass					
60.	Shutdown the Workstation.	Pass					
	At the TM/TC DFE rack						
70.	Switch off each unit of the TM/TC FE individually, in any order.	Pass					

Test location:	Operator	Product-Assurance:	Date: Time:

7.11 CCS HCI close, session stop and logoff

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
10.	From the the "Session Manager Execution Window" REALTIME press the Leave button to disconnect from the running Test Session. Wait until into the Session fields RUN-NOT are displayed	Pass					
20.	From the "Session Manager Execution Window" REALTIME press the Stop button to stop the currently running Test Session. Verify that in the Realtime window into the Session fields NOT-NOT are displayed and into the System window the Status is NOT.	Pass					
30.	From the "Session Manager Execution Window" REALTIME, select the menu button Execution → Close. Verify the window disappears.	Pass					
40.	From the "Session Manager System Window" HPCSS, select the menu button System → Quit... Verify the window disappears.	Pass					
50.	Close all remaining HCI windows	Pass					

Test location:	Operator	Product-Assurance:	Date: Time:

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
60.	Execute the System Logout from the KDE Start menu. Verify the Red Hat login window appears.	Pass					
70.	If not used anymore, switch off any other workstation (also in Cleanroom).	Pass					
80.	Switch off all workstation screens	Pass					
90.	Make an entry into the Logbook, that the S/C is powered off	Pass					
100.	Make a Printout of Script/Command History executed during the day and put it into the Logbook	Pass					

Test location:	Operator	Product-Assurance:	Date:	Time:

END OF DOCUMENT

	Name	Dep./Comp.		Name	Dep./Comp.
	Baldock Richard	FAE12	X	Sonn Nico	ASG51
	Barlage Bernhard	AED13		Steininger Eric	AED321
	Bayer Thomas	ASA42	X	Stritter Rene	AED11
	Brune Holger	ASA45		Suess Rudi	OTN/ASA44
	Chen Bing	HE Space	X	Theunissen Martijn	DSSA
	Davis William	Captec	X	Vascotto Riccardo	HE Space
	Edelhoff Dirk	AED21		Wagner Klaus	ASG23
	Fehringer Alexander	ASG15		Wietbrock Walter	AET12
X	Fricke Wolfgang Dr.	AED 65		Wöhler Hans	ASG23
	Geiger Hermann	ASA42		Wössner Ulrich	ASE252
	Grasl Andreas	OTN/ASA44		Zumstein Armin	AED15
	Grasshoff Brigitte	AET12			
X	Hamer Simon	Terma			
	Hanka, Erhard	FI522			
X	Hendrikse Jeffrey	HE Space			
	Hendry David	Terma			
	Hengstler Reinhold	ASA42			
	Hinger Jürgen	ASG23			
X	Hohn Rüdiger	AED65			
X	Hopfgarten Michael	AET32			
	Huber Johann	ASA42			
	Hund Walter	ASE252			
X	Idler Siegmund	AED312			
	Ivády von András	FAE12			
	Jahn Gerd Dr.	ASG23			
	Jolk Matthias	AET1	X	ESA/ESTEC	ESA
	Klenke Uwe	ASG72	X	Thales Alenia Space Cannes	TAS-F
X	Kölle Markus	ASA43	X	Thales Alenia Space Torino	TAS-I
	König Werner	AET32			
X	Koppe Axel	AED312			
X	Kroeker Jürgen	AED65		**Instruments:**	
X	La Gioia Valentina	Terma		MPE (PACS)	MPE
	Lang Jürgen	ASE252		RAL (SPIRE)	RAL
	Langenstein Rolf	AED15		SRON (HIFI)	SRON
	Langfermann Michael	ASA41			
	Leitermann Stefan	AET12			
	Liberatore Danilo	Rhea		**Subcontractors:**	
	Martin Olivier	Altec		Austrian Aerospace	AAE
X	Maukisch Jan	ASA43		Austrian Aerospace	AAEM
X	Much Christoph	ASA43		BOC Edwards	BOCE
X	Müller Martin	ASA43		Dutch Space Solar Arrays	DSSA
	Pietroboni Karin	AED65		EADS Astrium Sub-Subsyst. & Equipment	ASSE
	Reichle Konrad	ASA42		EADS CASA Espacio	CASA
	Runge Axel	OTN/ASA44		EADS CASA Espacio	ECAS
	Saal Christoph	External		European Test Services	ETS
X	Schink Dietmar	AED321		Patria New Technologies Oy	PANT
	Schmidt Thomas	AED15		SENER Ingenieria SA	SEN
	Schweickert Gunn	ASG23		Thales Alenia Space, Antwerp	TAS-ETCA

Location : ESTEC	Title: Manual operation of BDR's during failure investigation on the LPS/SAS SCOE		
Facility : Class 100000	Model: PFM	Subsystem:	Date: 26 February 2009
	Test Conductor: I.Luck		NCR Ref: NCR-4913
CI No 120000	Prepared By: I.Luck		CIL No:

Scope:

This ACS details the actions to switch on the spacecraft with the BS SCOE alone and via manual operation of the BDR's in the SAS SCOE.

This ACS is only valid during the fault finding activities on the SAS SCOE in the S1B integration facility.

This procedure can only be used with a simple S/C switch-on using HP-2-ASED-PR-0070.

This ACS contains the following Annexes:

- Annex 1 : Procedure Variation Summary

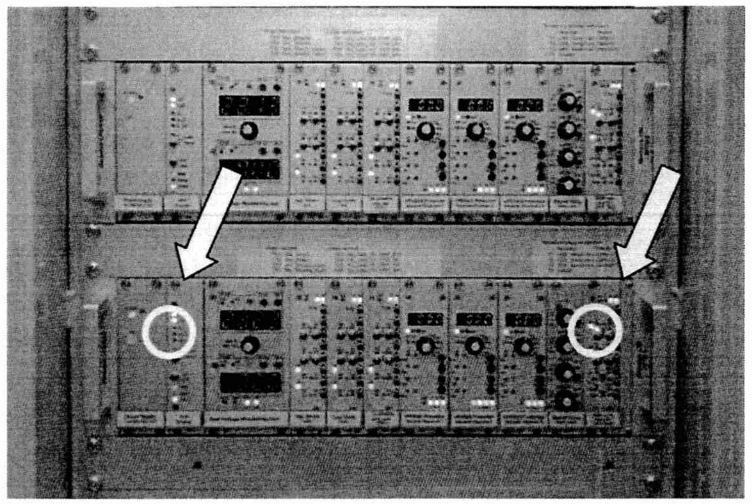
EGSE S/W As per leading procedure	**On-Board S/W** reference and Issue As per leading procedure
HPSDB: As per leading procedure	**Test Session ID:** As per leading procedure

Facilities required:	• No specific facilities.	
Personnel required:	• 1 Test conductor, • 1 Functional Test engineer, • 1 QA	
Safety and Hazards:	• Not applicable.	
Constraints:	Safety critical NCRs identified: None Blocking NCRs: None S/C configuration: None	

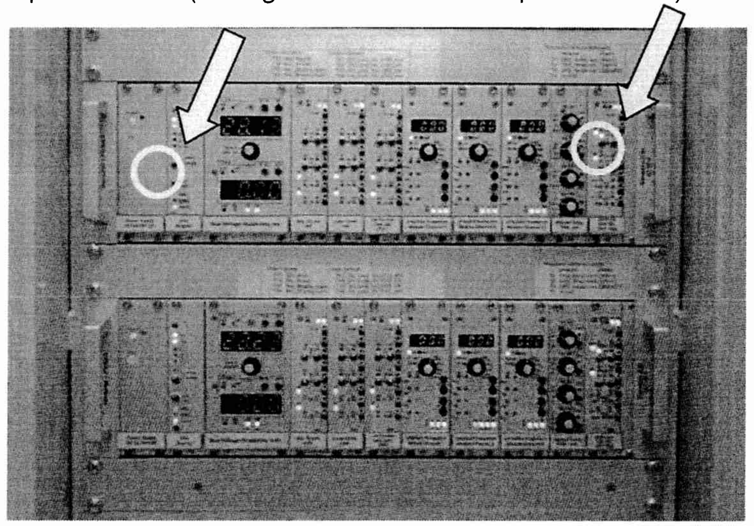
Release AIT:	Release SE:	ESA	Release PA/Safety:	Sign off (PA / QC / Team Leader)
for R.Hohn	Y.Roche	~~F.Wechsler~~	PA	

No:	Activity	Proc/Drg/Result	Responsible & sign off
<u>Spacecraft Switch-on Activities</u>			
1	Inform the Herschel floor manager of the start of activities of this ACS.	✓	
2	Ensure the SAS SCOE controller is physically disconnected from the CCS-SCOE LAN.	✓	
3	Ensure the SAS SCOE rack 1 is powered and that the two round BDR connectors (SK01BX11 & SK01BX12) at connected at the rear of the SAS SCOE.	✓	
4	Ensure the umbilical cables are connected to the Spacecraft via feed-through testboxes. In the test boxes the following pins should be strapped through the testboxes : - HU1J01 : pin 18 (Primary TC Data) - HU1J01 : pin 35 (Primary TC Data) - HU1J01 : pin 19 (Primary TC Clock) - HU1J01 : pin 36 (Primary TC Clock) - HU1J01 : pin 17 (Primary TC Enable) - HU1J01 : pin 34 (Primary TC Enable) - HU1J01 : pin 31 (Primary TM Data) - HU1J01 : pin 52 (Primary TM Data) - HU1J01 : pin 32 (Primary TM Clock) - HU1J01 : pin 33 (Primary TM Clock) - HU2J01 : pin 18 (Redundant TC Data) - HU2J01 : pin 35 (Redundant TC Data) - HU2J01 : pin 19 (Redundant TC Clock) - HU2J01 : pin 36 (Redundant TC Clock) - HU2J01 : pin 17 (Redundant TC Enable) - HU2J01 : pin 34 (Redundant TC Enable) - HU2J01 : pin 31 (Redundant TM Data) - HU2J01 : pin 52 (Redundant TM Data) - HU2J01 : pin 32 (Redundant TM Clock) - HU2J01 : pin 33 (Redundant TM Clock)	✓	

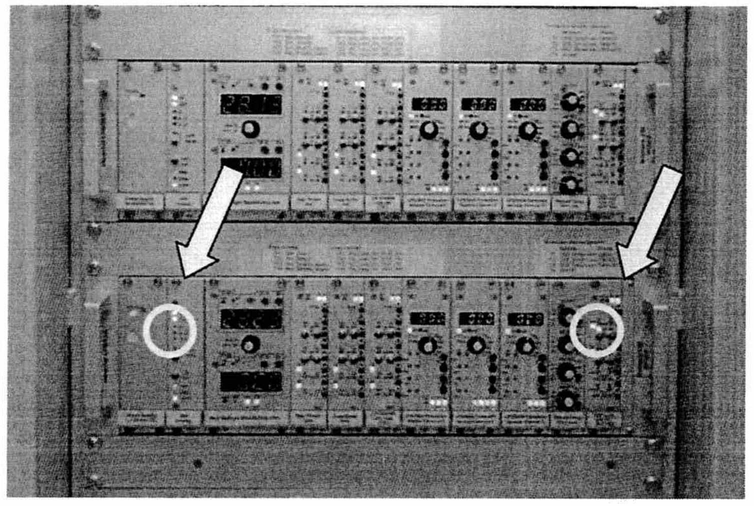
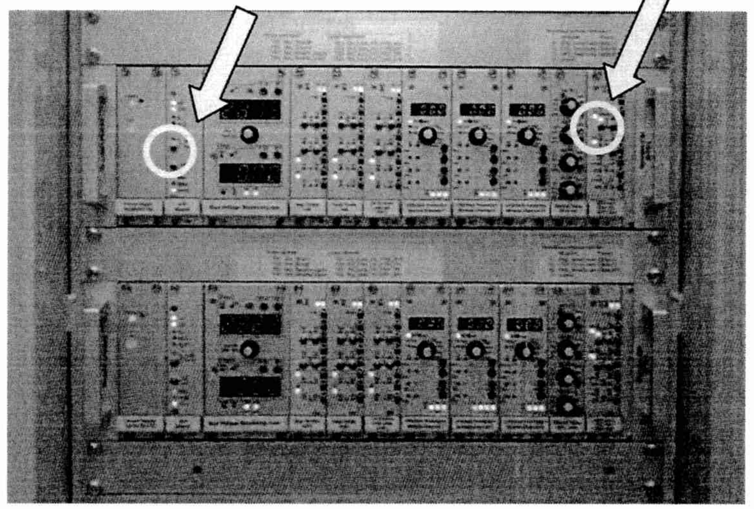
Sign off (ACS implementing engineer)	Sign off (QA)
	R. Goossens

No:	Activity	Proc/Drg/Result	Responsible & sign off
	In the test boxes the following pins (for the separation straps) should be short-circuited on the Spacecraft side of the testboxes : - HU1J01 pin 13 to HU1J01 pin 27 - HU1J01 pin 47 to HU1J01 pin 48 - HU1J01 pin 21 to HU1J01 pin 22 - HU1J01 pin 25 to HU1J01 pin 26 - HU2J01 pin 13 to HU1J01 pin 27 - HU2J01 pin 47 to HU1J01 pin 48 - HU2J01 pin 21 to HU1J01 pin 22 - HU2J01 pin 25 to HU1J01 pin 26	✓	
5	When running the HP-2-ASED-PR-0070 procedure, section 7.5, configure the system (via the displayed GUI) for LPS Mode, simulated battery, battery voltage of 25.4V, nominal BDR case.	✓	
6	Ignore errors (continue) on the CCS workstation for TC/TM displayed to the SASSCOE until the error message is be displayed for the remote operation of BDR1 via SAS SCOE command. Then perform the following manual operation on the SAS SCOE before continuing	PV	
7	At the front-panel of the SAS SCOE rack 1, on the unit Siemens CBI A110-1, push **and hold** the flip switch to **manual** (see left-hand arrow in the picture below) then push down the flip switch **TX1** (see right-hand arrow in the picture below).  This action switches-on the BDR prime. (TX2 led should be OFF and TX1 led should be ON).	✓ PV	

Sign off (ACS implementing engineer)	Sign off (QA)
	R. Goossens

No:	Activity	Proc/Drg/Result	Responsible & sign off
8	On the CCS workstation, select **CONTINUE**.	✓	
9	On the CCS workstation, when the error message is be displayed for the remote operation of BDR2 via SAS SCOE command, perform the following manual operation on the SAS SCOE before continuing.	✓	
10	At the front-panel of the SAS SCOE rack 1, on the unit Siemens CBI A110-2, push **and hold** the flip switch to **manual** (see left-hand arrow in the picture below) then push down the flip switch **TX1** (see right-hand arrow in the picture below).  This action switches-on the BDR redundant. (TX2 led should be OFF and TX1 led should be ON).	✓	
11	Remove the two round BDR connectors (SK01BX11 & SK01BX12) from the rear of the SAS SCOE.	✓	
12	On the CCS workstation, select **CONTINUE**.	✓	
13	Continue with the spacecraft operation/testing.	✓	
Spacecraft Switch-off Activities			
14	When an error is displayed on the CCS workstation wrt the disconnection of the BDR1 via SAS SCOE command, then perform the following manual operations on the SAS SCOE before continuing	✓	
15	Reconnect the two round BDR connectors (SK01BX11 & SK01BX12) to the rear of the SAS SCOE.	✓	
16	At the front-panel of the SAS SCOE rack 1, on the unit Siemens CBI A110-1, push **and hold** the flip switch to **manual** (see left-hand arrow in the picture below) then push down the	✓	

Sign off (ACS implementing engineer)	Sign off (QA)

No:	Activity	Proc/Drg/Result	Responsible & sign off
	flip switch **TX2** (see right-hand arrow in the picture below).  This action switches-off the BDR prime. (TX1 led should be OFF and TX2 led should be ON).	✓	[illegible]
17	On the CCS workstation, select **CONTINUE**.	✓	[illegible]
18	When an error is displayed on the CCS workstation wrt the disconnection of the BDR2 via SAS SCOE command, then perform the following manual operations on the SAS SCOE before continuing	✓	[illegible]
19	At the front-panel of the SAS SCOE rack 1, on the unit Siemens CBI A110-2, push **and hold** the flip switch to **manual** (see left-hand arrow in the picture below) then push down the flip switch **TX2** (see right-hand arrow in the picture below). 	✓	[illegible]

Sign off (ACS implementing engineer)	Sign off (QA)

No:	Activity	Proc/Drg/Result	Responsible & sign off
	This action switches-off the BDR redundant. (TX1 led should be OFF and TX2 led should be ON).	✓	GJD
20	On the CCS workstation, select **CONTINUE**.	✓	GJD
21	Continue with the spacecraft switch-off.	✓	GJD.
Emergency Spacecraft Switch-off			
22	In case of an emergency the Spacecraft can be rapidly switched-off by operating the round, red EMERGENCY OFF button at the bottom right of the BS SCOE	NOT USED	

Sign off (ACS implementing engineer)	Sign off (QA)

Annex 1 : Procedure Variation Summary

	Test Change		Curr. No.: Date Page of
Test designation: Preliminary Electrical Fit Check with Flight ACU	Test Procedure: HP-2-ASED-SD-449	Issue: 1	Rev.: B-draft
Test step changed	Reason for Change		

Prepared by:	Resp. Test Leader	Project Engineer
PA/QA	Prime	Customer

Sign off (ACS implementing engineer)	Sign off (QA)

7 Appendix 4: SPIRE LPU Check at CSG As-Run Procedure

(ref. HP-2-ASED-SD-0469, issue 1)

Location : ESA	Title: SPIRE LPU Check at CSG		
Facility : Class 100 000	Model: PFM	Subsystem: SPIRE	Date: 24/02/2009
	Test Conductor: S. Hamer	RAL: D. Griffin / S. Sidher	NCR Ref: N/A
CI No.: 125 200	Prepared By: A. Koppe/S. Hamer		CIL No:

Scope: This following procedure shall be executed to check (in order): - latch verification with DVM - the current drawn when the LLPU is enabled or disabled.	**Procedures and reference documents:-** Ref.1: SPIRE FM Short Functional Test Procedures: SPIRE-RAL-PRC-2398, iss. 2.5

Facilities required:	EGSE: CCS LL DVM	**Drawings:** none
Personnel required:	1 CCS Operator; 1 Test Conductor; 1 QA	**MASS:**
Safety and Hazards:	Cryostat harness connected to CCU	
Constraints:	Class 100 000 clean room EPLM mounted on SVM	

EGSE CCS SW version: 2.0-1317	**On-Board S/W:** CDMS ASW: Version: 3.8.0.1
HPSDB: LI-1441 Iss 28	SPIRE DPU ASW Version: 3.0.B

Release AIT: 25/02/09	Release SE:	Release PA/Safety:	Sign off (PA/QC/Team Leader):
Release Floor Manager: 25.02.09 A. Koppe	Release SPIRE Instrument / RAL:		

No:	Activity	Expected Value Before/During/After	Actual Value	Success/Failure	Responsible & sign off
01	Verify that the SCOE cable connection according to Appendix 1 is in place, ensure that S/C configuration sheet (Appendix 2) is inline with test to be performed and inform Floor Manager that ACS will start	OK	✓		
	LATCH VERIFICATION WITH DVM				
10	Ensure that ESD rules are respected and wrist strap is attached by the operator	OK	✓		
11	Open MLI for access to CB 312300	OK	left open		
12	Disconnect J01 and J02 from P01 and P02 on CB 312300, Integrate the connector of the 20 m long SPIRE test cable to the SVM-CB 312300 P01.	OK	✓		
13	Mate the 15 way adapter to the test cable, install the Break Out Box and connect the DVM between pins 3 and 10.	OK	✓ Grasl		
14	Check on DVM that the resistance indicates that the Mechanism is latched	±40 SDS (R = 173 ± ~~30~~ Ohm)	173,242 Ω R = ~~171,594 Ω~~		25.02.09 Grasl / Lang

No:	Activity	Expected Value Before/During/After	Actual Value	Success/Failure	Responsible & sign off
	TEST EQUIPMENT REMOVAL				
15	Disconnect the SPIRE test cable from P01 on CB 312300	ok	✓		
16	Re-connect P/J01 and P/J02 on CB 312300	ok	✓		
17	Closure of MLI as opened in step 02 above	—	left open		AI => RUAG
	START OF SPIRE LPU CHECK				
22	If not already on configure EGSEs and switch ON SVM i.a.w. appendix 3 sections 7.1 – 7.5 (Ensuring PCDU-A is ON)	OK	already on		
	Perform SPIRE Prime LPU check according to sections 4.1.24 and 4.2.24 of Ref1 as follows: 27/02/05 00:43				
23	**Power on Prime LPU LCL (LCL#25)** Execute: **DC25D170**	**Status WM12B565 OFF/ON**	ON	State of LCL #25 switches to ON	

No:	Activity	Expected Value Before/During/After	Actual Value	Success/Failure	Responsible & sign off
24	Send HL command #5 (LPU Enable Prime) Execute: **DCT01170, DHT01170 = "CMD_ID_HLC5"**	Monitor TM: **WM107565:** 0 mA / / 130 -180 mA	178 mA	Current between 130 -180 mA	
25	Send HL command #6 (LPU Disable Prime) Execute: **DCT01170, DHT01170 = "CMD_ID_HLC6"**	Monitor TM: **WM107565:** 130 -180 mA/ / 0 mA	0.01 mA	Current OFF	
26	**Un-Power LPU LCL (LCL#25)** Execute: **DC25B170**	**Status WM12B565:** **ON/OFF**	OFF	State of LCL #25 switches to OFF	
27	**Power on Prime LPU LCL (LCL#26)** Execute **DC26D170**	**Status WMA2B565:** **OFF/ON**	ON	State of LCL #26 switches to ON	
28	Send HL command #21 (LPU Enable Prime) Execute: **DCT01170, DHT01170 = "CMD_ID_HLC21"**	Monitor TM: **WMA07565:** 0 mA / / 130 -180 mA	178 mA	Current between 130 -180 mA	
29	Send HL command #22 (LPU Disable Prime) Execute: **DCT01170, DHT01170 = "CMD_ID_HLC22"**	Monitor TM: **WMA07565:** 130 -180 mA/ / 0 mA	0 mA	Current OFF	
30	**Un-Power LPU LCL (LCL#26)** Execute: **DC26B170** by accident DC27B170 was xed, switch off LCL 27 -> No problem	**Status WMA2B565:** **ON/OFF**	OFF	State of LCL #26 switches to OFF	
31	If no longer required switch off SVM and close the CCS test session i.a.w. appendix 3 section 7.7 – 7.11	**OK**	N/A	Continue with CFT	
END	Inform Floor Manager ACS complete	OK	N/A		

APPENDIX 1

Actual **SCOE cable connection (to be confirmed by AIT)**

SCOE CABLES CONNECTION to HERSCHEL S/C

SKIN-01	PWR Panel (PCDU)					
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector	Checked
	BS Nom Power	SK01BJ09	PCDU	BS SCOE Cable Plugged		
	BS Red Power	SK01BJ10	PCDU	BS SCOE Cable Plugged		
	BDR1 AIT	SK01BJ11	PCDU	LPS SCOE Cable Plugged		
	BDR2 AIT	SK01BJ12	PCDU	LPS SCOE Cable Plugged		
	SA Nom Power	SK01AJ01	PCDU	POWER SCOE Cable Plugged		
	SA Nom Power	SK01AJ02	PCDU	POWER SCOE Cable Plugged		
	SA Nom Power	SK01AJ03	PCDU	POWER SCOE Cable Plugged		
	SA Nom Power	SK01AJ04	Battery	EMC Dust Cap		
	SA Red Power	SK01AJ05	PCDU	POWER SCOE Cable Plugged		
	SA Red Power	SK01AJ06	PCDU	POWER SCOE Cable Plugged		
	SA Red Power	SK01AJ07	PCDU	POWER SCOE Cable Plugged		
SKIN-02	PWR Panel (ACC, CDMU, RCS, 1553 & Thruster)					
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector	
SKIN-02	DMS 1553 Bus_A	J01	CDMU	Bus Monitor Cable Plugged		
SKIN-02	DMS 1553 Bus_B	J02	CDMU	Bus Monitor Cable Plugged		
SKIN-02	ACMS 1553 Bus_A	J03	ACC	ACMS SCOE Cable Plugged		
SKIN-02	ACMS 1553 Bus_B	J04	ACC	ACMS SCOE Cable Plugged		
SKIN-02	LV1/FCV 20N CMD S/A M	J05	ACC/RCS	ACMS SCOE Cable Plugged		
SKIN-02	LV2/FCV 20N CMD S/A R	J06	ACC/RCS	ACMS SCOE Cable Plugged		
SKIN-02	RCS Press/Tank Temp/PT Pwr	J07	ACC/PT&TH	ACMS SCOE Cable Plugged		
SKIN-02	Thruster Temp M/LV1 Sts	J08	ACC/RCS	ACMS SCOE Cable Plugged		
SKIN-02	CDMU and ACC EEPROM reprogramming input	J09	ACC/CDMU		Flight Plug SK02P09 Plugged	
SKIN-02	CDMU and ACC EEPROM reprogramming input	J10	ACC/CDMU		Flight Plug SK02P10 Plugged	
SKIN-02	Thruster Temp R/LV2 Sts	J11	ACC/RCS	ACMS SCOE Cable Plugged		
SKIN-02	Thruster C/B Heaters M	J12	ACC/CBH	ACMS SCOE Cable Plugged		
SKIN-02	Thruster C/B Heaters R	J13	ACC/CBH	ACMS SCOE Cable Plugged		
SKIN-02	Str1/2 On/Off Cmd M/Str1 Sts	J14	ACC/STR-1		ACMS Flight Plug SK02P14 Plugged	

SKIN-02	Str1/2 On/Off Cmd R/Str2 Sts	J15	ACC/STR-2		ACMS Flight Plug SK02P15 Plugged	
SKIN-02	Gyro A On/Off Cmd	J16	ACC/GYRO-E1		ACMS Flight Plug SK02P16 Plugged	
SKIN-02	Gyro B On/Off Cmd	J17	ACC/GYRO-E2		ACMS Flight Plug SK02P17 Plugged	
SKIN-03	TTC Panel					
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector	
SKIN-03	Test point TC + protection jumper EPC1	SK03J01	XPND1/EPC1		Flight cap	
SKIN-03	Test point TC + protection jumper EPC2	SK03J02	XPND2/EPC2		Flight cap	
	RF LINK					
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector	
	RF link for antenna LGA1	N/A	LGA1	RF SCOE LGA1 Plugged	LGA1 Anechoic Cap	
	RF link for antenna LGA2	N/A	LGA2	RF SCOE LGA2 Plugged	LGA2 Anechoic Cap	
	RF link for antenna MGA	N/A	MGA	RF SCOE MGA Plugged	MGA Anechoic Cap	
SKIN-04	ACMS Panel (RWE)					
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector	
SKIN-04	RWL1 Sgn	J01	ACC/RWL-1		ACMS Flight Plug SK04P01 Plugged	
SKIN-04	RWL2 Sgn	J02	ACC/RWL-2		ACMS Flight Plug SK04P02 Plugged	
SKIN-04	RWL3 Sgn	J03	ACC/RWL-3		ACMS Flight Plug SK04P03 Plugged	
SKIN-04	RWL4 Sgn	J04	ACC/RWL-4		ACMS Flight Plug SK04P04 Plugged	
SKIN-05	GYR/QRS Panel					
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector	
SKIN-05	CRS1 AOCS Sgn	J01	CRS-1/ACC		ACMS Flight Plug	
SKIN-05	CRS2 AOCS Sgn	J02	CRS-2/ACC		ACMS Flight Plug	
SKIN-05	GYRO RS422 / Test	J03	GYRO	ACMS SCOE Cable Plugged		
SKIN-05	CRS 1/2 Stimuli	J04	CRS-1,2	ACMS SCOE Cable Plugged		
SKIN-05	AAD Sgn M	J05	AAD/ACC	ACMS SCOE Cable Plugged		
SKIN-05	SAS1/2 Sgn M	J06	SAS/ACC	ACMS SCOE Cable Plugged		
SKIN-05	SAS1/2 Sgn R	J07	SAS/ACC	ACMS SCOE Cable Plugged		
SKIN-05	AAD Sgn R	J08	AAD/ACC	ACMS SCOE Cable Plugged		
SKIN-06	STR Panel					
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector	
SKIN-06	STR1 Stimuli	J01	STR1	ACMS SCOE Cable Plugged		
SKIN-06	STR2 Stimuli	J02	STR2	ACMS SCOE Cable Plugged		
	UMBILICAL					
	Connector Function	Connector	S/C unit	SCOE CABLE		
	Power/Data	HU1J01	SYSTEM	SCOEs cable Plugged		
	Power/Data	HU2J01	SYSTEM	SCOEs cable Plugged		

APPENDIX 2

S/C Operational Status Sheet

APPENDIX 3

Parts that are relevant for this Activity Control Sheet:

RD1 **HP-2-ASED-PR-0070 Iss 5**

8 Appendix 5: SPIRE Spectrometer Switch ON Test – As-Run Procedure

(ref. HP-2-ASED-SD-0470, issue 1)

EADS Astrium HERSCHEL S/C	ACTIVITY CONTROL	SHEET	HP-2-ASED-SD-0470 Iss: 01	Page 1 of 3

Location : ESA	Title: SPIRE Spectrometer Switch on Test (leaving SSW Vss2 and Vdd2 switched off)		
Facility : Class 100 000	Model: PFM	Subsystem: SPIRE	Date: 25/02/2009
	Test Conductor: S. Hamer	RAL: S. Sidher	NCR Ref: N/A
CI No.: 125 200	Prepared By: A. Koppe		CIL No:

Scope: This following procedure shall be executed to verify PRIME side operation of spectrometer JFET switch on without JFET 1 operation		**Procedures and reference documents:-**	
Facilities required:	EGSE: CCS	**Drawings:** none	
Personnel required:	1 CCS Operator; 1 Test Conductor; 1 QA	**MASS:**	
Safety and Hazards:			
Constraints:	Class 100 000 clean room EPLM mounted on SVM		
EGSE CCS SW version: 2.0-1317		**On-Board S/W:** CDMS ASW: Version: 3.8.0.1	
HPSDB: LI1441 Iss28		SPIRE DPU ASW Version: 3.0.B	

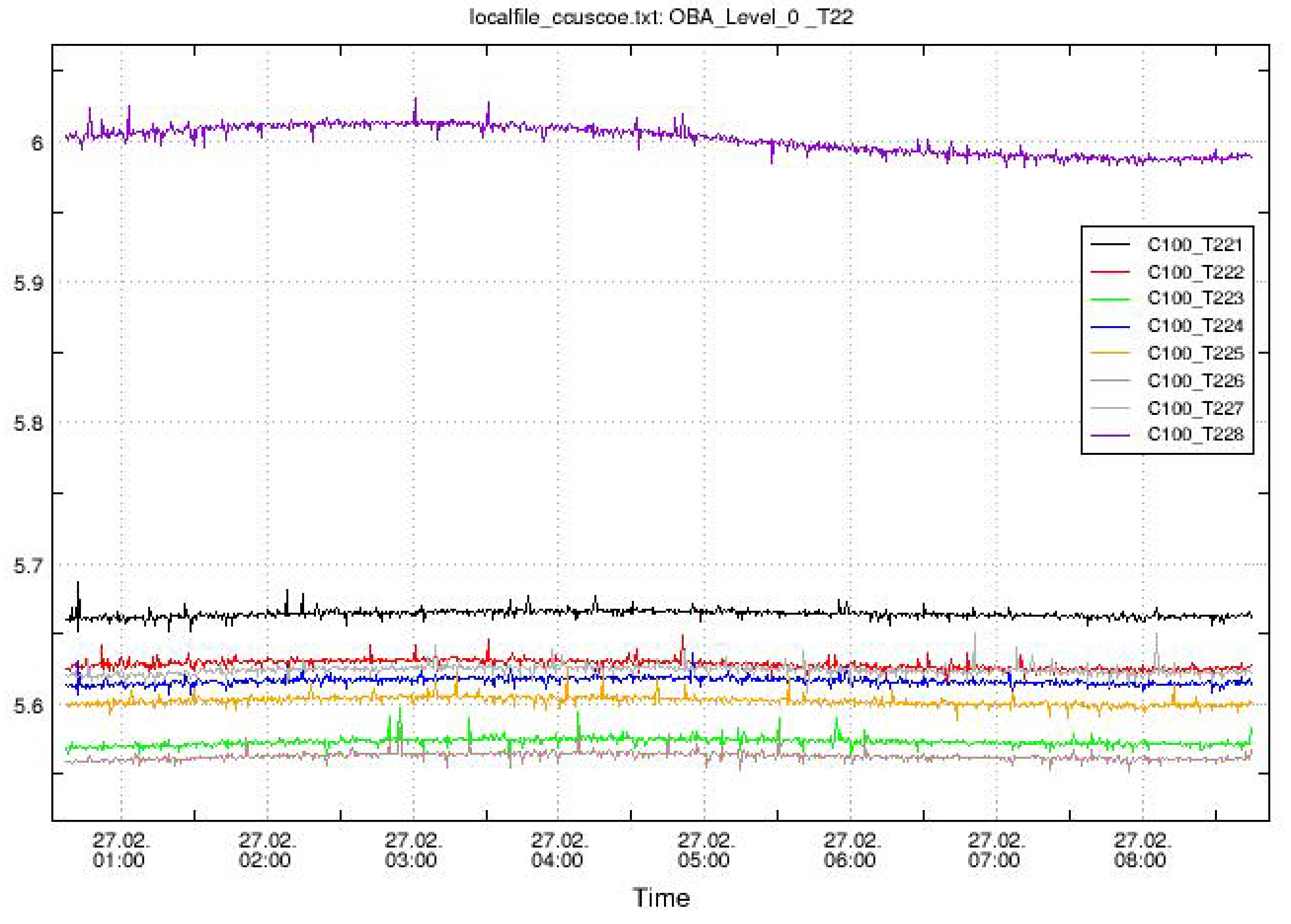
Release AIT:	Release SE:	Release PA/Safety: R. Goossens	Sign off (PA/QC/Team Leader): A. Koppe
Release Floor Manager: A. Koppe	Release SPIRE Instrument / RAL:		

No:	Activity	Expected Value Before/During/After	Actual Value	Success/Failure	Responsible & sign off
1	Complete the Prime Side CFTs up to and including the Spectrometer Switch OFF procedure SPIRE-IST-COLD-SDET-OFF-P (section 7.2.2.29 in TP-0217 Issue 2).		OK.	OK	05:59 27/02/09
2	**Wait for the I-EGSE to change mission configuration from fm_ist_cft_config19p_Kourou to fm_ist_cft_config20p_Kourou**		OK	OK	
3	Run procedure SPIRE-IST-COLD-FUNC-DCU-11-SPEC-P (as per section 7.2.2.25 in TP-0217)	The SSW resistor channel SSW-R1 should not show any signal on QLA	OK	OK	
4	Run procedure SPIRE-IST-COLD-SDET-OFF-P (section 7.2.2.29 in TP-0217 Issue 2).		OK	OK	
5	Continue with the remaining switch-off sequence after Prime Side CFTs (from section 7.2.2.25 on wards in TP-0217)		OK	OK	
END	Inform Floor Manager ACS complete	OK	OK	OK	

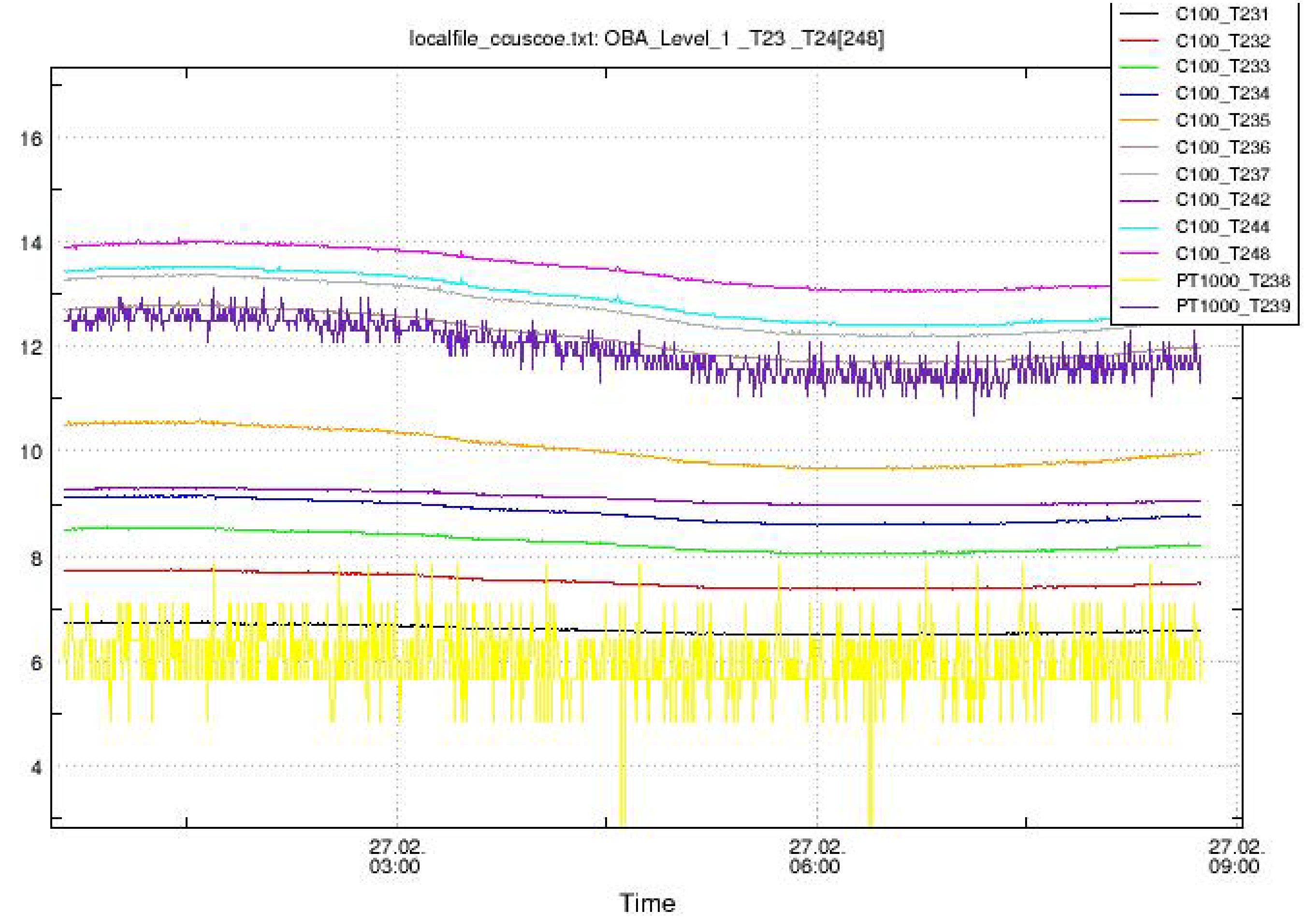
27/02/09
06:08.

9 Appendix 6: Temperatures during CFT in He1

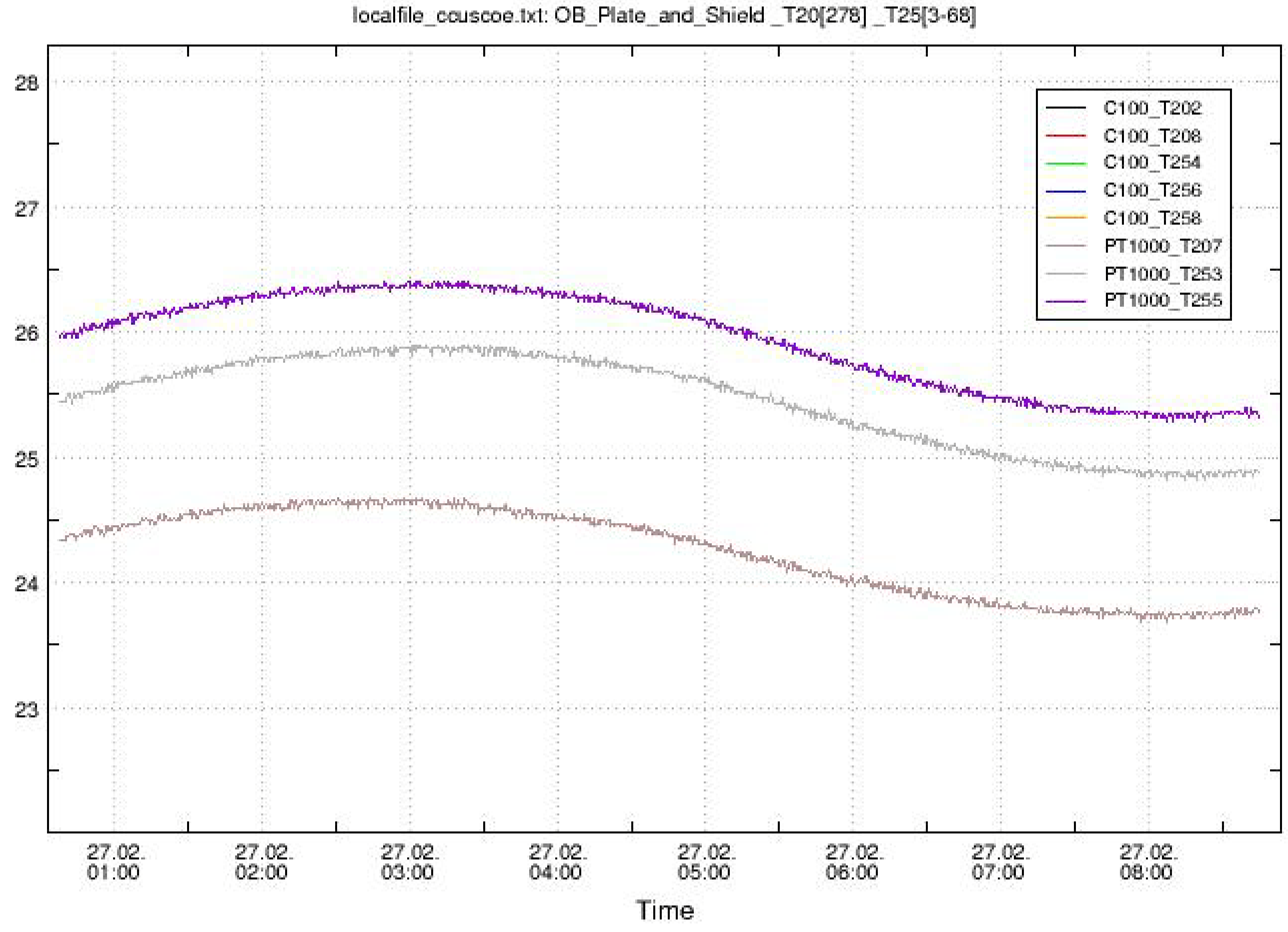
Level 0 Temperatures



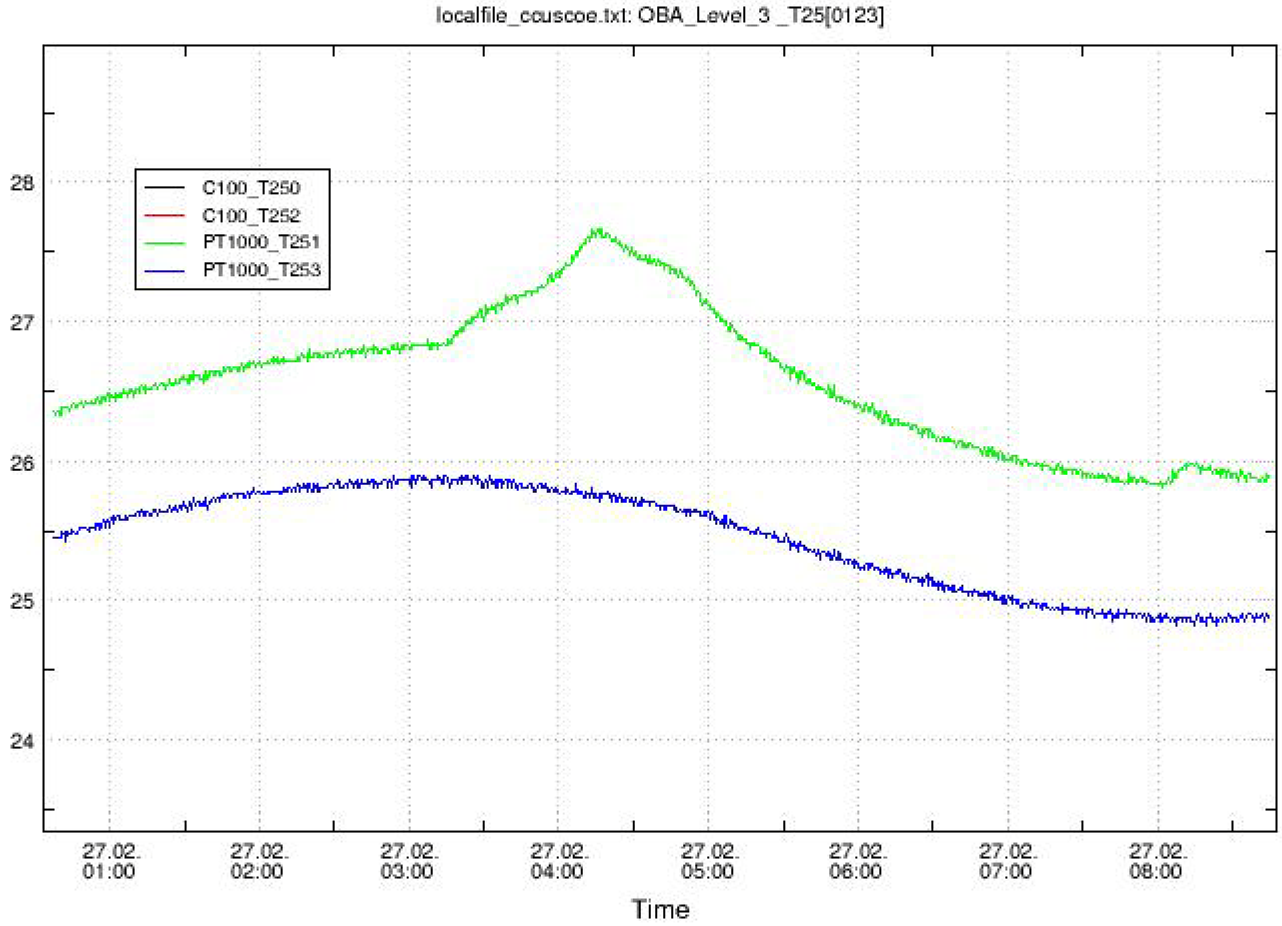
Level 1 Temperatures



Level 2 Temperatures



Level 3 Temperatures



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

	Name	Dep./Comp.		Name	Dep./Comp.
	Baldock Richard	FAE12		Theunissen Martijn	ASA43
	Barlage Bernhard	AED13		Vascotto Riccardo	HE Space
	Bayer Thomas	ASA42		Wagner Klaus	ASG23
	Brune Holger	ASA45	X	Wietbrock Walter	AET12
	Chen Bing	HE Space		Wöhler Hans	ASG23
	Davis William	Captec		Wössner Ulrich	ASE252
	Edelhoff Dirk	AED21		Zumstein Armin	AED15
	Fehringer Alexander	ASG15			
X	Fricke Wolfgang Dr.	AED 65			
	Geiger Hermann	ASA42			
	Grasl Andreas	OTN/ASA44			
	Grasshoff Brigitte	AET12			
X	Hamer Simon	Terma			
	Hanka, Erhard	FI522			
	Hendrikse Jeffrey	HE Space			
	Hendry David	Terma			
	Hengstler Reinhold	ASA42			
	Hinger Jürgen	ASG23			
	Hofmann Rolf	ASE252			
X	Hohn Rüdiger	AED65			
	Hopfgarten Michael	AET32			
	Huber Johann	ASA42			
	Hund Walter	ASE252			
	Idler Siegmund	AED312			
	Ivády von András	FAE12			
	Jahn Gerd Dr.	ASG23	X	ESA/ESTEC	ESA
	Kölle Markus	ASA43	X	Thales Alenia Space Cannes	TAS-F
X	Koppe Axel	AED312		Thales Alenia Space Torino	TAS-I
X	Kroeker Jürgen	AED65			
	Lang Jürgen	ASE252			
	Langenstein Rolf	AED15		**Instruments:**	
	Langfermann Michael	ASA41		MPE (PACS)	MPE
	Liberatore Danilo	Rhea	X	RAL (SPIRE)	RAL
	Martin Olivier	Altec		SRON (HIFI)	SRON
	Maukisch Jan	ASA43			
X	Much Christoph	ASA43			
X	Müller Martin	ASA43		**Subcontractors:**	
	Pietroboni Karin	AED65		Austrian Aerospace	AAE
	Reichle Konrad	ASA42		Austrian Aerospace	AAEM
	Runge Axel	OTN/ASA44		BOC Edwards	BOCE
	Saal Christoph	External		Dutch Space Solar Arrays	DSSA
	Schink Dietmar	AED321		EADS Astrium Sub-Subsyst. & Equipment	ASSE
	Schmidt Thomas	AED15		EADS CASA Espacio	CASA
	Schweickert Gunn	ASG23		EADS CASA Espacio	ECAS
	Sonn Nico	ASG51		European Test Services	ETS
	Steininger Eric	AED321		Patria New Technologies Oy	PANT
X	Stritter Rene	AED11		SENER Ingenieria SA	SEN
	Suess Rudi	OTN/ASA44		Thales Alenia Space, Antwerp	TAS-ETCA