EADS astrium

Test Report

Herschel

Title: Test Report for SPIRE SFT
In TV Cold (Phase 5)

CI-No: 125200

Prepared by:	A. Koppe	Date:	6.12.2008
Checked by:	S. Idler		6.12.2008
Checked by:	J. Kroeker		8.12.2008
Product Assurance:	R. Stritter		07.12.08
Configuration Control:	W. Wietbrock		09/12/2008
Project Management:	W. Fricke		09/12/2008

Distribution: See Distribution List (last page)

Issue	Date	Sheet	Description of Change	Release
1	6.12.08	All	Formal Issue	

Table of Content

List of Tables

1 Scope

This document reports on the SPIRE SFT at He2 conditions, performed in the frame of the HERSCHEL TB/TV Test Phase 5 (see test step TS#5i of AD 3) in TV Cold, to verify proper instrument operation.

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

1.1 Objective

The objective of this SFT was:

- To check the correct functional operation of the SPIRE FM under He2 conditions on nominal and redundant side under TV Cold conditions

Note: The SPIRE detector checks, Mechanism and LPU tests were not part of this SFT.

1.2 Test Flow

The TB/TV test is guided by the "Integrated Test Procedure for the HERSCHEL FM TB/TV Test", ref. HP-2-ASED-TP-0177, Issue 1.1 [AD3]. The instrument relevant parts are called up by procedure "HERSCHEL SAT and Instruments Procedure for the SAT TB/TV Testing", ref. HP-2-ASED-TP-0236, Issue 1.0 [AD4], which than addresses the applicable instrument SFT procedure " TBTV SPIRE Functional Test Procedure", ref. HP-2-ASED-TP-0212, Issue 2 , [AD1] for SPIRE. Since the TB/TV test has been started with the SPIRE instrument in REDY mode according to procedure " TBTV SPIRE Functional Test Procedure", ref. HP-2-ASED-TP-0248, Issue 2, [AD2] in Phase 4, the instrument needed to be switched off according to AD2 and on again as per AD1 to perform the SFT. Thereafter the instrument was switched off and left in REDY mode on redundant side as per AD2 for further TV testing (see steps below).

The Test flow in Phase 5 of the TV Cold phase was as follows:

1. Power on not required since S/C already ON
2. Power off SPIRE Prime from TV REDY mode as per AD 2, chapter 7.28
3. configure SPIRE I-EGSE for test
4. Power on SPIRE Prime for SFT as per AD 1, chapter 7.2.2
5. Run Nominal SFT Procedures as per table 1.2-1
6. Power off SPIRE Prime
7. Power on SPIRE Redundant
8. Run Redundant SFT Procedures as per table 1.2-2

9. Power off SPIRE Redundant
10. Power on SPIRE Prime into TV REDY mode as per AD 2, chapter 7.29

Step #	Procedure Name	Purpose
1.	SPIRE-FM-SFT-FUNC-SCU-01-P	SCU Nominal Science Packet Generation Check PRIME
2.	SPIRE-FM-SFT-FUNC-SCU-03-P	SCU DC Thermometry check PRIME
3.	SPIRE-FM-SFT-FUNC-SCU-06-P	SCU AC Thermometry check PRIME
4.	SPIRE-FM-SFT-FUNC-SCU-07-P	Sorption Cooler Heaters Check PRIME
5.	SPIRE-FM-SFT-FUNC-SCU-04-P	Photometer Calibrator Check PRIME
6.	SPIRE-FM-SFT-FUNC-SCU-05-P	Spectrometer Calibrator Check PRIME
7.	SPIRE-FM-SFT-FUNC-MCU-01-P	MCU Boot Check PRIME
8.	SPIRE-FM-SFT-FUNC-MCU-02-P	MCU Nominal Science Packet Generation Check PRIME
9.	SPIRE-FM-SFT-FUNC-BSM-01-P	BSM Chop/Jiggle Sensors check PRIME
10.	SPIRE-FM-SFT-BSM-0FF-P	BSM switch OFF PRIME
11.	SPIRE-FM-SFT-FUNC-SMEC-01-P	SMEC Encoder and LVDT check PRIME
12.	SPIRE-FM-SFT-SMEC-OFF-P	SMEC switch OFF
13.	SPIRE-FM-FUNC-DCU-01-P	DCU Science Packet Generation Check PRIME
14.	SPIRE-FM-SFT-FUNC-DCU-04-PHOT-P	Photometer LIAs Check PRIME
15.	SPIRE-FM-SFT-PLIA-OFF-P	Photometer LIAs Switch OFF PRIME
16.	SPIRE-FM-SFT-FUNC-DCU-04-SPEC-P	Spectrometer LIAs Check PRIME
17.	SPIRE-FM-SFT-SLIA-OFF-P	Spectrometer LIAs Switch OFF PRIME
18.	SPIRE-FM-SFT-FUNC-MCU-OFF-P	MCU switch OFF PRIME
19.	SPIRE-FM-SFT-FUNC-SCU-OFF-P	SCU Switch OFF PRIME
20.	SPIRE-FM-SFT-LPU-01-P	Checkout of LPU PRIME **not performed**

Table 1.2-1 SPIRE Prime Functional Procedures

Step #	Procedure Name	Purpose
1.	SPIRE-FM-SFT-FUNC-SCU-01-R	SCU Nominal Science Packet Generation Check REDUNDANT
2.	SPIRE-FM-SFT-FUNC-SCU-03-R	SCU DC Thermometry Check REDUNDANT
3.	SPIRE-FM-SFT-FUNC-SCU-06-R	SCU AC Thermometry Check REDUNDANT
4.	SPIRE-FM-SFT-FUNC-SCU-07-R	Sorption Cooler Heaters Check REDUNDANT
5.	SPIRE-FM-SFT-FUNC-SCU-04-R	Photometer Calibrator Check REDUNDANT
6.	SPIRE-FM-SFT-FUNC-SCU-05-R	Spectrometer Calibrator Check REDUNDANT
7.	SPIRE-FM-SFT-FUNC-MCU-01-R	MCU Boot Check REDUNDANT
8.	SPIRE-FM-SFT-FUNC-MCU-02-R	MCU Nominal Science Packet Generation Check REDUNDANT
9.	SPIRE-FM-SFT-FUNC-BSM-01-R	BSM Chop/Jiggle Sensors check REDUNDANT
10.	SPIRE-FM-SFT-BSM-0FF-R	BSM Switch OFF REDUNDANT
11.	SPIRE-FM-SFT-FUNC-SMEC-01-R	SMEC Encoder and LVDT check REDUNDANT
12.	SPIRE-FM-SFT-SMEC-OFF-R	SMEC Switch OFF
13.	SPIRE-FM-FUNC-DCU-01-R	DCU Science Packet Generation Check REDUNDANT
14.	SPIRE-FM-SFT-FUNC-DCU-04-PHOT-R	Photometer LIAs Check REDUNDANT
15.	SPIRE-FM-SFT-PLIA-OFF-R	Photometer LIAs Switch OFF REDUNDANT
16.	SPIRE-FM-SFT-FUNC-DCU-04-SPEC-R	Spectrometer LIAs Check REDUNDANT
17.	SPIRE-FM-SFT-SLIA-OFF-R	Spectrometer LIAs Switch OFF REDUNDANT
18.	SPIRE-FM-SFT-FUNC-MCU-OFF-R	MCU Switch OFF REDUNDANT
19.	SPIRE-FM-SFT-FUNC-SCU-OFF-R	SCU Switch OFF REDUNDANT
20.	SPIRE-FM-SFT-LPU-01-R	Checkout of LPU REDUNDANT **not performed**

Table 1.2-2: SPIRE Redundant Functional Procedures

1.3 Procedure Execution Summary:

This test has been run with the HERSCHEL S/C in vertical position and on SPIRE nominal and redundant side. The as run procedure is attached to this document as ANNEX 1.

The temperatures, seen during the SFT, are shown in ANNEX 2.

The test duration of the SPIRE SFT Test was ~ 4 hours.

Location:	ESTEC, Noordwijk, NL TV Chamber
Test Session Name:	2008_11_23_12_28_hercdmu_hpws23_REALTIME_TBT VTPA5
Environment:	HP_2_ASED _TP_236_TBTV_END_002
OBSW:	CDMS 3.6.2.6, ACMS 4.0
HPSDB:	HP-ASP-LI-1441_25
HPCCS Release:	HPCCS Release_2.0-1317

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

PVS#69 skip LPU tests, since not performed in TV

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

The following observations were made during the test**:**

Time (UTC)	Test Procedure / Step / Script / Command / Event / Anomaly	Remarks / Cause of anomaly / Corrective action	C/A type (T/P)	NCR ref. (P
Sunday, November, 24th				
20:39	**Started SPIRE power OFF, Prime TP-0248, step 28.1**			**PVS#C69 TP-0236**
20:44:11	Error received, WMB02568 (Battery_Temp_2)			
20:45:15	Error received, WMB04568 (Battery_Temp_4)			
20:48:27	Error received, WMB01568 (Battery_Temp_1)			
20:48:27	Error received, WMB03568 (Battery_Temp_3)			
21:05	Shift handed over to night crew			
21:14:58	Command not ackn. : DC005161 Configure SDBFDIR	Reported in Command History (CCS); Packets checked ➔ have arrived. Ok (this is a known problem with acknowledging)		
21:27	SPIRE Nominal now powered-on, DRCU mode			
22:15	STR TCS lines threshold modification	Found ORS unsigned as if not performed yet; execution time was 3,5 hrs passed; consulted test floor for advice status; test floor reported also not executed (unsigned) ORS and asked to perform now; Operator did it but also noticed on TCS control window that new settings looked already applied; nevertheless it was executed; Then operator checked command history for previous executions; Apparently is was performed on 19:58 but not noted or signed-off !!		**ORS#66**
22:30	General remark: we (checkout) noticed that a number of SPIRE parameters report out of limit temperatures; we wonder if this behaviour is " normal or acceptable" and if so why the limits are not adjusted to avoid these	Instr experts to check and advice (this is also valid for other two instruments and s/c components), before we end up with numerous NCR's on out-of - limits		**See NCR 4675**
22:39	During (SPIRE SFT) TP-212 section 7.2.3.14 step 1 noted: LIAP1TEMP (SML8K510) out of limits: expected: >287 < 317, actually: 272	In fact the whole range SML0K510 upto SML8K510 was out of range; Acc to a remark at step 3 these are expected, not sure if that remark should also be at step 1 already →		

Time (UTC)	Test Procedure / Step / Script / Command / Event / Anomaly	Remarks / Cause of anomaly / Corrective action	C/A type (T/P)	NCR ref. (P
		instr. experts to advice if ok or not; if not then potential NCR		
	Again a general remark during the nightshift: receiving regular BATTERY Temp out of limits	Not noted in logbook because " no problem" status all the time as confirmed by test-director YR		
22:53	Again expected out of limits observed: SML-B, A & 9 K510			
23:04	Next expected alarm: SPIRE_ALARM_LSMCU_DEAD			
23:17	Switched-off SPIRE DRCU (in line with PVS#C69 step 5)			
23:36	SPIRE redundant now powered-on, DRCU mode	During power-on a lot of temp parameters reported out of limit: SM-B0K,D0K, L0K, L0V, L1K, L1V, L2K, L2V, L3K, L3V, L4K, L4V, L5K, L5V, L6K, L7K, L8K, L9K, LAK, LBK -510 A few minutes later again: SM-B0K, D0K, T0K, T1K, W0K, W1K-510		
Monday, November, 24th				
00:30	During (SPIRE SFT) TP-212 section 7.2.7.14 step 1 noted:	More temp parameters reported out of limit: SM- L0K, L1K, L2K, L3K, L4K, L5K, L6K, L7K, L8K, -510		
00:40	During (SPIRE SFT) TP-212 section 7.2.7.16 step 2 noted	More temp parameters reported out of limit: SM- L9K, LAK, LBK, -510		**NCR 4675**
00:48	Next expected alarm: SPIRE_ALARM_LSMCU_DEAD			
01:00	SPIRE redundant powered off for SFT			
01:15	SPIRE ON, redundant REDY for TB/TV Finished with PVS#C69	During power-on a lot of temp parameters reported out of limit: SM-B0K,D0K, L0K, L0V, L1K, L1V, L2K, L2V, L3K, L3V, L4K, L4V, L5K, L5V, L6K, L7K, L8K, L9K, LAK, LBK -510 A few minutes later again: SM-B0K, D0K, T0K, T1K, W0K, W1K-510		

Table 1: SPIRE SFT Test Summary

2 Documents/Drawings

2.1 Applicable Documents

AD1	SPIRE FM Short Functional Test (Warm or Cold)	HP-2-ASED-TP-0212, Issue 2
AD2	TBTV SPIRE Functional Test Procedure	HP-2-ASED-TP-0248, Issue 2
AD3	Integrated Test Procedure for the HERSCHEL FM TB/TV Test	HP-2-ASED-TP-0177, Issue 1.1
AD4	HERSCHEL SAT and Instruments Procedure for the SAT TB/TV Testing	HP-2-ASED-TP-0236, Issue 1.0

2.2 Reference Documents

None

2.3 Other Documents

None

2.4 Acronyms & Abbreviations

See “as-run” procedure.

3 Main Observations and Problems Identified.

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

3.1 SPIRE (NCR-3955)

Has been closed, but was seen again

3.2 SPIRE (NCR-4675)

During the TBTV TV cold, there were numerous out of limits (hard) reported for SPIRE internal temperatures. The SPIRE MIB included in the latest HPSDB delivery does not include the limits applicable for TBTV. It currently contains the limits applicable in room temperature.
The new SPIRE MIB is already delivered to TASF, but not included yet in a new delivery of HPSDB.

No other NCR´s have been raised.

3.3 Procedure Changes

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

4 Summary

The SPIRE SFT in TV test Phase 5 (TV Cold) was successfully performed on both, nominal and redundant side.

Numerous out of limits (hard) were reported for SPIRE internal temperatures. The cause is that the SPIRE MIB, included in the latest HPSDB delivery, did not include the limits applicable for TB/TV. It currently contains the limits applicable for room temperature (see NCR-4675).
A new SPIRE MIB has already been delivered to TASF. The new delivery of the respective HPSDB was made available on 25th of November and should now be implemented before start of TV Test Phase 7 (instrument tests).

The detailed evaluation of the test results will be performed by RAL and issued in a separate instrument test report.

4.1 Open Issues

none

4.2 Requirements Verified

With the above SFT the health check of the SPIRE instrument in TV Test Phase 5 has been proven.

5 Appendix 1: SPIRE FM Short Functional Test

As-Run Procedure

(ref. HP-2-ASED-TP-0212, issue 2)

EADS astrium

Test Procedure **Herschel**

AS RUN COPY 23/24-11-'08
TB/TV test
session: 2008_11_23_12_28_heradmu_hpws23_REALTIME_TBTVTPA5
TAG : HP_2_ASED_TP_0236_TBTV-END-002

Title: **SPIRE FM Short Functional Test (Warm or Cold)**

CI-No: 125 200

Prepared by:	S. Hamer/ TERMA AS A. Koppe	Date:	13th November 2008
Checked by:	S. Idler		14.11.2008
Product Assurance:	R. Stritter		13.11.08
Configuration Control:	W. Wietbrock		14/11/2008
Project Management:	W. Fricke		14/11/2008
TAS-F	D. Montet		

Distribution: See Distribution List (last page)

Issue	Date	Sheet	Description of Change	Release
1	30.01.08	All	First Formal Issue	
1.1	03.06.08	11 24 29,68 58 59 65 91 94 95,96 97	Typo in AD1, AD2, AD3 references Modification of text in chapter 7.2 Mode is "DRCU ON" with raw value x0100 Note for type 5/4 event included and typo in script name, step1, removed typo in script name, step1, removed typo in script name, step1, removed typo in negative voltage PLIAM9V (step2) typo in negative voltage SLIAM9V (step2) typo in script name, step1, removed typo in script name, step1, removed	
1.2	19.06.08	all	Implementation of updated RAL SFT procedure, ref. SPIRE-RAL-PRC-2494, issue 2.5 and red-markings according to as-run procedure of SFT performed on 9.06.2008	
1.3	24.10.08	All	Update of IEGSE check and TBTV specifics. Implementation of updated RAL SFT procedure, ref. SPIRE-RAL-PRC-2494, issue 2.6	
2.0	13.11.08	All	Correction of Switch ON & Operating temperatures limits for SPIRE in section 7.2.2 and 7.2.6	

Table of Content

Table of Figures

No table of figures entries found.

List of Tables

1 Scope

This document describes the set of Short Functional Tests (SFTs) to be performed on the fully integrated SPIRE FM Instrument to check correct operation using the Herschel CCS without the need of connection to I-EGSE.

Specifically this procedure is part of the overall Satellite SFT which will be performed after shipment to ESTEC (SFT1) and also at the end of Environment Testing (SFT2). It can be performed in either Warm or Cold (HeI or HeII) conditions. Both redundancies are tested within this procedure.

It will also be executed during TBTV cold and hot phases.

Constraints

- Before carrying out the next procedure within the test sequence always ask for the go ahead by the SPIRE staff.
- SMEC
- Any text in boldface in the procedural steps generally indicates an action which may have to be performed manually by the CCS staff.

1.1 Objective

1. The objective of the test is to perform a short "health-check" of the FM instrument.

1.2 Test Flow

This test flow is structured to reflect nominal operations of the FM SPIRE.

The flow is as follows:

1. Power on and configure SPIRE I-EGSE for test if required
2. Power on and configure SVM for test
3. Power on SPIRE Prime and enable Mil1553B-bus interface
4. Run Nominal SFT Procedures as per table 1.2-1
5. Disable Mil1553B-bus interface and Power off SPIRE Prime
6. Power on SPIRE Redundant and enable Mil1553B-bus interface
7. Run Redundant SFT Procedures as per table 1.2-2
8. Disable Mil1553B-bus interface and Power off SPIRE Redundant
9. Power off SVM
10. Switch off all EGSE

Step #	Procedure Name	Purpose	Duration
1.	SPIRE-FM-SFT-FUNC-SCU-01-P	SCU Nominal Science Packet Generation Check PRIME	3 min
2.	SPIRE-FM-SFT-FUNC-SCU-03-P	SCU DC Thermometry check PRIME	8 min
3.	SPIRE-FM-SFT-FUNC-SCU-06-P	SCU AC Thermometry check PRIME	2 min
4.	SPIRE-FM-SFT-FUNC-SCU-07-P	Sorption Cooler Heaters Check PRIME	5 min
5.	SPIRE-FM-SFT-FUNC-SCU-04-P	Photometer Calibrator Check PRIME	3 min
6.	SPIRE-FM-SFT-FUNC-SCU-05-P	Spectrometer Calibrator Check PRIME	5 min
7.	SPIRE-FM-SFT-FUNC-MCU-01-P	MCU Boot Check PRIME	5 min
8.	SPIRE-FM-SFT-FUNC-MCU-02-P	MCU Nominal Science Packet Generation Check PRIME	5 min
9.	SPIRE-FM-SFT-FUNC-BSM-01-P	BSM Chop/Jiggle Sensors check PRIME	3 min
10.	SPIRE-FM-SFT-BSM-0FF-P	BSM switch OFF PRIME	3 min
11.	SPIRE-FM-SFT-FUNC-SMEC-01-P	SMEC Encoder and LVDT check PRIME	3 min
12.	SPIRE-FM-SFT-SMEC-OFF-P	SMEC switch OFF	3 min
13.	SPIRE-FM-FUNC-DCU-01-P	DCU Science Packet Generation Check PRIME	5 min
14.	SPIRE-FM-SFT-FUNC-DCU-04-PHOT-P	Photometer LIAs Check PRIME	5 min
15.	SPIRE-FM-SFT-PLIA-OFF-P	Photometer LIAs Switch OFF PRIME	2 min
16.	SPIRE-FM-SFT-FUNC-DCU-04-SPEC-P	Spectrometer LIAs Check PRIME	5 min
17.	SPIRE-FM-SFT-SLIA-OFF-P	Spectrometer LIAs Switch OFF PRIME	2 min
18.	SPIRE-FM-SFT-FUNC-MCU-OFF-P	MCU switch OFF PRIME	2 min
19.	SPIRE-FM-SFT-FUNC-SCU-OFF-P	SCU Switch OFF PRIME	2 min
20.	SPIRE-FM-SFT-LPU-01-P	Checkout of LPU PRIME	5 min

Table 1.2-1 SPIRE Prime Functional Procedures

Step #	Procedure Name	Purpose	Duration
1.	SPIRE-FM-SFT-FUNC-SCU-01-R	SCU Nominal Science Packet Generation Check REDUNDANT	3 min
2.	SPIRE-FM-SFT-FUNC-SCU-03-R	SCU DC Thermometry Check REDUNDANT	8 min
3.	SPIRE-FM-SFT-FUNC-SCU-06-R	SCU AC Thermometry Check REDUNDANT	2 min
4.	SPIRE-FM-SFT-FUNC-SCU-07-R	Sorption Cooler Heaters Check REDUNDANT	5 min
5.	SPIRE-FM-SFT-FUNC-SCU-04-R	Photometer Calibrator Check REDUNDANT	3 min
6.	SPIRE-FM-SFT-FUNC-SCU-05-R	Spectrometer Calibrator Check REDUNDANT	5 min
7.	SPIRE-FM-SFT-FUNC-MCU-01-R	MCU Boot Check REDUNDANT	5 min
8.	SPIRE-FM-SFT-FUNC-MCU-02-R	MCU Nominal Science Packet Generation Check REDUNDANT	5 min
9.	SPIRE-FM-SFT-FUNC-BSM-01-R	BSM Chop/Jiggle Sensors check REDUNDANT	3 min

10.	SPIRE-FM-SFT-BSM-0FF-R	BSM Switch OFF REDUNDANT	3 min
11.	SPIRE-FM-SFT-FUNC-SMEC-01-R	SMEC Encoder and LVDT check REDUNDANT	3 min
12.	SPIRE-FM-SFT-SMEC-OFF-R	SMEC Switch OFF	3 min
13.	SPIRE-FM-FUNC-DCU-01-R	DCU Science Packet Generation Check REDUNDANT	5 min
14.	SPIRE-FM-SFT-FUNC-DCU-04-PHOT-R	Photometer LIAs Check REDUNDANT	5 min
15.	SPIRE-FM-SFT-PLIA-OFF-R	Photometer LIAs Switch OFF REDUNDANT	2 min
16.	SPIRE-FM-SFT-FUNC-DCU-04-SPEC-R	Spectrometer LIAs Check REDUNDANT	5 min
17.	SPIRE-FM-SFT-SLIA-OFF-R	Spectrometer LIAs Switch OFF REDUNDANT	2 min
18.	SPIRE-FM-SFT-FUNC-MCU-OFF-R	MCU Switch OFF REDUNDANT	2 min
19.	SPIRE-FM-SFT-FUNC-SCU-OFF-R	SCU Switch OFF REDUNDANT	2 min
20.	SPIRE-FM-SFT-LPU-01-R	Checkout of LPU REDUNDANT	5 min

Table 1.2-2: SPIRE Redundant Functional Procedures

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, Issue 1	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 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 2.1	SPIRE-RAL-DOC-002841

2.2 Reference Documents

RD 1	Herschel Planck Central Checkout System System User Manual	H-P-4-TE-MA-0010
RD 2	SPIRE FM Short Functional Test Procedures	SPIRE-RAL-PRC-2494, iss. 2.6
RD 3	Herschel CDMU ASW S/W Interface Control Document	H-P-4-SSF-IC-0001
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. 1.3	SPIRE-RAL-PRJ-002395
RD 8	H/P OBT-UTC Time Synchronisation Technical Note Iss. 1.3	PT-CMOC-OPS-TN-6604-OPS- OGH

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
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 in its basic test mode (i.e. quick switch on (PCDU & CDMS) in accordance with AD 2. SPIRE FM units will be powered ON as per this procedure and assumes that FPU has already been successfully integrated to the warm units.

The procedures detailed in this document can be executed in any foreseen orientation.

3.2 EGSE Configuration

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

I-EGSE can be configured and connected to the HPCCS in accordance with AD 8, however it is not mandatory to have the I-EGSE connected for the SFT.

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 Scripts

The following SPIRE test scripts are required for execution on the HPCCS they do NOT reflect the test steps or order in which the steps are executed (the latter is defined in the order of the procedure):

No.	Tcl Script Name	Comment	Confirmed
1.	SPIRE-FM-SFT-DPU-START-P-SP	DPU ON PRIME	
2.	SPIRE-FM-SFT-DRCU-START-P-STEP1	DRCU ON PRIME Step1	
3.	SPIRE-FM-SFT-DRCU-START-P-STEP2	DRCU ON PRIME Step2	
4.	SPIRE-FM-SFT-FUNC-SCU-01-P	SCU science generation check	
5.	SPIRE-FM-SFT-FUNC-SCU-03-P	SCU DC thermometry check	
6.	SPIRE-FM-SFT-FUNC-SCU-06-P	SCU AC thermometry check	
7.	SPIRE-FM-SFT-FUNC-SCU-07-P	Sorption Cooler Heater Check	
8.	SPIRE-FM-SFT-FUNC-SCU-04-P	Photometer Calibration Check	
9.	SPIRE-FM-SFT-FUNC-SCU-05-P	Spectrometer Calibration Check	
10.	SPIRE-FM-SFT-FUNC-MCU-01-P	MCU (Prime) Boot Check	
11.	SPIRE-FM-SFT-FUNC-MCU-02-P	MCU Nominal Frame Generation Check	
12.	SPIRE-FM-SFT-FUNC-BSM-01-P	BSM (Prime) Chop/Jiggle Sensor Check	
13.	SPIRE-FM-SFT-BSM-OFF-P	BSM (Prime) Switch OFF	
14.	SPIRE-FM-SFT-FUNC-DCU-01-P	DCU Nominal Science Packet Generation Check PRIME	
15.	SPIRE-FM-SFT-FUNC-DCU-04-PHOT-P	Photometer LIAs Check PRIME	
16.	SPIRE-FM-SFT-PLIA-OFF-P	Photometer LIAs Switch OFF PRIME	
17.	SPIRE-FM-SFT-FUNC-DCU-04-SPEC-P	Spectrometer LIAs Check PRIME	
18.	SPIRE-FM-SFT-SLIA-OFF-P	Spectrometer LIAs Switch OFF PRIME	
19.	SPIRE-FM-SFT-MCU-OFF-P	MCU Switch OFF PRIME	
20.	SPIRE-FM-SFT-SCU-OFF-P	SCU Switch OFF PRIME	
21.	SPIRE-FM-SFT-DRCU-OFF-P	DRCU Switch OFF PRIME	
22.	SPIRE-FM-SFT-FUNC-SMEC-01-P	SMEC Encoder and LVDT check PRIME	
23.	SPIRE-FM-SFT-SMEC-OFF-P	SMEC Switch OFF PRIME	
	REDUNDANT UNIT SCRIPTS		
24.	SPIRE-FM-SFT-DPU-START-R-PP	DPU ON REDUN	
25.	SPIRE-FM-SFT-DRCU-START-R-STEP1	DRCU ON REDUN Step1	

No.	Tcl Script Name	Comment	Confirmed
26.	SPIRE-FM-SFT-DRCU-START-R-STEP2	DRCU ON REDUN Step2	
27.	SPIRE-FM-SFT-FUNC-SCU-01-R	SCU Nominal Science Packet Generation Check REDUN.	
28.	SPIRE-FM-SFT-FUNC-SCU-03-R	SCU DC Thermometry Check REDUN.	
29.	SPIRE-FM-SFT-FUNC-SCU-06-R	SCU AC Thermometry Check REDUN.	
30.	SPIRE-FM-SFT-FUNC-SCU-07-R	Sorption Cooler Heaters Check REDUN.	
31.	SPIRE-FM-SFT-FUNC-SCU-04-R	Photometer Calibrator Check REDUN.	
32.	SPIRE-FM-SFT-FUNC-SCU-05-R	Spectrometer Calibrator Check REDUN.	
33.	SPIRE-FM-SFT-FUNC-MCU-01-R	MCU Boot Check REDUN.	
34.	SPIRE-FM-SFT-FUNC-MCU-02-R	MCU Nominal Science Packet Generation Check REDUN.	
35.	SPIRE-FM-SFT-FUNC-BSM-01-R	BSM Chop/Jiggle Sensors Check REDUN.	
36.	SPIRE-FM-SFT-BSM-0FF-R	BSM Switch OFF REDUN.	
37.	SPIRE-FM-SFT-FUNC-DCU-01-R	DCU Nominal Science Packet Generation Check REDUN.	
38.	SPIRE-FM-SFT-FUNC-DCU-04-PHOT-R	Photometer LIAs Check REDUN.	
39.	SPIRE-FM-SFT-PLIA-OFF-R	Photometer LIAs Switch OFF REDUN.	
40.	SPIRE-FM-SFT-FUNC-DCU-04-SPEC-R	Spectrometer LIAs Check REDUN.	
41.	SPIRE-FM-SFT-SLIA-OFF-R	Spectrometer LIAs switch OFF REDUN.	
42.	SPIRE-FM-SFT-MCU-OFF-R	MCU Switch OFF REDUN.	
43.	SPIRE-FM-SFT-SCU-OFF-R	SCU Switch OFF REDUN.	
44.	SPIRE-FM-SFT-DRCU-OFF-R	DRCU Switch OFF REDUN	
45.	SPIRE-FM-SFT-FUNC-SMEC-01-R	SMEC Encoder and LVDT Check REDUN.	
46.	SPIRE-FM-SFT-SMEC-OFF-R	SMEC Switch OFF REDUN.	

The HPCSS must also have the following MIB files for SPIRE loaded:

HPCCS Software	Version	Comment	Confirmed Installed
SPIRE MIB version			

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

I-EGSE Software	Version	Comment
SPIRE MIB version		
SCOS version		

5 Conditions

5.1 Personnel

Responsibility	Name / Organisation
Test Director	
Test Conductor	
EGSE Operator	
Electrical Engineer	
Specialist Engineer	
Element Cognizant	
PA Responsible	
Instrument Representative	
Customer Representative	
ESA Representative	

5.2 Environmental

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

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

S/C Cryo conditions: see section 7.1

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 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 not mandatory for this test, but if used can be connected to the HPCCS in accordance with AD 8.

5.4.4 OGSE

None.

5.4.5 Special Equipment

None.

6 Verification Requirements and Test Criteria

This is a short functional check of all SPIRE PFM subsystems in warm or cold conditions. No specific requirements are to be verified.

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 7.2.11 shall be executed.

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

Test Location:	
Test Session Id(s):	
Environment:	

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	SPIRE: OFF						
0.1	Check that all open work identified at the TRR is closed	OK					
0.2	Check SPIRE FPU interface temperatures (throughout the test):						
	Level 0 (HTT upper bulk) T222	As per TRR					
	Level 1 (Vent line) T234	As per TRR					
	Level 2 (OBA) T242	As per TRR					
0.3	No constraints on thermal shield or CVV	N/A					
0.4	Check cover temperature	As per TRR					
0.5	Stabiliity (drifting)						
	L0	As per TRR					
	L1/L2	As per TRR					
0.6	Check cryostat angle Keep angle constant throughout the test	As per TRR					
	SPIRE: OFF						

Enter Start Date|Time:			

7.2 Step by Step Procedure

7.2.1 EGSE & Satellite Switch On

The following test steps are not applicable for TBTV tests.

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	Install Test Box and Satellite & EGSE Switch On						
1.1	Confirm I-EGSE physically connected to HPCCS	OK			Steps 1.1, 1.3 to 1.7 are not mandatory for test execution		
1.2	If not already on, switch on HPCCS, SCOEs and Satellite/SVM and configure into Basic Test Mode i.a.w. AD 2 Section 7.1 to 7.5						
1.3	Confirm that EGSE and Satellite are in the correct configuration as per AD 2	OK					
1.4	Switch on & configure SPIRE I-EGSE i.a.w. **AD 8**						
1.5	Confirm SPIRE I-EGSE is in the correct configuration as per AD 8	OK					
1.6	From HPCCS Test Conductor console issue command to connect to SPIRE I-EGSE **connect HSPIREEGSE**	YZS29940 = connected					
1.7	Verify correct connection and time synchronisation with IEGSE: **Y102999ETVT036_ASDGEN_VERSPIREIEGSE**	OK					
	READY FOR START OF SPIRE SFT						

Enter Date/Time:			Sign Off	TC:	PA:

Enter Start Date|Time:	23/11/08	21:12	

7.2.2 *Switch On SPIRE PRIME To DRCU ON (Standby)*

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 DRCU ON mode. When in DRCU ON mode one parameter remains OOL (soft) namely SMD2V505 (NCR3955 refers) this is also expected.

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N	
1.	ONLY APPLICABLE FOR TBTV: Verify the following TCS baseplate temperature for SPIRE Warm Units before switching ON: **HSDCU (DEA88710)**	> -30°C & < +45°C	5.45		✓		A. Polverini
2.	On HPCCS start Packet History displays for the following APIDs:1280,1282	OK	OK		✓		A. Polverini
3.	From the HPCCS test conductor console start the test script to power SPIRE Prime to DRCU ON mode: **S102999SCVT005_ASDSFTSPIR_PWR_ON_P**		✓		✓		A. Polverini
4.	On HPCCS when prompted: "SPIRE Switch ON for SFT related tests in any conditions - Select NO to abort TS if not correct"	YES	YES		✓		A. Polverini

Enter Date/Time:	23/11/08	21:15	Sign Off	TC: A. Polverini	PA: R. Goossens

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N	
5.	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.			N/A	X		A. Pelver
6.	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 DRCU ON mode.			A number of soft/hard OOL´s are reported	✓		A. Pelver
7.	On HPCCS when prompted: "Check Telemetry Updating Correctly and OBT is Consistent with CDMU - OK to continue"	OK THSK = TSYNC			✓		A. Pelver
8.	If I-EGSE connected when prompted on HPCCS, perform check requested: "Check IEGSE Time Consistent - OK to continue when RAL confirm"	OK		N/A			A. Pelver
9.	On HPCCS when prompted: "Check Telemetry No Longer Updating - OK to continue" Check that parameters:			**AND: SA_1_559**			

Enter Date/Time:	23/11/08	2122	Sign Off	TC: A. Pelver	PA: R. Goossens

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N	
	THSK TM2N	Not refreshing Not incrementing	Not refr. Not incr		✓		A. Polver
10.	Select OK to continue	OK	OK		✓		A. Polver
11.	On HPCCS when prompted: "Check Telemetry Updating Correctly - OK to continue" Check that parameters: THSK TM2N	 Refreshing @ 1Hz Incrementing by 1 @ 1Hz	 Refr Incr	AND: SA_1_559	✓		A. Polver
12.	Select OK to continue	OK	OK		✓		A. Polver
13.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT005_ASDSFTSPIR_PWR_ON_P** it will prompt: "Set Bus Profile Back to Original Setting?" Select NO	NO	NO		✓		A. Polver

Enter Date/Time:	23/11/08	21:24	Sign Off	TC: A. Polver	PA: R. Goossens

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N	
14.	At the prompt: "Bus Profile left unchanged" Select OK to continue	OK	OK		✓		A. Polverini
15.	Verify HK TM packets are being received on APIDs 1280 & 1282				✓		A. Polverini
16.	MODE parameter is set to "DRCU ON" mode (RAW value 0x0100)	SM00M500 = 0x0100 (DRCU ON)	SM00M500 = DRCU ON	AND: SA_1_559	✓		A. Polverini
17.	ONLY APPLICABLE FOR TBTV: Verify the following TCS baseplate temperature for SPIRE Warm Units before operating SPIRE: HSDCU (DEA88710) (170)	> -15°C & < +45°C	5.37		✓		A. Polverini
	SPIRE powered and in DRCU ON mode						

Remark 1

Enter Date/Time:	23/11/08	21:27	Sign Off	TC: A. Polverini	PA: R. Goossens

Enter Start Date|Time:	23/11/08	21:29	

7.2.3 *Short Functional Tests - Nominal*

7.2.3.1 Procedure SPIRE-FM-SFT-FUNC-SCU-01-P

Version	2.4
Date	4th June 2008
Purpose	SCU science packet generation check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced
Final configuration	Unchanged
Constraints	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • SFT PARAMETERS and DPU & OBS PARAMETERS displays are selected on the CCS
Duration	3 minutes
Pass/Fail Criteria	Specified SCU HK parameters show expected increment.

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-FUNC-SCU-01-P.tcl	SCUFRAMECNT (On SFT PARAMETERS display) TM5N (On DPU & OBS PARAMETERS display)	0/31 0x3FFF/1	0/31 0x3FFF/1	ok

SA-6-559

SA-1-559

Test Result (Pass/Fail):	Pass

Enter Date/Time:	23/11/08	21:33	Sign Off	TC: A. Pilbratt	PA: R. Goossens

Enter Start Date|Time:	23/11/08	21:36	

7.2.3.2 Procedure SPIRE-FM-SFT-FUNC-SCU-03-P

Version	2.3
Date	28th August 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 • SFT PARAMETERS display is selected on the CCS
Duration	8 minutes
Pass/Fail Criteria	DC Thermometry channels show temperature readings according to the actual instrument temperature* *: At warm temperatures all channels should show short circuit RAW readings of -32768

Procedure Steps:

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

A. Pérez

Enter Date/Time:	23/11/08	21:29	Sign Off	TC: A. Pérez	PA: R. Goossens

Enter Start Date|Time:			

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 / FFFF	/FFFF	✓ A. Pelu
4	If the instrument is at He II temperatures check the values of SCU DC thermometry channels. **Note that the measured channel values will depend on the actual cryostat Level 0 and Level 1 temperatures.**	PUMPHTRTEMP PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L0 K ~ L0 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K		✓ A. Pelu
5	If the instrument is at He I			N/A	

Enter Date/Time:	23/11/08	21:40	Sign Off	TC: A. Pelu	PA: R. Goossens

DS: 65535 ID: SA_6_5 Title: FUNCTIONAL TEST PARAMETERS Sample Time: 2008.328.21.39.31.201 Workstation: hpws21

NAME	DESCRIPTION	VALUE	UNIT	NAME	DESCRIPTION	VALUE	UNIT
SM10N500	OBSID	B0000000	HEX	SM_1F520	SCUTEMPSTAT	0000FFFF	HEX
SM2LN500	BBFULLTYPE	Null		SM_0X520	PLIABITSTAT	00000000	HEX
SM00M500	MODE	DRCU_ON		SM_1X520	SLIABITSTAT	00000000	HEX
SM00T500	THSK	2008.328.21.39.30.653	HEX	SM_2X520	MCUBITSTAT	00000000	HEX
SMT1N500	TM2N	000004FC	HEX	SMT0A520	EVHSV	0.0832	mV
SMD1N510	DCUFRAMECNT	0		SMH0A520	SPHSV	0.1299	mV
SMD0N515	MCUFRAMECNT	0		SMT1A520	SPHTRV	0.0023	V
SMD0N520	SCUFRAMECNT	31		SMP0V520	PCALV	0.000298	V
SM20F510	PSWJFETSTAT	00000000	HEX	SMP0A520	PCALCURR	0.0012	mA
SM80F510	PMLWJFETSTAT	00000000	HEX	SMS0V520	SCAL2V	0.000436	V
SM20V510	PSWJFET1V	0	V	SMS0A520	SCAL2CURR	0.000458	mA
SM21V510	PSWJFET2V	0	V	SMS1V520	SCAL4V	0.000568	V
SM22V510	PSWJFET3V	0	V	SMS1A520	SCAL4CURR	0.000803	mA
SM23V510	PSWJFET4V	0	V	SMK0F520	SUBKSTAT	00000000	HEX
SM24V510	PSWJFET5V	0	V	SMF0K520	PUMPHTRTEMP	2.57754778	K
SM25V510	PSWJFET6V	0	V	SMF1K520	PUMPHSTEMP	3.31061931	K
SM30V510	PMWJFET1V	0	V	SMF2K520	EVAPHSTEMP	3.17919903	K
SM31V510	PMWJFET2V	0	V	SMF3K520	SHUNTTEMP	2.07411334	K
SM32V510	PMWJFET3V	0	V	SMF4K520	EMCFILTEMP	4.97838420	K
SM33V510	PMWJFET4V	0	V	SMF5K520	SL0TEMP	2.08017733	K
SM50V510	PLWJFET1V	0	V	SMF6K520	PL0TEMP	2.09588310	K
SM51V510	PLWJFET2V	0	V	SMF7K520	OPTTEMP	5.01704724	K
SMT0V510	TCJFETV	0	V	SMF8K520	BAFTEMP	5.25228916	K
SMF0F510	SPECJFETSTAT	00000000	HEX	SMF9K520	BSMIFTEMP	5.03394456	K
SM00V510	SSWJFET1V	0	V	SMS0K520	SCAL2TEMP	5.11306283	K
SM01V510	SSWJFET2V	0	V	SMS1K520	SCAL4TEMP	5.02279963	K
SM10V510	SLWJFET1V	0	V	SMS2K520	SCALTEMP	4.95806815	K
SMS0W515	SMECENCPWR	0000FFFF	HEX	SMFAK520	SMECIFTEMP	4.89965380	K
SMS1W515	SMECLVDTPWR	0000FFFF	HEX	SMFBK520	SMECTEMP	4.91045483	K
SMS1M515	SMECLOOPMODE	0000FFFF	HEX	SMFCK520	BSMTEMP	4.97787479	K
SMC0W515	CHOPSENSPWR	0000FFFF	HEX	SMK0K520	SUBKTEMP	65.05010000	K
SMJ0W515	JIGGSENSPWR	0000FFFF	HEX				

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. **Note that the measured channel values will depend on the actual cryostat Level 1 temperature.**	PUMPHTRTEMP PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K		
6	If the instrument is warm: **Configure the SFT PARAMETERS display to show the RAW values of SCU DC**	PUMPHTRTEMP PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP	— — — — —	N/A	

Enter Date/Time:	23/11/08	21:41	Sign Off	TC: A. Pohlen	PA: R. Goossens

Enter Start Date|Time:			

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
	thermometry channels. Record the RAW values of SCU DC thermometry channels. Nominal values should show a short circuit status (or RAW - 32768). **Non Nominal (Open Circuit Criterion):** **RAW reading in the range [0, -100]**	SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	— — — — — — — — — — —	N/A	
Test Result (Pass/Fail):					

Enter Date/Time:	23/11/08	2:41	Sign Off	TC: A. Plum	PA: R. Goossens

Enter Start Date|Time:	23/11/08	21:43	

7.2.3.3 Procedure SPIRE-FM-SFT-FUNC-SCU-06-P

Version	2.3
Date	28th August 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 • SFT PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail Criteria	AC Thermometry channel shows 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-FM-SFT-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	0/1/1	0/1/1	

Enter Date/Time:	23/11/08	21:44	Sign Off	TC: A. Pohlen	PA: R. Goossens

Enter Start Date|Time:	23/11/08	21:44

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
	SUBKSTAT				
4	If the instrument is at He II temperatures check the value of SCU AC thermometry channel. **Note that the measured channel value will depend on the cryostat Level 0 temperature.**	SUBKTEMP	~L0 K	2.01	
5	If the instrument is at He I temperatures check the value of SCU AC thermometry channel. **Note that the measured channel value will depend on the cryostat Level 1 temperature.**	SUBKTEMP	~L1 K	N/A	
6	If the instrument is warm: **Configure the SFT PARAMETERS display to show the RAW value of SCU AC thermometry channel.** Only record the RAW value of SCU AC thermometry channel if it indicates an open circuit. **Open Circuit Criterion:** **RAW reading in the range [0, -100]**	SUBKTEMP	—	N/A	

Enter Date/Time:	23/11/08	21:45	Sign Off	TC: A. Pelham	PA: R. Goossens

Enter Start Date|Time:	23/11/08	

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
Test Result (Pass/Fail):	Pass				

Enter Date/Time:	23/11/08	2146	Sign Off	TC: A. Peacock	PA: R. Goossens

Enter Start Date|Time:	23/11/08	21:47	

7.2.3.4 Procedure SPIRE-FM-SFT-FUNC-SCU-07-P

Version	2.2
Date	2nd January 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	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • SFT 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-FM-SFT-FUNC-SCU-07-P.tcl	—	—	—	—
2	**Wait for the parameter BBFULLTYPE to get set to Cooler_Htr_Che**	BBFULLTYPE	Cooler_Htr_Che		
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	0.1554 / 324.96 / 0.1554	OK

Enter Date/Time:	23/11/08		Sign Off	TC: A. [signature]	PA: K. Vassens [signature]

Enter Start Date|Time:			

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
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	0.1853 / 0.1587	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	0.0029 / 0.0029	OK
Test Result (Pass/Fail):					

Enter Start Date|Time:	23/11/08	21:56	

7.2.3.5 Procedure SPIRE-FM-SFT-FUNC-SCU-04-P

Version	2.3
Date	28th August 2007
Purpose	Photometer Calibration 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	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail Criteria	PCAL voltage and current agree with expected values

Enter Start Date|Time:	23/11/08	21:58	

Procedure Steps:

Step	Description	Parameter Name - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-FUNC-SCU-04-P.tcl **The expected values during the test should be monitored when parameter BBFULLTYPE in the SFT PARAMETERS display is set to PCAL_Check This usually happens about 30 seconds from the start of test execution.**	PCALCURR - mA PCALV – V BBFULLTYPE	0.0/0.1/0.0 0.0/~0.02/0.0 PCAL_Check	0.01 0.01	21:58:43
Test Result (Pass/Fail):					

Enter Date/Time:	23/11/08	22:05	Sign Off	TC: A. Polo	PA: R. Goossens

Enter Start Date|Time:	23/11/08	22:06

7.2.3.6 Procedure SPIRE-FM-SFT-FUNC-SCU-05-P

Version	2.3
Date	28th 2007
Purpose	Spectrometer Calibration 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	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	5 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-FM-SFT-FUNC-SCU-05-P.tcl	—	—	—	
2	**Wait for the parameter BBFULLTYPE to get set to SCAL4_Check**	BBFULLTYPE	SCAL4_Check		

09:12

Enter Date/Time:	23/11/08	22:11	Sign Off	TC: A. Polus	PA: R. Goossens

Enter Start Date|Time:			

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 parameters SCAL4CURR and SCAL4V *These parameters are set back to 0 after ~20 seconds*	SCAL4CURR – mA SCAL4V – V	0.0/~0.10/0.0 0.0/~0.05/0.0	0.0/0.1/0.0 0.0/0.05/0.0	
4	**Wait for the parameter BBFULLTYPE to get set to SCAL2_Check**	BBFULLTYPE	SCAL2_Check		
5	A few seconds later record the values of parameters SCAL2CURR and SCAL2V *These parameters are set back to 0 after ~20 seconds*	SCAL2CURR – mA SCAL2V – V	0.0/~0.10/0.0 0.0/~0.05/0.0	0.0/0.1/0.0 0.0/0.05/0.0	
Test Result (Pass/Fail):					

Enter Date/Time:	23/11/08	22:11	Sign Off	TC: A. Pelham	PA: R. Goossens

Enter Start Date|Time:			

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
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 ± 0.6V ~ 15.0 ± 0.6V ~ -15.0 ± 0.7V ~300K ~300K ~300K	5.0 14.14 -14.96 15.52 -15.63 270 276 276	
Test Result (Pass/Fail): Pass					

Enter Date/Time:	23/11/08	22:22	Sign Off	TC: A. Polverini	PA: R. Goossens

DS: 65535 ID: SA_7_5 Title: SFT PARAMETERS Sample Time: 2008.328.22.18.55.170 Workstation: hpws21

NAME	DESCRIPTION	VALUE	UNIT	NAME	DESCRIPTION	VALUE	UNIT
SM10N500	OBSID	B0000000	HEX	SM_1V520	SCUP9V	9.0801	V
SM2LN500	BBFULLTYPE	Null		SM_2V520	SCUM9V	-9.0713	V
SM00M500	MODE	DRCU_ON		SMT0A520	EVHSV	0.1598	mV
SM00T500	THSK	2008.328.22.18.54.622	HEX	SMH0A520	SPHSV	0.1299	mV
SMT1N500	TM2N	00000E38	HEX	SMT1A520	SPHTRV	0.0035	V
SMD1N510	DCUFRAMECNT	0		SMP0V520	PCALV	0.000298	V
SMD0N515	MCUFRAMECNT	0		SMP0A520	PCALCURR	0.0012	mA
SMD0N520	SCUFRAMECNT	31		SMS0V520	SCAL2V	0.000236	V
SMB6V510	BIASP5V	5.18	V	SMS0A520	SCAL2CURR	0.000458	mA
SMB7V510	BIASP9V	8.99	V	SMS1V520	SCAL4V	0.000568	V
SMB8V510	BIASM9V	-9.04	V	SMS1A520	SCAL4CURR	0.000803	mA
SML0V510	PLIAP5V	0.085	V	SMK0F520	SUBKSTAT	00000001	HEX
SML1V510	PLIAP9V	0.017	V	SMF0K520	PUMPHTRTEMP	5.50073517	K
SML2V510	PLIAM9V	0.017	V	SMF1K520	PUMPHSTEMP	3.32963888	K
SML3V510	SLIAP5V	0.048	V	SMF2K520	EVAPHSTEMP	3.33760391	K
SML4V510	SLIAP9V	0.016	V	SMF3K520	SHUNTTEMP	2.08448943	K
SML5V510	SLIAM9V	0.017	V	SMF4K520	EMCFILTEMP	4.94168064	K
SM_4V515	MCUP5V	20.00	V	SMF5K520	SL0TEMP	2.07955076	K
SM_2V515	MCUP14V	75.36	V	SMF6K520	PL0TEMP	2.09523222	K
SM_3V515	MCUM14V	75.36	V	SMF7K520	OPTTEMP	4.97257309	K
SM_0V515	MCUP15V	75.36	V	SMF8K520	BAFTEMP	5.20481270	K
SM_1V515	MCUM15V	75.36	V	SMF9K520	BSMIFTEMP	4.98954640	K
SMM0K515	MCUMACTEMP	1651.51	K	SMS0K520	SCAL2TEMP	5.08188336	K
SMF0K515	MCUSMECTEMP	1651.51	K	SMS1K520	SCAL4TEMP	5.00323376	K
SMB0K515	MCUBSMTEMP	1651.51	K	SMS2K520	SCALTEMP	4.91180579	K
SMS0W515	SMECENCPWR	0000FFFF	HEX	SMFAK520	SMECIFTEMP	4.85521465	K
SMS1W515	SMECLVDTPWR	0000FFFF	HEX	SMFBK520	SMECTEMP	4.86509039	K
SMS1M515	SMECLOOPMODE	0000FFFF	HEX	SMFCK520	BSMTEMP	4.93373494	K
SMC0W515	CHOPSENSPWR	0000FFFF	HEX	SMK0K520	SUBKTEMP	2.04120600	K
SMJ0W515	JIGGSENSPWR	0000FFFF	HEX	SM_0X520	PLIABITSTAT	00000000	HEX
SM_1F520	SCUTEMPSTAT	0000FFFF	HEX	SM_1X520	SLIABITSTAT	00000000	HEX
SM_0V520	SCUP5V	5.2333	V	SM_2X520	MCUBITSTAT	00000000	HEX

DS: 65535 ID: SA_7_5 Title: SFT PARAMETERS Sample Time: 2008.328.22.19.45.169 Workstation: hpws21

NAME	DESCRIPTION	VALUE	UNIT	NAME	DESCRIPTION	VALUE	UNIT
SM10N500	OBSID	B0000165	HEX	SM_1V520	SCUP9V	9.0791	V
SM2LN500	BBFULLTYPE	MCU_Boot		SM_2V520	SCUM9V	-9.0716	V
SM00M500	MODE	DRCU_ON		SMT0A520	EVHSV	0.1342	mV
SM00T500	THSK	2008.328.22.19.44.621	HEX	SMH0A520	SPHSV	0.1554	mV
SMT1N500	TM2N	00000E6A	HEX	SMT1A520	SPHTRV	0.0035	V
SMD1N510	DCUFRAMECNT	0		SMP0V520	PCALV	0.000247	V
SMD0N515	MCUFRAMECNT	0		SMP0A520	PCALCURR	0.0012	mA
SMD0N520	SCUFRAMECNT	31		SMS0V520	SCAL2V	0.000236	V
SMB6V510	BIASP5V	5.18	V	SMS0A520	SCAL2CURR	0.000636	mA
SMB7V510	BIASP9V	8.99	V	SMS1V520	SCAL4V	0.000468	V
SMB8V510	BIASM9V	-9.04	V	SMS1A520	SCAL4CURR	0.000625	mA
SML0V510	PLIAP5V	0.086	V	SMK0F520	SUBKSTAT	00000001	HEX
SML1V510	PLIAP9V	0.017	V	SMF0K520	PUMPHTRTEMP	5.49326796	K
SML2V510	PLIAM9V	0.017	V	SMF1K520	PUMPHSTEMP	3.32560443	K
SML3V510	SLIAP5V	0.049	V	SMF2K520	EVAPHSTEMP	3.33361034	K
SML4V510	SLIAP9V	0.017	V	SMF3K520	SHUNTTEMP	2.08479461	K
SML5V510	SLIAM9V	0.017	V	SMF4K520	EMCFILTEMP	4.92944612	K
SM_4V515	MCUP5V	-18.01	V	SMF5K520	SL0TEMP	2.07955076	K
SM_2V515	MCUP14V	-75.37	V	SMF6K520	PL0TEMP	2.09523222	K
SM_3V515	MCUM14V	-75.37	V	SMF7K520	OPTTEMP	4.97257309	K
SM_0V515	MCUP15V	-75.37	V	SMF8K520	BAFTEMP	5.20283451	K
SM_1V515	MCUM15V	-75.37	V	SMF9K520	BSMIFTEMP	4.98815895	K
SMM0K515	MCUMACTEMP	-1651.46	K	SMS0K520	SCAL2TEMP	5.07860131	K
SMF0K515	MCUSMECTEMP	-1651.46	K	SMS1K520	SCAL4TEMP	4.99997278	K
SMB0K515	MCUBSMTEMP	-1651.46	K	SMS2K520	SCALTEMP	4.91180579	K
SMS0W515	SMECENCPWR	00000000	HEX	SMFAK520	SMECIFTEMP	4.85521465	K
SMS1W515	SMECLVDTPWR	00000000	HEX	SMFBK520	SMECTEMP	4.86338922	K
SMS1M515	SMECLOOPMODE	00000000	HEX	SMFCK520	BSMTEMP	4.93289418	K
SMC0W515	CHOPSENSPWR	00000000	HEX	SMK0K520	SUBKTEMP	2.04120600	K
SMJ0W515	JIGGSENSPWR	00000000	HEX	SM_0X520	PLIABITSTAT	00000000	HEX
SM_1F520	SCUTEMPSTAT	0000FFFF	HEX	SM_1X520	SLIABITSTAT	00000000	HEX
SM_0V520	SCUP5V	5.2332	V	SM_2X520	MCUBITSTAT	00000001	HEX

DS: 65535 ID: SA_7_5 Title: SFT PARAMETERS Sample Time: 2008.328.22.20.41.169 Workstation: hpws21

NAME	DESCRIPTION	VALUE	UNIT	NAME	DESCRIPTION	VALUE	UNIT
SM10N500	OBSID	B0000000	HEX	SM_1V520	SCUP9V	9.0794	V
SM2LN500	BBFULLTYPE	Null		SM_2V520	SCUM9V	-9.0716	V
SM00M500	MODE	DRCU_ON		SMT0A520	EVHSV	0.1342	mV
SM00T500	THSK	2008.328.22.20.40.620	HEX	SMH0A520	SPHSV	0.1045	mV
SMT1N500	TM2N	00000EA2	HEX	SMT1A520	SPHTRV	0.0042	V
SMD1N510	DCUFRAMECNT	0		SMP0V520	PCALV	0.000298	V
SMD0N515	MCUFRAMECNT	0		SMP0A520	PCALCURR	0.0014	mA
SMD0N520	SCUFRAMECNT	31		SMS0V520	SCAL2V	0.000336	V
SMB6V510	BIASP5V	5.18	V	SMS0A520	SCAL2CURR	0.000458	mA
SMB7V510	BIASP9V	8.99	V	SMS1V520	SCAL4V	0.000268	V
SMB8V510	BIASM9V	-9.04	V	SMS1A520	SCAL4CURR	0.000803	mA
SML0V510	PLIAP5V	0.086	V	SMK0F520	SUBKSTAT	00000001	HEX
SML1V510	PLIAP9V	0.017	V	SMF0K520	PUMPHTRTEMP	5.48393394	K
SML2V510	PLIAM9V	0.016	V	SMF1K520	PUMPHSTEMP	3.32387537	K
SML3V510	SLIAP5V	0.048	V	SMF2K520	EVAPHSTEMP	3.33018728	K
SML4V510	SLIAP9V	0.016	V	SMF3K520	SHUNTTEMP	2.08418425	K
SML5V510	SLIAM9V	0.017	V	SMF4K520	EMCFILTEMP	4.93433993	K
SM_4V515	MCUP5V	5.00	V	SMF5K520	SL0TEMP	2.07986404	K
SM_2V515	MCUP14V	14.14	V	SMF6K520	PL0TEMP	2.09458135	K
SM_3V515	MCUM14V	-14.46	V	SMF7K520	OPTTEMP	4.96939637	K
SM_0V515	MCUP15V	15.52	V	SMF8K520	BAFTEMP	5.20283451	K
SM_1V515	MCUM15V	-15.63	V	SMF9K520	BSMIFTEMP	4.98399663	K
SMM0K515	MCUMACTEMP	270.09	K	SMS0K520	SCAL2TEMP	5.07860131	K
SMF0K515	MCUSMECTEMP	276.34	K	SMS1K520	SCAL4TEMP	4.99508131	K
SMB0K515	MCUBSMTEMP	276.14	K	SMS2K520	SCALTEMP	4.91320768	K
SMS0W515	SMECENCPWR	00000000	HEX	SMFAK520	SMECIFTEMP	4.85521465	K
SMS1W515	SMECLVDTPWR	00000000	HEX	SMFBK520	SMECTEMP	4.86225511	K
SMS1M515	SMECLOOPMODE	00000006	HEX	SMFCK520	BSMTEMP	4.93163305	K
SMC0W515	CHOPSENSPWR	00000000	HEX	SMK0K520	SUBKTEMP	2.04120600	K
SMJ0W515	JIGGSENSPWR	00000000	HEX	SM_0X520	PLIABITSTAT	00000000	HEX
SM_1F520	SCUTEMPSTAT	0000FFFF	HEX	SM_1X520	SLIABITSTAT	00000000	HEX
SM_0V520	SCUP5V	5.2328	V	SM_2X520	MCUBITSTAT	00000001	HEX

Enter Start Date|Time:	23/11/08	22:16	

7.2.3.7 Procedure SPIRE-FM-SFT-FUNC-MCU-01-P

Version	2.4
Date	4th June 2008
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.
Constraints	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCU voltages and board temperatures 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-FM-SFT-FUNC-MCU-01-P.tcl	—	—	—	—
2	Check that the MCU is booted up successfully	MCUBITSTAT	0/1/1	0	

Enter Date/Time:	23/11/08	22:24	Sign Off	TC: A. Pluvet	PA: R. Goossens

Enter Start Date|Time:	23/11/08	22:23	

7.2.3.8 Procedure: SPIRE-FM-SFT-FUNC-MCU-02-P

Version	2.2
Date	2nd January 2007
Purpose	MCU Nominal Frame Generation 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.
Constraints	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • SFT 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-FM-SFT-FUNC-MCU-02-P.tcl	MCUFRAMECNT	**FM** : 0/297	— 0/297	—
Test Result (Pass/Fail):	Pass				

A. Plum

Enter Date/Time:	23/11/08	22:25	Sign Off	TC: A. Plum	PA: R. Goossens

Enter Start Date|Time:	23/11/08	22:26	

7.2.3.9 Procedure SPIRE-FM-SFT-FUNC-BSM-01-P

Version	2.3
Date	28th August 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.
Constraints	• 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 • SFT PARAMETERS display is selected on the CCS
Duration	3 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-FM-SFT-FUNC-BSM-01-P.tcl	—	—	—	—
2	Check that the Chop and Jiggle sensors have switched on	CHOPSENSPWR JIGGSENSPWR	0/1/1 0/1/1	0/1/1 0/1/1	
Test Result (Pass/Fail):					

Enter Date/Time:	23/11/08	22:27	Sign Off	TC: A. Polus	PA: R. Goossens

Enter Start Date|Time:	23/11/08	22:28	

7.2.3.10 Procedure SPIRE-FM-SFT-BSM-OFF-P

Version	2.3
Date	28th August 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.
Constraints	• 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 • SFT PARAMETERS display is selected on the CCS
Duration	3 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-FM-SFT-BSM-OFF-P.tcl	—	—	—	—
2	Check that the power to the BSM sensors is switched off	CHOPSENSPWR JIGGSENSPWR	1/-/0 1/-/0	1/0/0 1/0/0	
Test Result (Pass/Fail):					

Enter Date/Time:	23/11/08	22:29	Sign Off	TC: A. Polus	PA: R. Goossens

Enter Start Date|Time:	23/11/08	22:30	

7.2.3.11 Procedure SPIRE-FM-SFT-FUNC-SMEC-01-P

Version	2.3
Date	28th August 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.
Constraints	• 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 • SFT PARAMETERS display is selected on the CCS
Duration	3 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-FM-SFT-FUNC-SMEC-01-P.tcl	—	—	—	—
2	Check that power to the SMEC LED and LVDT sensor is on	SMECENCPWR	0/-/1	0 / 1 / 1	
		SMECLVDTPWR	0/-/1	0 / 1 / 1	
Test Result (Pass/Fail):	Pass				

Enter Date/Time:	23/11/08	22:31	Sign Off	TC: A. Pohlen	PA: R. Goossens

Enter Start Date|Time:	23/11/08	22:32	

7.2.3.12 Procedure SPIRE-FM-SFT-SMEC-OFF-P

Version	2.3
Date	28th August 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.
Constraints	• 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 • SFT 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-FM-SFT-SMEC-OFF-P.tcl	—	—	—	—
2	Check that the power to the SMEC sensors is switched off	SMECENCPWR SMECLVDTPWR	1/-/0 1/-/0	1/0/0 1/0/0	
Test Result (Pass/Fail): Pass					

Enter Date/Time:	23/11/08	22:33	Sign Off	TC: A. Polverini	PA: R. Goossens

Enter Start Date|Time:	23/11/08	22:34	

7.2.3.13 Procedure SPIRE-FM-SFT-FUNC-DCU-01-P

Version	2.2
Date	2nd January 2007
Purpose	DCU science packet generation check for all Photometer and Spectrometer packet types (PF, PSW, PMW, PLW, SF, SSW and SLW)
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
Constraints	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified DCU HK parameter shows expected increment

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-FUNC-DCU-01-P.tcl	DCUFRAMECNT	0/700	0/700	
Test Result (Pass/Fail):	Pass				

Enter Date/Time:	23/11/08	22:37	Sign Off	TC: A. Pelu	PA: R. Goossens

Enter Start Date|Time:	23/11/08	22:38	

7.2.3.14 Procedure SPIRE-FM-SFT-FUNC-DCU-04-PHOT-P

Version	2.4
Date	10th Sept 2007
Purpose	Photometer LIAs PRIME 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. Photometer LIAs are ON
Constraints	• SPIRE DRCU PRIME is switched ON • Photometer LIAs are OFF • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • DCU PARAMETERS & SFT PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified Photometer LIA HK parameters show expected ON values

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-FUNC-DCU-04-PHOT-P.tcl	PLIABITSTAT	0/1/1	0/1/1	

Enter Date/Time:	23/11/08	22:39	Sign Off	TC: A. Pierre	PA: R. Goossens

Enter Start Date|Time:			

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
2	Check Photometer LIA HK parameter values and ensure that the values are refreshing	PLIAP5V PLIAP9V PLIAM9V	0.0/-/ 5.2 ± 0.2V 0.0/-/ 11.5 ± 0.5V 0.0/-/-11.5 ± 0.5V	5.23 11.57 -11.50	
3	**On the DCU PARAMETERS display check that the LIA temperatures are slowly warming up.** At switch-on it is possible that some of the LIA temperatures will be in soft or even hard limits. No action is required.	LIAP1TEMP to LIAP9TEMP	~ 290-300 K	272 WARMING UP AS EXP	
4	**Wait for ~3 minutes before continuing with the SFTs**	—	—	—	—
Test Result (Pass/Fail): Pass					

Enter Date/Time:	23/11/08	22:46	Sign Off	TC: A. Phan	PA: R. Goossens

Enter Start Date|Time:	23/11/08	22:49	

7.2.3.15 Procedure SPIRE-FM-SFT-PLIA-OFF-P

Version	2.4
Date	10th Sept 2007
Purpose	Photometer LIAs 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. Photometer LIAs 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. Photometer LIAs are OFF
Constraints	• SPIRE DRCU PRIME is switched ON • Photometer LIAs are ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail criteria	Specified Photometer LIA HK parameters show expected OFF values

Procedure Steps:

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-PLIA-OFF-P.tcl	PLIABITSTAT	1/-/0	1 / 0	
2	Check Photometer LIA HK parameter values	PLIAP5V PLIAP9V PLIAM9V	5.2 ± 0.2V/-/0.0 11.5 ± 0.5V/-/0.0 - 11.5 ± 0.5V/-/0.0	5.23 / 0.14 11.56 / 0.017 -11.56 / 0.016	
Test Result (Pass/Fail):					

Enter Date/Time:	23/11/08	22:51	Sign Off	TC: A. Blum	PA: R. Goossens

Enter Start Date|Time:	23/11/08	22:51	

7.2.3.16 Procedure SPIRE-FM-SFT-FUNC-DCU-04-SPEC-P

Version	2.4
Date	10th Sept 2007
Purpose	Spectrometer LIAs PRIME 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. Spectrometer LIAs are ON
Constraints	• SPIRE DRCU PRIME is switched ON • Spectrometer LIAs are OFF • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • SFT PARAMETERS & DCU PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified Spectrometer LIA HK parameters show expected ON values

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-FUNC-DCU-04-SPEC-P.tcl	SLIABITSTAT	0/1/1	0/1/1	

A. Polus

Enter Date/Time:	23/11/08	22:53	Sign Off	TC: A. Polus	PA: R. Goossens

Enter Start Date|Time:	23/11/08	22:53	

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
2	Check Spectrometer LIA HK parameter values and ensure that the values are refreshing	SLIAP5V SLIAP9V SLIAM9V	0.0/-/ 5.2 ± 0.2V 0.0/-/ 11.5 ± 0.5V 0.0/-/-11.5 ± 0.5V	0.091/ 5.24 0.016/ 11.57 0.017/ -11.45	A. Polo
3	**On the DCU PARAMETERS display check that the LIA temperatures are slowly warming up.** At switch-on it is possible that some of the LIA temperatures will be in soft or even hard limits. No action is required.	LIAS1TEMP to LIAS3TEMP	~ 290-300 K	278.73	A. Polo
4	**Wait for ~3 minutes before continuing with the SFTs**	—	—	—	—
Test Result (Pass/Fail):	Pass				

Enter Date/Time:	23/11/08	22:57	Sign Off	TC: A. Polo	PA: R. Goossens

Enter Start Date|Time:	28/11/08	22:58	

7.2.3.17 Procedure SPIRE-FM-SFT-SLIA-OFF-P

Version	2.4
Date	10th Sept 2007
Purpose	Spectrometer LIAs 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. Spectrometer LIAs 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. Spectrometer LIAs are OFF
Constraints	• SPIRE DRCU PRIME is switched ON • Spectrometer LIAs are ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail criteria	Specified Spectrometer LIA HK parameters show expected OFF values

Procedure Steps:

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-SLIA-OFF-P.tcl	SLIABITSTAT	1/-/0	1 / 0	

A. Pilon

Enter Date/Time:	23/11/08	23:00	Sign Off	TC: A. Pilon	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:00	

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Success/ Failure
2	Check Photometer LIA HK parameter values	SLIAP5V SLIAP9V SLIAM9V	5.2 ± 0.2V/-/0.0 11.5 ± 0.5V/-/0.0 -11.5 ± 0.5V/-/0.0	5.24 / 0.047 11.58 / 0.017 -11.56 / 0.016	
Test Result (Pass/Fail): Pass					

A. Pan

Enter Start Date|Time:	23/01/08	23:01	

7.2.3.18 Procedure SPIRE-FM-SFT-FUNC-MCU-OFF-P

Version	2.4
Date	4th June 2008
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.
Constraints	• 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 • SFT PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail criteria	Specified MCU HK Parameter shows expected value.

Note: type 5/4 event: ALARM_LSMCU_DEAD is expected

Enter Start Date|Time:	23/11/08	23:04	

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-FM-SFT -MCU-OFF-P.tcl	—	—	—	—
2	Check that the MCU is switched off Expected events: • A TM(5,1) event report with Event ID 0x0521 and SID 0x510F will be received to indicate that the DPU is not receiving a response from the MCU. • A TM(5,4) event report with Event ID 0x550D and SID 0x5420 will be received to indicate the MCU disconnection from the DPU.	MCUBITSTAT	1/-/0	1 / 0 TM(5,1, 521) SID 510F TM(5,4, 550D) SID 5420	OK

A. Polverini

Test Result (Pass/Fail):	Pass

Enter Date/Time:	23/11/08	23:06	Sign Off	TC: A. Polverini	PA: R Bousquet

Enter Start Date|Time:	23/11/08	28:08	

7.2.3.19 Procedure SPIRE-FM-SFT-FUNC-SCU-OFF-P

Version	2.4
Date	4th June 2008
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
Constraints	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	2 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-FM-SFT- SCU-OFF-P.tcl	—	—	—	—

Enter Date/Time:	27/11/08	23:10	Sign Off	TC: A. Polo	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:10	

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure	
2	A few seconds later record the value of parameter SCUTEMPSTAT a) EVID 1313 No_MCU_Response_Error b) EVID 21773 ALARM_LSMCU_DEAD	SCUTEMPSTAT	0xFFFF/-/0	0xFFFF/0	OK	A. Pohn
3	A few seconds later record the value of parameter SUBKSTAT	SUBKSTAT	1/-/0	1/0	OK	A. Pohn
Test Result (Pass/Fail):	Pass					

Enter Date/Time:	23/11/09	23:10	Sign Off	TC: A. Pohn	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:12	

7.2.4 *Switch Off DRCU & DPU 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 from DRCU ON: **S102999SCVT007_ASDSFTSPIR_PWR_OFF_P**	OK	ok		✓		A. Polehampton
2.	On HPCCS when prompted: "SPIRE Switch OFF for SFT related tests in any conditions - Select NO to abort TS if not correct"	YES	YES		✓		A. Polehampton
3.	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.			N/A			A. Pol
4.	If **YES** is selected the test script will go on to automatically power off all SPIRE warm units.						

Enter Date/Time:	23/11/08	23:14	Sign Off	TC: A. Pol	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:17	

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N	
5.	During Switch OFF of SPIRE the following (5,1) and (5,4) event messages on APID 1280 are expected and do not indicate a problem: c) EVID 1313 No_MCU_Response_Error d) EVID 21773 ALARM_LSMCU_DEAD				✓		A. Polve
6.	On HPCCS when prompted: "Check Telemetry No Longer Updating - OK to continue" Check that parameters: THSK TM2N	 Not refreshing Not incrementing	 Not refreshing Not incrementing	AND: SA_1_559	✓		A. Polve
7.	Select OK to continue	OK	OK		✓		A. Polve
8.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT007_ASDSFTSPIR_PWR_OFF_P** it will prompt: "Bus profile left as SPIRE PRIME, change manually after if required - OK to continue"						

Enter Date/Time:	23/11/08	23:21	Sign Off	TC: A. Polverini	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:21	

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N	
9.	Select OK to continue	OK	OK		V		A. Pelus
10.	On HPCCS stop Packet History displays for the following APIDs:1280,1282	OK	OK		V		A. Pelus
	SPIRE OFF						

Enter Date/Time:	23/11/08	23:22	Sign Off	TC: A. Pelus	PA: R. Goossens

Enter Start Date|Time:			

7.2.5 *Procedure SPIRE-FM-WFT-LPU-01-P*

THIS SECTION IS NOT PERFORMED FOR TBTV SFT

Version	1.0
Date	Tuesday, 28 August 2007
Purpose	DPU PRIME Switch OFF
Initial configuration	Prime and redundant DPU and DRCU are off
Final configuration	Prime and redundant DPU and DRCU are off
Constraints	• Cryostat is vertical to within ±45° • Prime and redundant DPU and DRCU are off
Duration	5 minutes
Pass/Fail criteria	The specified current is drawn when the LPU is enabled and is switched off when the LPU is disabled

SKIPPED AS PER PUS # C69 an. S.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	**Power on Prime LPU LCL (LCL #25)** Execute: **DC25D170**	LCL status	OFF/ /ON		State of LCL #25 switches to ON
2	**Send HL command #5 (LPU Enable Prime)** Execute: **DCT01170, DHT01170 = "CMD_ID_HLC5"**	LCL #25 current	0mA/ /130-180mA		Current between 130-180mA

Enter Date/Time:			Sign Off	TC:	PA:

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
4	**Send HL command #6 (LPU Disable Prime)** Execute: **DCT01170, DHT01170 = "CMD_ID_HLC6"**	LCL #25 current	130-180mA/ /0mA		Current off
5	**Un-power Prime LPU LCL (LCL # 25)** Execute: **DC25B170**	LCL status	ON/ / OFF		State of LCL #25 switches to OFF
Test Result (Pass/Fail):					

Enter Date/Time:			Sign Off	TC:	PA:

Enter Start Date|Time:	23/11/08	23:23	

7.2.6 *Switch On SPIRE REDUNDANT DPU & DRCU*

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 DRCU ON mode. When in DRCU ON mode one parameter remains OOL (soft) namely SMD2V505 (NCR3955 refers) this is also expected.

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N	
1.	ONLY APPLICABLE FOR TBTV: Verify the following TCS baseplate temperature for SPIRE Warm Units before operating SPIRE: **HSDCU (DEA88710)** (170)	> -30°C & < +45°C	5.16		✓		A. Pohn
2.	On HPCCS start Packet History displays for the following APIDs:1281,1283	OK	OK		✓		A. Pohn
3.	From the HPCCS test conductor console start the test script to power SPIRE Prime to DRCU ON: **S102999SCVT006_ASDSFTSPIR_PWR_ON_R**		✓		✓		A. Pohn
4.	On HPCCS when prompted: "SPIRE Switch ON for SFT related test in any condition - Select NO to abort TS if not correct"	YES	YES		✓		A. Pohn

Enter Date/Time:	23/11/08	23:25	Sign Off	TC: A. Pohn	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:25

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N	
5.	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.			N/A			
6.	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 DRCU ON mode.			✓	✓		A. Pohn
7.	On HPCCS when prompted: "Check Telemetry Updating Correctly and OBT is Consistent with CDMU - OK to continue"	OK	OK		✓		A. Pohn
8.	If I-EGSE connected when prompted on HPCCS, perform check requested: "Check IEGSE Time Consistent - OK to continue when RAL confirm"	OK		N/A			A. Pohn
9.	On HPCCS when prompted: "Check Telemetry No Longer Updating - OK to continue" Check that parameters:			AND: SA_1_559	✓		A. Pohn

Enter Date/Time:	23/11/08	23:31	Sign Off	TC: A. Pohn	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:32

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N	
	THSK TM2N	Not refreshing Not incrementing	Not refreshing Not incrementing		✓		A. Polus
10.	Select OK to continue	OK	OK		✓		A. Polus
11.	On HPCCS when prompted: "Check Telemetry Updating Correctly - OK to continue" Check that parameters: THSK TM2N	 Refreshing @ 1Hz Incrementing by 1 @ 1Hz	 Refreshing Incrementing	AND: SA_1_559	✓		A. Polus
12.	Select OK to continue	OK	OK		✓		A. Polus
13.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT006_ASDSFTSPIR_PWR_ON_R** it will prompt: "Set Bus Profile Back to Original Setting?" Select NO	NO	NO		✓		A. Polus

Enter Date/Time:	23/11/08	23:34	Sign Off	TC: A. Polus	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:34	

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N	
14.	At the prompt: "Bus Profile left unchanged" Select OK to continue	OK	OK		✓		A. Polus
15.	Verify HK TM packets are being received on APIDs 1281 & 1283		OK		✓		A. Polus
16.	MODE parameter is set to "DRCU ON" mode (RAW value 0x0100)	SM00M500 = 0x0100 (DRCU ON)	SM00M500 = DRCU ON	**AND: SA_1_559**	✓		A. Polus
17.	ONLY APPLICABLE FOR TBTV: Verify the following TCS baseplate temperature for SPIRE Warm Units before operating SPIRE: **HSDCU (DEA88710 → 170)**	> -15°C & < +45°C	5.14		✓		A. Polus
	SPIRE powered and in DRCU ON mode						

Enter Date/Time:	23/11/08	23:36	Sign Off	TC: A. Polus	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:38	

7.2.7 *Short Functional Tests - Redundant*

7.2.7.1 Procedure SPIRE-FM-SFT-FUNC-SCU-01-R

Version	2.4
Date	4th June 2008
Purpose	SCU science packet generation check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced
Final configuration	Unchanged
Constraints	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail Criteria	Specified SCU HK parameters show expected increment.

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-FUNC-SCU-01-R.tcl	SCUFRAMECNT (On SFT PARAMETERS display) TM5N (On DPU & OBS PARAMETERS display)	0/31 0x3FFF/1	0/31 0x3FFF/1	A. Pearson
Test Result (Pass/Fail):					

Enter Date/Time:	23/11/08	23:42	Sign Off	TC: A. Pearson	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:43	

7.2.7.2 Procedure SPIRE-FM-SFT-FUNC-SCU-03-R

Version	2.3
Date	28th August 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 • SFT PARAMETERS display is selected on the CCS
Duration	8 minutes
Pass/Fail Criteria	DC Thermometry channels show temperature readings according to the actual instrument temperature* *: At warm temperatures all channels should show short circuit RAW readings of -32768

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-FUNC-SCU-03-R.tcl	—	—	—	—

A. Pohn

Enter Date/Time:	23/11/08	23:44	Sign Off	TC: A. Pohn	PA: R. Goossens

Enter Start Date|Time:	27/11/08	23:44	

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
2	**Wait for the parameter BBFULLTYPE to get set to SCU_DC_Therm**				
3	A few seconds later record the value of parameter SCUTEMPSTAT	SCUTEMPSTAT	0/FFFF/FFFF	0/FFFF/FFFF	OK A. Pdrun
4	If the instrument is at He II temperatures check the values of SCU DC thermometry channels. **Notes:** **• The measured channel values will depend on the cryostat Level 0 and Level 1 temperatures.** **SCALTEMP is expected to show an anomalous value. HP-112000-ASED-NC – 4289 is open. Fix will require an update to**	PUMPHTRTEMP PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP	~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L0 K ~ L0 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K	SEE ATTACHED PRINTOUTS	OK A. Pdrun

Enter Date/Time:	23/11/08	23:48	Sign Off	TC: A. Pdrun	PA: R. Cassens

DS: 65535 ID: SA_6_5 Title: FUNCTIONAL TEST PARAMETERS Sample Time: 2008.328.23.45.14.207 Workstation: hpws21

NAME	DESCRIPTION	VALUE	UNIT	NAME	DESCRIPTION	VALUE	UNIT
SM10N500	OBSID	B0000000	HEX	SM_1F520	SCUTEMPSTAT	00000000	HEX
SM2LN500	BBFULLTYPE	Null		SM_0X520	PLIABITSTAT	00000000	HEX
SM00M500	MODE	DRCU_ON		SM_1X520	SLIABITSTAT	00000000	HEX
SM00T500	THSK	2008.328.23.45.13.659	HEX	SM_2X520	MCUBITSTAT	00000000	HEX
SMT1N500	TM2N	000003A7	HEX	SMT0A520	EVHSV	0.0066	mV
SMD1N510	DCUFRAMECNT	0		SMH0A520	SPHSV	0.0280	mV
SMD0N515	MCUFRAMECNT	0		SMT1A520	SPHTRV	0.0017	V
SMD0N520	SCUFRAMECNT	31		SMP0V520	PCALV	0.0004	V
SM20F510	PSWJFETSTAT	00000000	HEX	SMP0A520	PCALCURR	0.00043	mA
SM80F510	PMLWJFETSTAT	00000000	HEX	SMS0V520	SCAL2V	0.000136	V
SM20V510	PSWJFET1V	0	V	SMS0A520	SCAL2CURR	-0.000254	mA
SM21V510	PSWJFET2V	0	V	SMS1V520	SCAL4V	0.000268	V
SM22V510	PSWJFET3V	0	V	SMS1A520	SCAL4CURR	0.000447	mA
SM23V510	PSWJFET4V	0	V	SMK0F520	SUBKSTAT	00000000	HEX
SM24V510	PSWJFET5V	0	V	SMF0K520	PUMPHTRTEMP	0	K
SM25V510	PSWJFET6V	0	V	SMF1K520	PUMPHSTEMP	0	K
SM30V510	PMWJFET1V	0	V	SMF2K520	EVAPHSTEMP	0	K
SM31V510	PMWJFET2V	0	V	SMF3K520	SHUNTTEMP	0	K
SM32V510	PMWJFET3V	0	V	SMF4K520	EMCFILTEMP	0	K
SM33V510	PMWJFET4V	0	V	SMF5K520	SL0TEMP	0	K
SM50V510	PLWJFET1V	0	V	SMF6K520	PL0TEMP	0	K
SM51V510	PLWJFET2V	0	V	SMF7K520	OPTTEMP	0	K
SMT0V510	TCJFETV	0	V	SMF8K520	BAFTEMP	0	K
SMF0F510	SPECJFETSTAT	00000000	HEX	SMF9K520	BSMIFTEMP	0	K
SM00V510	SSWJFET1V	0	V	SMS0K520	SCAL2TEMP	0	K
SM01V510	SSWJFET2V	0	V	SMS1K520	SCAL4TEMP	0	K
SM10V510	SLWJFET1V	0	V	SMS2K520	SCALTEMP	0	K
SMS0W515	SMECENCPWR	0000FFFF	HEX	SMFAK520	SMECIFTEMP	0	K
SMS1W515	SMECLVDTPWR	0000FFFF	HEX	SMFBK520	SMECTEMP	0	K
SMS1M515	SMECLOOPMODE	0000FFFF	HEX	SMFCK520	BSMTEMP	0	K
SMC0W515	CHOPSENSPWR	0000FFFF	HEX	SMK0K520	SUBKTEMP	55.15210000	K
SMJ0W515	JIGGSENSPWR	0000FFFF	HEX				

DS: 65535 ID: SA_6_5 Title: FUNCTIONAL TEST PARAMETERS Sample Time: 2008.328.23.46.37.206 Workstation: hpws21

NAME	DESCRIPTION	VALUE	UNIT
SM10N500	OBSID	B000017C	HEX
SM2LN500	BBFULLTYPE	Null	
SM00M500	MODE	DRCU_ON	
SM00T500	THSK	2008.328.23.46.36.658	HEX
SMT1N500	TM2N	000003FA	HEX
SMD1N510	DCUFRAMECNT	0	
SMD0N515	MCUFRAMECNT	0	
SMD0N520	SCUFRAMECNT	31	
SM20F510	PSWJFETSTAT	00000000	HEX
SM80F510	PMLWJFETSTAT	00000000	HEX
SM20V510	PSWJFET1V	0	V
SM21V510	PSWJFET2V	0	V
SM22V510	PSWJFET3V	0	V
SM23V510	PSWJFET4V	0	V
SM24V510	PSWJFET5V	0	V
SM25V510	PSWJFET6V	0	V
SM30V510	PMWJFET1V	0	V
SM31V510	PMWJFET2V	0	V
SM32V510	PMWJFET3V	0	V
SM33V510	PMWJFET4V	0	V
SM50V510	PLWJFET1V	0	V
SM51V510	PLWJFET2V	0	V
SMT0V510	TCJFETV	0	V
SMF0F510	SPECJFETSTAT	00000000	HEX
SM00V510	SSWJFET1V	0	V
SM01V510	SSWJFET2V	0	V
SM10V510	SLWJFET1V	0	V
SMS0W515	SMECENCPWR	0000FFFF	HEX
SMS1W515	SMECLVDTPWR	0000FFFF	HEX
SMS1M515	SMECLOOPMODE	0000FFFF	HEX
SMC0W515	CHOPSENSPWR	0000FFFF	HEX
SMJ0W515	JIGGSENSPWR	0000FFFF	HEX

NAME	DESCRIPTION	VALUE	UNIT
SM_1F520	SCUTEMPSTAT	0000FFFF	HEX
SM_0X520	PLIABITSTAT	00000000	HEX
SM_1X520	SLIABITSTAT	00000000	HEX
SM_2X520	MCUBITSTAT	00000000	HEX
SMT0A520	EVHSV	0.0066	mV
SMH0A520	SPHSV	0.0280	mV
SMT1A520	SPHTRV	0.0023	V
SMP0V520	PCALV	0.0004	V
SMP0A520	PCALCURR	0.000679	mA
SMS0V520	SCAL2V	0.000136	V
SMS0A520	SCAL2CURR	-7.6e-05	mA
SMS1V520	SCAL4V	0.000368	V
SMS1A520	SCAL4CURR	0.000625	mA
SMK0F520	SUBKSTAT	00000000	HEX
SMF0K520	PUMPHTRTEMP	4.80779888	K
SMF1K520	PUMPHSTEMP	3.23459939	K
SMF2K520	EVAPHSTEMP	3.20602280	K
SMF3K520	SHUNTTEMP	2.07507548	K
SMF4K520	EMCFILTEMP	4.83525031	K
SMF5K520	SL0TEMP	2.09270997	K
SMF6K520	PL0TEMP	2.09952301	K
SMF7K520	OPTTEMP	4.87801326	K
SMF8K520	BAFTEMP	5.11445749	K
SMF9K520	BSMIFTEMP	4.87224554	K
SMS0K520	SCAL2TEMP	4.80252252	K
SMS1K520	SCAL4TEMP	4.80417800	K
SMS2K520	SCALTEMP	16.33861962	K
SMFAK520	SMECIFTEMP	4.75099693	K
SMFBK520	SMECTEMP	4.73725258	K
SMFCK520	BSMTEMP	4.83791103	K
SMK0K520	SUBKTEMP	55.15210000	K

DS: 65535 ID: SA_6_5 Title: FUNCTIONAL TEST PARAMETERS Sample Time: 2008.328.23.46.52.206 Workstation: hpws21

NAME	DESCRIPTION	VALUE	UNIT
SM10N500	OBSID	B0000000	HEX
SM2LN500	BBFULLTYPE	Null	
SM00M500	MODE	DRCU_ON	
SM00T500	THSK	2008.328.23.46.51.658	HEX
SMT1N500	TM2N	00000409	HEX
SMD1N510	DCUFRAMECNT	0	
SMD0N515	MCUFRAMECNT	0	
SMD0N520	SCUFRAMECNT	31	
SM20F510	PSWJFETSTAT	00000000	HEX
SM80F510	PMLWJFETSTAT	00000000	HEX
SM20V510	PSWJFET1V	0	V
SM21V510	PSWJFET2V	0	V
SM22V510	PSWJFET3V	0	V
SM23V510	PSWJFET4V	0	V
SM24V510	PSWJFET5V	0	V
SM25V510	PSWJFET6V	0	V
SM30V510	PMWJFET1V	0	V
SM31V510	PMWJFET2V	0	V
SM32V510	PMWJFET3V	0	V
SM33V510	PMWJFET4V	0	V
SM50V510	PLWJFET1V	0	V
SM51V510	PLWJFET2V	0	V
SMT0V510	TCJFETV	0	V
SMF0F510	SPECJFETSTAT	00000000	HEX
SM00V510	SSWJFET1V	0	V
SM01V510	SSWJFET2V	0	V
SM10V510	SLWJFET1V	0	V
SMS0W515	SMECENCPWR	0000FFFF	HEX
SMS1W515	SMECLVDTPWR	0000FFFF	HEX
SMS1M515	SMECLOOPMODE	0000FFFF	HEX
SMC0W515	CHOPSENSPWR	0000FFFF	HEX
SMJ0W515	JIGGSENSPWR	0000FFFF	HEX

NAME	DESCRIPTION	VALUE	UNIT
SM_1F520	SCUTEMPSTAT	0000FFFF	HEX
SM_0X520	PLIABITSTAT	00000000	HEX
SM_1X520	SLIABITSTAT	00000000	HEX
SM_2X520	MCUBITSTAT	00000000	HEX
SMT0A520	EVHSV	0.0066	mV
SMH0A520	SPHSV	-0.0229	mV
SMT1A520	SPHTRV	0.0023	V
SMP0V520	PCALV	0.000349	V
SMP0A520	PCALCURR	0.000679	mA
SMS0V520	SCAL2V	3.6e-05	V
SMS0A520	SCAL2CURR	-7.6e-05	mA
SMS1V520	SCAL4V	0.000168	V
SMS1A520	SCAL4CURR	0.000269	mA
SMK0F520	SUBKSTAT	00000000	HEX
SMF0K520	PUMPHTRTEMP	4.80694833	K
SMF1K520	PUMPHSTEMP	3.23631304	K
SMF2K520	EVAPHSTEMP	3.20778020	K
SMF3K520	SHUNTTEMP	2.07596710	K
SMF4K520	EMCFILTEMP	4.83525031	K
SMF5K520	SL0TEMP	2.09302612	K
SMF6K520	PL0TEMP	2.10021533	K
SMF7K520	OPTTEMP	4.87970658	K
SMF8K520	BAFTEMP	5.11445749	K
SMF9K520	BSMIFTEMP	4.87357166	K
SMS0K520	SCAL2TEMP	4.81693584	K
SMS1K520	SCAL4TEMP	4.81560486	K
SMS2K520	SCALTEMP	16.34314824	K
SMFAK520	SMECIFTEMP	4.75099693	K
SMFBK520	SMECTEMP	4.73782554	K
SMFCK520	BSMTEMP	4.83876131	K
SMK0K520	SUBKTEMP	55.15210000	K

Enter Start Date|Time:	23/11/08	23:48	

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
	the SPIRE MIB.	BSMTEMP	~ L1 K		
5	If the instrument is at He I temperatures check the values of SCU DC thermometry channels. **Notes:** **• The measured channel values will depend on the cryostat Level 1 temperatures.** **SCALTEMP is expected to show an anomalous value. HP-112000-ASED-NC – 4289 is open. Fix will require an update to the SPIRE MIB.**	PUMPHTRTEMP PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K ~ L1 K (NCR open) ~ L1 K ~ L1 K ~ L1 K	N/A	
6	If the instrument is warm: **Configure the SFT PARAMETERS display to show**	PUMPHTRTEMP PUMPHSTEMP EVAPHSTEMP SHUNTTEMP	— — — —	N/A	

Enter Date/Time:	23/11/08	23:48	Sign Off	TC: A. Polo	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:48

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
	the RAW values of SCU DC thermometry channels. Record the RAW values of SCU DC thermometry channels. Nominal values should show a short circuit status (or RAW -32768). **Non Nominal (Open Circuit Criterion):** **RAW reading in the range [0, -100]**	EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	— — — — — — — — — — — —	N/A	
Test Result (Pass/Fail):	Pass				

Enter Date/Time:	23/11/08	23:48	Sign Off	TC: A. Polus	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:49	

7.2.7.3 Procedure SPIRE-FM-SFT-FUNC-SCU-06-R

Version	2.3
Date	28th August 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 • SFT PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail Criteria	AC Thermometry channel shows 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-FM-SFT-FUNC-SCU-06-R.tcl	—	—	—	—
2	**Wait for the parameter BBFULLTYPE to get set to SCU_AC_Therm**			✓	

A. Peru

Enter Date/Time:	23/11/08	23:53	Sign Off	TC: A. Peru	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:53	

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 SUBKSTAT	SUBKSTAT	0/1/1	0 / 1	
4	If the instrument is at He II temperatures check the value of SCU AC thermometry channel. **Note that the measured channel value will depend on the cryostat Level 0 temperature.**	SUBKTEMP	~L0 K	95.16 / 2.05	
5	If the instrument is at He I temperatures check the value of SCU AC thermometry channel. **Note that the measured channel value will depend on the cryostat Level 1 temperature.**	SUBKTEMP	~L1 K	N/A	

Enter Start Date|Time:	23/11/08	23:53	

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
6	If the instrument is warm: **Configure the SFT PARAMETERS display to show the RAW value of SCU AC thermometry channel.** Only record the RAW value of SCU AC thermometry channel if it indicates an open circuit. **Open Circuit Criterion:** **RAW reading in the range [0, -100]**	SUBKTEMP	—	N/A	
Test Result (Pass/Fail):					

7.2.7.4 Procedure SPIRE-FM-SFT-FUNC-SCU-07-R

Version	2.2
Date	2nd January 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

Enter Date/Time:	23/11/08	23:53	Sign Off	TC:	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:55	

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 • SFT 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-FM-SFT-FUNC-SCU-07-R.tcl	—	—	—	—
2	**Wait for the parameter BBFULLTYPE to get set to Cooler_Htr_Che**	BBFULLTYPE	Cooler_Htr_Che		
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	0/324/0	

Enter Date/Time:	23/11/08	23:57	Sign Off	TC: A. Polus	PA: R. Goossens

Enter Start Date|Time:	23/11/08	23:57	

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
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	0/ 325 /0	
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	0/ 8.8 /0	
Test Result (Pass/Fail):	PASS				

Enter Start Date|Time:	23/11/08	23:58	

7.2.7.5 Procedure SPIRE-FM-SFT-FUNC-SCU-04-R

Version	2.3
Date	28th August 2007
Purpose	Photometer Calibration 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	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail Criteria	PCAL voltage and current agree with expected values

Procedure Steps:

Step	Description	Parameter Name - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-FUNC-SCU-04-R.tcl **The expected values during the test should be monitored when parameter BBFULLTYPE in the SFT PARAMETERS display is set to PCAL_Check This usually happens about 30 seconds from the start of test execution.**	PCALCURR - mA PCALV – V BBFULLTYPE	0.0/0.1/0.0 0.0/~0.02/0.0 PCAL_Check	0.0/0.1/0.0 0.0/0.02/0.0 PCAL_Check	OK

A. Polehampton

Test Result (Pass/Fail):	PASS

Enter Date/Time:	23/11/08	23:59	Sign Off	TC: A. Polehampton	PA: R. Vaassens

Enter Start Date|Time:	24/11/08	00:01	

7.2.7.6 Procedure SPIRE-FM-SFT-FUNC-SCU-05-R

Version	2.2
Date	2nd January 2007
Purpose	Spectrometer Calibration 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	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	5 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-FM-SFT-FUNC-SCU-05-R.tcl	—	—	—	
2	**Wait for the parameter BBFULLTYPE to get set to SCAL4_Check**	BBFULLTYPE	SCAL4_Check	SCAL4_Check OK A. Pohlen	

Enter Date/Time:	24/11/08	00:04	Sign Off	TC: A. Pohlen	PA: R. Goossens

Enter Start Date|Time:	24/11/08	00:04	

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 parameters SCAL4CURR and SCAL4V *These parameters are set back to 0 after ~30 seconds*	SCAL4CURR – mA SCAL4V – V	0.0/~0.10/0.0 0.0/~0.05/0.0	0.0 0.0	? A. Polverari
4	**Wait for the parameter BBFULLTYPE to get set to SCAL2_Check**	BBFULLTYPE	SCAL2_Check	SCAL2_Check	ok A. Polverari
5	A few seconds later record the values of parameters SCAL2CURR and SCAL2V *These parameters are set back to 0 after ~30 seconds*	SCAL2CURR – mA SCAL2V – V	0.0/~0.10/0.0 0.0/~0.05/0.0	0.0/0.1/0.0 0.0/0.05/0.0	ok A. Polverari
Test Result (Pass/Fail):					

Enter Date/Time:	24/11/08	00:04	Sign Off	TC: A. Polverari	PA: R. Goossens

Enter Start Date|Time:	24/11/08	00:06	

7.2.7.7 Procedure SPIRE-FM-SFT-FUNC-MCU-01-R

Version	2.4
Date	4th June 2008
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.
Constraints	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCU voltages and board temperatures 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-FM-SFT-FUNC-MCU-01-R.tcl	—	—	—	—
2	Check that the MCU is booted up successfully	MCUBITSTAT	0/1/1	0/1/1	

Enter Date/Time:	24/11/08	00:09	Sign Off	TC: A. Pelun	PA: R. Goossens

Enter Start Date|Time:	24/11/08	00:09

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
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 ± 0.6V ~ 15.0 ± 0.6V ~ -15.0 ± 0.7V ~300K ~300K ~300K	4.99 14.12 -14.49 15.58 -15.61 269.29 274.78 274.43	
Test Result (Pass/Fail):	PASS				

A. Polus

Enter Date/Time:	24/11/08	00:10	Sign Off	TC: A. Polus	PA: R. Goossens

DS: 65535 ID: SA_7_5 Title: SFT PARAMETERS Sample Time: 2008.329.00.07.00.195 Workstation: hpws21

NAME	DESCRIPTION	VALUE	UNIT	NAME	DESCRIPTION	VALUE	UNIT
SM10N500	OBSID	B0000000	HEX	SM_1V520	SCUP9V	9.0788	V
SM2LN500	BBFULLTYPE	Null		SM_2V520	SCUM9V	-9.0947	V
SM00M500	MODE	DRCU_ON		SMT0A520	EVHSV	-0.0189	mV
SM00T500	THSK	2008.329.00.06.59.647	HEX	SMH0A520	SPHSV	0.0025	mV
SMT1N500	TM2N	000008C1	HEX	SMT1A520	SPHTRV	0.0017	V
SMD1N510	DCUFRAMECNT	0		SMP0V520	PCALV	0.000451	V
SMD0N515	MCUFRAMECNT	0		SMP0A520	PCALCURR	0.000679	mA
SMD0N520	SCUFRAMECNT	31		SMS0V520	SCAL2V	3.6e-05	V
SMB6V510	BIASP5V	5.17	V	SMS0A520	SCAL2CURR	0.000102	mA
SMB7V510	BIASP9V	9.01	V	SMS1V520	SCAL4V	6.8e-05	V
SMB8V510	BIASM9V	-9.06	V	SMS1A520	SCAL4CURR	0.000625	mA
SML0V510	PLIAP5V	0.0091	V	SMK0F520	SUBKSTAT	00000001	HEX
SML1V510	PLIAP9V	0.011	V	SMF0K520	PUMPHTRTEMP	6.77847162	K
SML2V510	PLIAM9V	0.012	V	SMF1K520	PUMPHSTEMP	3.54228872	K
SML3V510	SLIAP5V	0.01	V	SMF2K520	EVAPHSTEMP	4.21569083	K
SML4V510	SLIAP9V	0.01	V	SMF3K520	SHUNTTEMP	2.09171912	K
SML5V510	SLIAM9V	0.011	V	SMF4K520	EMCFILTEMP	4.82269444	K
SM_4V515	MCUP5V	20.00	V	SMF5K520	SL0TEMP	2.09239382	K
SM_2V515	MCUP14V	75.36	V	SMF6K520	PL0TEMP	2.09917685	K
SM_3V515	MCUM14V	75.36	V	SMF7K520	OPTTEMP	4.86954664	K
SM_0V515	MCUP15V	75.36	V	SMF8K520	BAFTEMP	5.10074171	K
SM_1V515	MCUM15V	75.36	V	SMF9K520	BSMIFTEMP	4.86031042	K
SMM0K515	MCUMACTEMP	1651.51	K	SMS0K520	SCAL2TEMP	4.88740096	K
SMF0K515	MCUSMECTEMP	1651.51	K	SMS1K520	SCAL4TEMP	4.91844657	K
SMB0K515	MCUBSMTEMP	1651.51	K	SMS2K520	SCALTEMP	16.30691928	K
SMS0W515	SMECENCPWR	0000FFFF	HEX	SMFAK520	SMECIFTEMP	4.73580138	K
SMS1W515	SMECLVDTPWR	0000FFFF	HEX	SMFBK520	SMECTEMP	4.72579335	K
SMS1M515	SMECLOOPMODE	0000FFFF	HEX	SMFCK520	BSMTEMP	4.82685731	K
SMC0W515	CHOPSENSPWR	0000FFFF	HEX	SMK0K520	SUBKTEMP	2.05317774	K
SMJ0W515	JIGGSENSPWR	0000FFFF	HEX	SM_0X520	PLIABITSTAT	00000000	HEX
SM_1F520	SCUTEMPSTAT	0000FFFF	HEX	SM_1X520	SLIABITSTAT	00000000	HEX
SM_0V520	SCUP5V	5.2217	V	SM_2X520	MCUBITSTAT	00000000	HEX

DS: 65535 ID: SA_7_5 Title: SFT PARAMETERS Sample Time: 2008.329.00.07.48.195 Workstation: hpws21

NAME	DESCRIPTION	VALUE	UNIT	NAME	DESCRIPTION	VALUE	UNIT
SM10N500	OBSID	B0000181	HEX	SM_1V520	SCUP9V	9.0788	V
SM2LN500	BBFULLTYPE	MCU_Boot		SM_2V520	SCUM9V	-9.0944	V
SM00M500	MODE	DRCU_ON		SMT0A520	EVHSV	0.1087	mV
SM00T500	THSK	2008.329.00.07.47.647	HEX	SMH0A520	SPHSV	-0.0229	mV
SMT1N500	TM2N	000008F1	HEX	SMT1A520	SPHTRV	0.0017	V
SMD1N510	DCUFRAMECNT	0		SMP0V520	PCALV	0.0004	V
SMD0N515	MCUFRAMECNT	0		SMP0A520	PCALCURR	0.000679	mA
SMD0N520	SCUFRAMECNT	31		SMS0V520	SCAL2V	3.6e-05	V
SMB6V510	BIASP5V	5.17	V	SMS0A520	SCAL2CURR	-0.000254	mA
SMB7V510	BIASP9V	9.01	V	SMS1V520	SCAL4V	6.8e-05	V
SMB8V510	BIASM9V	-9.06	V	SMS1A520	SCAL4CURR	0.000625	mA
SML0V510	PLIAP5V	0.0073	V	SMK0F520	SUBKSTAT	00000001	HEX
SML1V510	PLIAP9V	0.01	V	SMF0K520	PUMPHTRTEMP	6.76488010	K
SML2V510	PLIAM9V	0.011	V	SMF1K520	PUMPHSTEMP	3.51400650	K
SML3V510	SLIAP5V	0.01	V	SMF2K520	EVAPHSTEMP	4.15352932	K
SML4V510	SLIAP9V	0.01	V	SMF3K520	SHUNTTEMP	2.09171912	K
SML5V510	SLIAM9V	0.011	V	SMF4K520	EMCFILTEMP	4.82018327	K
SM_4V515	MCUP5V	-18.01	V	SMF5K520	SL0TEMP	2.09270997	K
SM_2V515	MCUP14V	-75.37	V	SMF6K520	PL0TEMP	2.09986917	K
SM_3V515	MCUM14V	-75.37	V	SMF7K520	OPTTEMP	4.86785332	K
SM_0V515	MCUP15V	-75.37	V	SMF8K520	BAFTEMP	5.09682291	K
SM_1V515	MCUM15V	-75.37	V	SMF9K520	BSMIFTEMP	4.85898430	K
SMM0K515	MCUMACTEMP	-1651.46	K	SMS0K520	SCAL2TEMP	4.87619060	K
SMF0K515	MCUSMECTEMP	-1651.46	K	SMS1K520	SCAL4TEMP	4.90701971	K
SMB0K515	MCUBSMTEMP	-1651.46	K	SMS2K520	SCALTEMP	16.29559772	K
SMS0W515	SMECENCPWR	00000000	HEX	SMFAK520	SMECIFTEMP	4.73441997	K
SMS1W515	SMECLVDTPWR	00000000	HEX	SMFBK520	SMECTEMP	4.72464742	K
SMS1M515	SMECLOOPMODE	00000000	HEX	SMFCK520	BSMTEMP	4.82643216	K
SMC0W515	CHOPSENSPWR	00000000	HEX	SMK0K520	SUBKTEMP	2.06591968	K
SMJ0W515	JIGGSENSPWR	00000000	HEX	SM_0X520	PLIABITSTAT	00000000	HEX
SM_1F520	SCUTEMPSTAT	0000FFFF	HEX	SM_1X520	SLIABITSTAT	00000000	HEX
SM_0V520	SCUP5V	5.2217	V	SM_2X520	MCUBITSTAT	00000001	HEX

DS: 65535 ID: SA_7_5 Title: SFT PARAMETERS Sample Time: 2008.329.00.08.16.195 Workstation: hpws21

NAME	DESCRIPTION	VALUE	UNIT	NAME	DESCRIPTION	VALUE	UNIT
SM10N500	OBSID	B0000181	HEX	SM_1V520	SCUP9V	9.0784	V
SM2LN500	BBFULLTYPE	MCU_Boot		SM_2V520	SCUM9V	-9.0947	V
SM00M500	MODE	DRCU_ON		SMT0A520	EVHSV	-0.0189	mV
SM00T500	THSK	2008.329.00.08.15.646	HEX	SMH0A520	SPHSV	0.0280	mV
SMT1N500	TM2N	0000090D	HEX	SMT1A520	SPHTRV	0.0023	V
SMD1N510	DCUFRAMECNT	0		SMP0V520	PCALV	0.0004	V
SMD0N515	MCUFRAMECNT	0		SMP0A520	PCALCURR	0.00043	mA
SMD0N520	SCUFRAMECNT	31		SMS0V520	SCAL2V	3.6e-05	V
SMB6V510	BIASP5V	5.17	V	SMS0A520	SCAL2CURR	0.00028	mA
SMB7V510	BIASP9V	9.01	V	SMS1V520	SCAL4V	0.000268	V
SMB8V510	BIASM9V	-9.06	V	SMS1A520	SCAL4CURR	0.000447	mA
SML0V510	PLIAP5V	0.0091	V	SMK0F520	SUBKSTAT	00000001	HEX
SML1V510	PLIAP9V	0.012	V	SMF0K520	PUMPHTRTEMP	6.75651609	K
SML2V510	PLIAM9V	0.011	V	SMF1K520	PUMPHSTEMP	3.49809776	K
SML3V510	SLIAP5V	0.011	V	SMF2K520	EVAPHSTEMP	4.11698068	K
SML4V510	SLIAP9V	0.01	V	SMF3K520	SHUNTTEMP	2.09201633	K
SML5V510	SLIAM9V	0.01	V	SMF4K520	EMCFILTEMP	4.82269444	K
SM_4V515	MCUP5V	4.99	V	SMF5K520	SL0TEMP	2.09207767	K
SM_2V515	MCUP14V	14.12	V	SMF6K520	PL0TEMP	2.09952301	K
SM_3V515	MCUM14V	-14.49	V	SMF7K520	OPTTEMP	4.86954664	K
SM_0V515	MCUP15V	15.48	V	SMF8K520	BAFTEMP	5.09486352	K
SM_1V515	MCUM15V	-15.61	V	SMF9K520	BSMIFTEMP	4.85633205	K
SMM0K515	MCUMACTEMP	269.29	K	SMS0K520	SCAL2TEMP	4.87138616	K
SMF0K515	MCUSMECTEMP	274.78	K	SMS1K520	SCAL4TEMP	4.90416300	K
SMB0K515	MCUBSMTEMP	274.43	K	SMS2K520	SCALTEMP	16.29786203	K
SMS0W515	SMECENCPWR	00000000	HEX	SMFAK520	SMECIFTEMP	4.73441997	K
SMS1W515	SMECLVDTPWR	00000000	HEX	SMFBK520	SMECTEMP	4.72350150	K
SMS1M515	SMECLOOPMODE	00000006	HEX	SMFCK520	BSMTEMP	4.82600702	K
SMC0W515	CHOPSENSPWR	00000000	HEX	SMK0K520	SUBKTEMP	2.05954871	K
SMJ0W515	JIGGSENSPWR	00000000	HEX	SM_0X520	PLIABITSTAT	00000000	HEX
SM_1F520	SCUTEMPSTAT	0000FFFF	HEX	SM_1X520	SLIABITSTAT	00000000	HEX
SM_0V520	SCUP5V	5.2213	V	SM_2X520	MCUBITSTAT	00000001	HEX

Enter Start Date|Time:	24/11/08	00:11	

7.2.7.8 Procedure: SPIRE-FM-SFT-FUNC-MCU-02-R

Version	2.2
Date	2nd January 2007
Purpose	MCU Nominal Frame Generation 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.
Constraints	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • SFT 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-FM-SFT-FUNC-MCU-02-R.tcl	MCUFRAMECNT	**FM** : 0/297	0/297	—
Test Result (Pass/Fail): PASS					

A. Pollux

Enter Date/Time:	24/11/08	00:44	Sign Off	TC: A. Pollux	PA: R. Goossens

Enter Start Date|Time:	24/11/08	00:15	

7.2.7.9 Procedure SPIRE-FM-SFT-FUNC-BSM-01-R

Version	2.3
Date	28th August 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.
Constraints	• 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 • SFT PARAMETERS display is selected on the CCS
Duration	3 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-FM-SFT-FUNC-BSM-01-R.tcl	—	—	—	—
2	Check that the Chop and Jiggle sensors have switched on	CHOPSENSPWR JIGGSENSPWR	0/1/1 0/1/1	0/1/1 0/1/1	OK
Test Result (Pass/Fail): PASS					

A. Polverini

Enter Date/Time:	24/11/08	00:17	Sign Off	TC: A. Polverini	PA: R. Goossens

Enter Start Date|Time:	24/11/08	00:19	

7.2.7.10 Procedure SPIRE-FM-SFT-BSM-OFF-R

Version	2.3
Date	28th August 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.
Constraints	• 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 • SFT PARAMETERS display is selected on the CCS
Duration	3 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-FM-SFT-BSM-OFF-R.tcl	—	—	—	—
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): PASS					

A. Polverini

Enter Date/Time:	24/11/08	00:20	Sign Off	TC: A. Polverini	PA: R. Goossens

Enter Start Date|Time:	24/11/08	00:21	

7.2.7.11 Procedure SPIRE-FM-SFT-FUNC-SMEC-01-R

Version	2.3
Date	28th August 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.
Constraints	• 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 • SFT PARAMETERS display is selected on the CCS
Duration	3 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-FM-SFT-FUNC-SMEC-01-R.tcl	—	—	—	—
2	Check that power to the SMEC LED and LVDT sensor is on	SMECENCPWR SMECLVDTPWR	0/-/1 0/-/1	0 / 1 0 / 1	On
Test Result (Pass/Fail): PASS					

A. Polus

Enter Date/Time:	24/11/08	00:22	Sign Off	TC: A. Polus	PA: R. Goossens

Enter Start Date|Time:	24/11/08	00:23	

7.2.7.12 Procedure SPIRE-FM-SFT-SMEC-OFF-R

Version	2.3
Date	28th August 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.
Constraints	• 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 • SFT 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-FM-SFT-SMEC-OFF-R.tcl	—	—	—	—
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):					

A. Polehampton

Enter Date/Time:	24/11/08	00:24	Sign Off	TC: A. Polehampton	PA: R. Goossens

Enter Start Date|Time:	24/11/08	00:25	

7.2.7.13 Procedure SPIRE-FM-SFT-FUNC-DCU-01-R

Version	2.2
Date	2nd January 2007
Purpose	DCU science packet generation check for all Photometer and Spectrometer packet types (PF, PSW, PMW, PLW, SF, SSW and SLW)
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
Constraints	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified DCU HK parameter shows expected increment

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-FUNC-DCU-01-R.tcl	DCUFRAMECNT	0/700	0/700	OK
Test Result (Pass/Fail):	PASS				

A. Polo

Enter Date/Time:	24/11/08	00:27	Sign Off	TC: A. Polo	PA: R. Vossens

Enter Start Date|Time:	24/11/08	00:24	

7.2.7.14 Procedure SPIRE-FM-SFT-FUNC-DCU-04-PHOT-R

Version	2.4
Date	10th Sept 2007
Purpose	Photometer LIAs REDUNDANT 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. Photometer LIAs are ON
Constraints	• SPIRE DRCU REDUNDANT is switched ON • Photometer LIAs are OFF • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • SFT PARAMETERS & DCU PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified Photometer LIA HK parameters show expected ON values

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-FUNC-DCU-04-PHOT-R.tcl	PLIABITSTAT	0/1/1	0/1/2	OK A. Pohlen

Enter Date/Time:	24/11/08	00:33	Sign Off	TC: A. Pohlen	PA: R. Goossens

Enter Start Date|Time:	29/11/08	00:33	

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
2	Check Photometer LIA HK parameter values and ensure that the values are refreshing	PLIAP5V PLIAP9V PLIAM9V	0.0-/ 5.2 ± 0.2V 0.0/-/ 11.5 ± 0.5V 0.0/-/-11.5 ± 0.5V	0.01 5.24 0.01 11.58 0.01 -11.56	ok
3	**On the DCU PARAMETERS display check that the LIA temperatures are slowly warming up.** At switch-on it is possible that some of the LIA temperatures will be in soft or even hard limits. No action is required.	LIAP1TEMP to LIAP9TEMP	~ 290-300 K	272 K	ok
4	**Wait for ~3 minutes before continuing with the SFTs**	—	—	—	—
Test Result (Pass/Fail):	PASS				

00:32

Enter Date/Time:	29/11/08	00:36	Sign Off	TC: A. Pearson	PA: R. Goossens

DS: 65535 ID: SA_7_5 Title: SFT PARAMETERS Sample Time: 2008.329.00.31.04.183 Workstation: hpws21

NAME	DESCRIPTION	VALUE	UNIT	NAME	DESCRIPTION	VALUE	UNIT
SM10N500	OBSID	B0000000	HEX	SM_1V520	SCUP9V	9.0791	V
SM2LN500	BBFULLTYPE	EndObs		SM_2V520	SCUM9V	-9.0950	V
SM00M500	MODE	DRCU_ON		SMT0A520	EVHSV	-0.0189	mV
SM00T500	THSK	2008.329.00.31.03.635	HEX	SMH0A520	SPHSV	0.0025	mV
SMT1N500	TM2N	00000E65	HEX	SMT1A520	SPHTRV	0.0023	V
SMD1N510	DCUFRAMECNT	700		SMP0V520	PCALV	0.000298	V
SMD0N515	MCUFRAMECNT	297		SMP0A520	PCALCURR	0.00043	mA
SMD0N520	SCUFRAMECNT	31		SMS0V520	SCAL2V	3.6e-05	V
SMB6V510	BIASP5V	5.17	V	SMS0A520	SCAL2CURR	-7.6e-05	mA
SMB7V510	BIASP9V	9.01	V	SMS1V520	SCAL4V	0.000168	V
SMB8V510	BIASM9V	-9.06	V	SMS1A520	SCAL4CURR	0.000447	mA
SML0V510	PLIAP5V	5.24	V	SMK0F520	SUBKSTAT	00000001	HEX
SML1V510	PLIAP9V	11.58	V	SMF0K520	PUMPHTRTEMP	6.42195568	K
SML2V510	PLIAM9V	-11.56	V	SMF1K520	PUMPHSTEMP	3.24773739	K
SML3V510	SLIAP5V	0.0096	V	SMF2K520	EVAPHSTEMP	3.38469180	K
SML4V510	SLIAP9V	0.01	V	SMF3K520	SHUNTTEMP	2.08904425	K
SML5V510	SLIAM9V	0.01	V	SMF4K520	EMCFILTEMP	4.80260506	K
SM_4V515	MCUP5V	4.99	V	SMF5K520	SL0TEMP	2.09207767	K
SM_2V515	MCUP14V	14.13	V	SMF6K520	PL0TEMP	2.09917685	K
SM_3V515	MCUM14V	-14.49	V	SMF7K520	OPTTEMP	4.85030253	K
SM_0V515	MCUP15V	15.49	V	SMF8K520	BAFTEMP	5.08310714	K
SM_1V515	MCUM15V	-15.61	V	SMF9K520	BSMIFTEMP	4.84439694	K
SMM0K515	MCUMACTEMP	274.43	K	SMS0K520	SCAL2TEMP	4.85056692	K
SMF0K515	MCUSMECTEMP	281.28	K	SMS1K520	SCAL4TEMP	4.86988243	K
SMB0K515	MCUBSMTEMP	276.24	K	SMS2K520	SCALTEMP	16.25257583	K
SMS0W515	SMECENCPWR	00000000	HEX	SMFAK520	SMECIFTEMP	4.72060583	K
SMS1W515	SMECLVDTPWR	00000000	HEX	SMFBK520	SMECTEMP	4.71261524	K
SMS1M515	SMECLOOPMODE	00000006	HEX	SMFCK520	BSMTEMP	4.80985158	K
SMC0W515	CHOPSENSPWR	00000000	HEX	SMK0K520	SUBKTEMP	2.05317774	K
SMJ0W515	JIGGSENSPWR	00000000	HEX	SM_0X520	PLIABITSTAT	00000001	HEX
SM_1F520	SCUTEMPSTAT	0000FFFF	HEX	SM_1X520	SLIABITSTAT	00000000	HEX
SM_0V520	SCUP5V	5.2213	V	SM_2X520	MCUBITSTAT	00000001	HEX

Enter Start Date|Time:	24/11/08	00:37	

7.2.7.15 Procedure SPIRE-FM-SFT-PLIA-OFF-R

Version	2.4
Date	10th Sept 2007
Purpose	Photometer LIAs 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. Photometer LIAs 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. Photometer LIAs are OFF
Constraints	• SPIRE DRCU REDUNDANT is switched ON • Photometer LIAs are ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail criteria	Specified Photometer LIA HK parameters show expected OFF values

Procedure Steps:

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Success/ Failure	
1	Execute TCL script SPIRE-FM-SFT-PLIA-OFF-R.tcl	PLIABITSTAT	1/-/0	1 / 0	OK	A. Pohn
2	Check Photometer LIA HK parameter values	PLIAP5V PLIAP9V PLIAM9V	5.2 ± 0.2V/-/0.0 11.5 ± 0.5V/-/0.0 -11.5 ± 0.5V/-/0.0	5.24 / 0.0 11.58 / 0.0 -11.56 / 0.0	OK	A. Pohn
Test Result (Pass/Fail):						

Enter Date/Time:	24/11/08	00:38	Sign Off	TC: A. Pohn	PA: R. Boossens

Enter Start Date|Time:	24/11/08	00:34	

7.2.7.16 Procedure SPIRE-FM-SFT-FUNC-DCU-04-SPEC-R

Version	2.4
Date	10th Sept 2007
Purpose	Spectrometer LIAs REDUNDANT 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. Spectrometer LIAs are ON
Constraints	• SPIRE DRCU REDUNDANT is switched ON • Spectrometer LIAs are OFF • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • SFT PARAMETERS & DCU PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified Spectrometer LIA HK parameters show expected ON values

Procedure Steps:

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-FUNC-DCU-04-SPEC-R.tcl	SLIABITSTAT	0/1/1	0/1/1	ok A. Pohlen

Enter Date/Time:	24/11/08	00:40	Sign Off	TC: A. Pohlen	PA: R. Goossens

Enter Start Date|Time:	24/11/08	00:41	

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Success/ Failure
2	Check Spectrometer LIA HK parameter values and ensure that the values are refreshing	SLIAP5V SLIAP9V SLIAM9V	0.0/-/ 5.2 ± 0.2V 0.0/-/ 11.5 ± 0.5V 0.0/-/-11.5 ± 0.5V	0.0 / 5.25 0.0 / 11.58 0.0 / -11.56	OK
3	**On the DCU PARAMETERS display check that the LIA temperatures are slowly warming up.** At switch-on it is possible that some of the LIA temperatures will be in soft or even hard limits. No action is required.	LIAS1TEMP to LIAS3TEMP	~ 290-300 K	272	OK
4	**Wait for ~3 minutes before continuing with the SFTs**	—	—	—	—
Test Result (Pass/Fail):	PASS				

A. Pan

00:41

A. Pan

Enter Date/Time:	24/11/08	00:44	Sign Off	TC:	PA: R. Goossens

Enter Start Date|Time:	24/11/08	00:44	

7.2.7.17 Procedure SPIRE-FM-SFT-SLIA-OFF-R

Version	2.4
Date	10th Sept 2007
Purpose	Spectrometer LIAs 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. Spectrometer LIAs 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. Spectrometer LIAs are OFF
Constraints	• SPIRE DRCU REDUNDANT is switched ON • Spectrometer LIAs are ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail criteria	Specified Spectrometer LIA HK parameters show expected OFF values

Procedure Steps:

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Success/ Failure
1	Execute TCL script SPIRE-FM-SFT-SLIA-OFF-R.tcl	SLIABITSTAT	1/-/0	1 / 0	OK A. Pon
2	Check Photometer LIA HK parameter values	SLIAP5V SLIAP9V SLIAM9V	5.2 ± 0.2V/-/0.0 11.5 ± 0.5V/-/0.0 -11.5 ± 0.5V/-/0.0	5.24 / 0.0 11.98 / 0.0 -11.56 / 0.0	OK A. Pon

Test Result (Pass/Fail):

Enter Date/Time:	24/11/08	00:45	Sign Off	TC: A. Pon	PA: R. Goossens

Enter Start Date|Time:	24/11/08	00:46	

7.2.7.18 Procedure SPIRE-FM-SFT-FUNC-MCU-OFF-R

Version	2.4
Date	4th June 2008
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.
Constraints	• 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 • SFT PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail criteria	Specified MCU HK Parameter shows expected value.

Enter Start Date|Time:	24/11/08	00:47	

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute SPIRE-FM-SFT- MCU-OFF-R.tcl	—	—	—	—
2	Check that the MCU is switched off Expected events: • A TM(5,1) event report with Event ID 0x0521 and SID 0x510F will be received to indicate that the DPU is not receiving a response from the MCU. • A TM(5,4) event report with Event ID 0x550D and SID 0x5420 will be received to indicate the MCU disconnection from the DPU.	MCUBITSTAT	1/-/0	1/0 TM(5,1, 521 SID = 510F TM(5,4,5500 SID=5420	OK A. Parra

Test Result (Pass/Fail): PASS

Enter Date/Time:	24/11/08	00:49	Sign Off	TC: A. Parra	PA: R. Goossens

Enter Start Date|Time:	24/4/08	00:50	

7.2.7.19 Procedure SPIRE-FM-SFT-FUNC-SCU-OFF-R

Version	2.4
Date	4th June 2008
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
Constraints	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • SFT PARAMETERS display is selected on the CCS
Duration	2 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-FM-SFT- SCU-OFF-R.tcl	—	—	—	—

Enter Start Date|Time:	24/11/08	00:50	

Step	Description	Parameter - Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure	
2	A few seconds later record the value of parameter SCUTEMPSTAT a) EVID 1313 No_MCU_Response_Error b) EVID 21773 ALARM_LSMCU_DEAD	SCUTEMPSTAT	0xFFFF/-/0	0x FFFF/ 0	OK	A. Pohn
3	A few seconds later record the value of parameter SUBKSTAT	SUBKSTAT	1/-/0	1 / 0	OK	A. Pohn
Test Result (Pass/Fail): PASS						

Enter Start Date|Time:	24/11/08	00:55	

7.2.8 *Switch Off DRCU & DPU 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 Prime from DRCU ON: **S102999SCVT008_ASDSFTSPIR_PWR_OFF_R**	OK	OK		✓		A. Polo
2.	On HPCCS when prompted: "SPIRE Switch OFF for SFT related tests in any conditions - Select NO to abort TS if not correct"	YES	YES		✓		A. Polo
3.	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.			N/A			A. Polo
4.	If **YES** is selected the test script will go on to automatically power off all SPIRE warm units.				✓		A. Polo

Enter Date/Time:	24/11/08	00:56	Sign Off	TC: A. Polo	PA: R. Goossens

Enter Start Date|Time:	24/11/08	00:56	

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N	
5.	During Switch OFF of SPIRE the following (5,1) and (5,4) event messages on APID 1280 are expected and do not indicate a problem: c) EVID 1313 No_MCU_Response_Error d) EVID 21773 ALARM_LSMCU_DEAD				V		A. Polus
6.	On HPCCS when prompted: "Check Telemetry No Longer Updating - OK to continue" Check that parameters: THSK TM2N	 Not refreshing Not incrementing	 Not refreshing Not incrementing	AND: SA_1_559	V		A. Polus
7.	Select OK to continue	OK	OK		V		A. Polus
8.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT008_ASDSFTSPIR_PWR_OFF_R** it will prompt: "Bus profile left as SPIRE PRIME, change manually after if required - OK to continue"						

Enter Date/Time:	24/11/08	00:59	Sign Off	TC: A. Polus	PA: R. Goossens

Enter Start Date|Time:	24/11/08	00:59	

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
9.	Select OK to continue	OK	OK		✓	
10.	On HPCCS stop Packet History displays for the following APIDs:1281,1283	OK	OK		✓	
	SPIRE OFF					

A. Pon

A. Pon

Enter Start Date|Time:			

7.2.9 Procedure SPIRE-FM-SFT-LPU-01-R

THIS SECTION IS NOT PERFORMED FOR TBTV SFT

Version	1.0
Date	Tuesday, 28 August 2007
Purpose	DPU PRIME Switch OFF
Initial configuration	Prime and redundant DPU and DRCU are off
Final configuration	Prime and redundant DPU and DRCU are off
Constraints	• Cryostat is vertical to within ±45° • Prime and redundant DPU and DRCU are off
Duration	5 minutes
Pass/Fail criteria	The specified current is drawn when the LPU is enabled and is switched off when the LPU is disabled

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	**Power on Redundant LPU LCL (LCL #26)** Execute **DC26D170**	LCL status	OFF/ /ON		State of LCL #26 switches to ON
3	**Send HL command #21 (LPU Enable Redundant)** Execute: **DCT01170, DHT01170 = "CMD_ID_HLC21"**	LCL #26 current	0mA/ /130-180mA		Current between 130-180mA
4	**Send HL command #22 (LPU Disable Redundant)** Execute: **DCT01170, DHT01170 = "CMD_ID_HLC22"**	LCL #26 current	130-180mA/ /0mA		Current off

Enter Date/Time:			Sign Off	TC:	PA:

Enter Start Date|Time:			

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
5	**Un-power Prime LPU LCL (LCL # 25)** Execute: **DC26B170**	LCL status	ON/ / OFF		State of LCL #26 switches to OFF
Test Result (Pass/Fail):					

7.2.10 Satellite & EGSE Switch Off

The following test steps are not applicable for TBTV tests.

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remark	P	N
	Satellite & EGSE Switch Off						
	Initial Conditions: Nominal & Redundant SPIRE warm units OFF						
1	From HPCCS Test Conductor console issue command to disconnect from SPIRE I-EGSE **disconnect HSPIREEGSE**	OK			Steps 10.1-10.3 are only necessary if Steps 1.1, 1.3 to 1.7 were executed		
2	Confirm from HPCSS and SPIRE I-EGSE that the disconnection was successful	YZS2994 = disconnected					
3	If required Switch OFF I-EGSE i.a.w. AD 8						
4	Switch OFF Satellite/SVM, HPCCS and SCOEs i.a.w. procedure AD 2 Sections 7.7 to 7.11	OK					
5	Confirm both Satellite and EGSE powered down	OK					

Enter Date/Time:			Sign Off	TC:	PA:

Enter Start Date|Time:			

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

7.2.11 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.

Not applicable for TBTV

Version	2.3
Date	10th Sept. 2007
Purpose	To switch OFF the SPIRE instrument if an anomaly should occur
Initial configuration	SPIRE can be in ANY configuration - Prime or Redundant - as specified in the procedure steps
Final configuration	SPIRE is OFF
Preconditions	• SPIRE FM DPU is electrically integrated with the Herschel Satellite • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	~5-8 minutes
Pass/Fail Criteria	SPIRE is OFF. All instrument subsystems are completely powered OFF.

Note:
All HK parameters relevant to this procedure can be located on the FUNCTIONAL TEST PARAMETERS CCS display. The exact name of the script to be executed at each step depends on whether the Prime or Redundant instrument is switched on.

Enter Start Date|Time:			

Procedure Steps:

Step	Description	Parameter - Unit	Value	Actual value before/ after
1	**Check to see if the Photometer LIAs are on** If PLIABITSTAT=1 then execute SPIRE-FM-SFT-PLIA-OFF-<P/R>.tcl	PLIABITSTAT	**0 or 1**	
2	**Check to see if the Spectrometer LIAs are on** If SLIABITSTAT=1 then execute SPIRE-FM-SFT-SLIA-OFF-<P/R>.tcl	SLIABITSTAT	**0 or 1**	
3	**Check to see if the BSM is on** If CHOPSENSPWR=1 or JIGGSENSPWR=1, then execute SPIRE-FM-SFT-BSM-OFF-<P/R>.tcl	CHOPSENSPWR JIGGSENSPWR	**0 or 1** **0 or 1**	
4	**Check to see if the SMEC is on** If SMECENCPWR=1 or SMECLVDTPWR=1, then execute SPIRE-FM-SFT-SMEC-OFF-<P/R>.tcl	SMECENCPWR SMECLVDTPWR	**0 or 1** **0 or 1**	
5	**Check to see if the MCU is on** If MCUBITSTAT=1 then execute SPIRE-FM-SFT-MCU-OFF-<P/R>.tcl	MCUBITSTAT	**0 or 1**	

Enter Date/Time:			Sign Off	TC:	PA:

Enter Start Date|Time:			

Step	Description	Parameter - Unit	Value	Actual value before/ after
6	**Check to see if the SCU DC/AC thermometry is on** If SUBKSTAT=1 or SCUTEMPSTAT≠0, then execute SPIRE-FM-SFT-SCU-OFF-<P/R>.tcl	SUBKSTAT SCUTEMPSTAT	**0 or 1** **≠ 0**	
7	If SPIRE PRIME powered execute Section 7.2.4	OK		
8	If SPIRE REDUNDANT powered execute Section 7.2.8	OK		

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

Table 8.1-1: Procedure Variation Sheet

8.2 Non Conformance Report (NCR) Summary

NCR - No.	NCR - Title	Date	Open Closed	PA sig.

Table 8.2-1: Non-Conformance Record Sheet

8.3 Sign-off Sheet

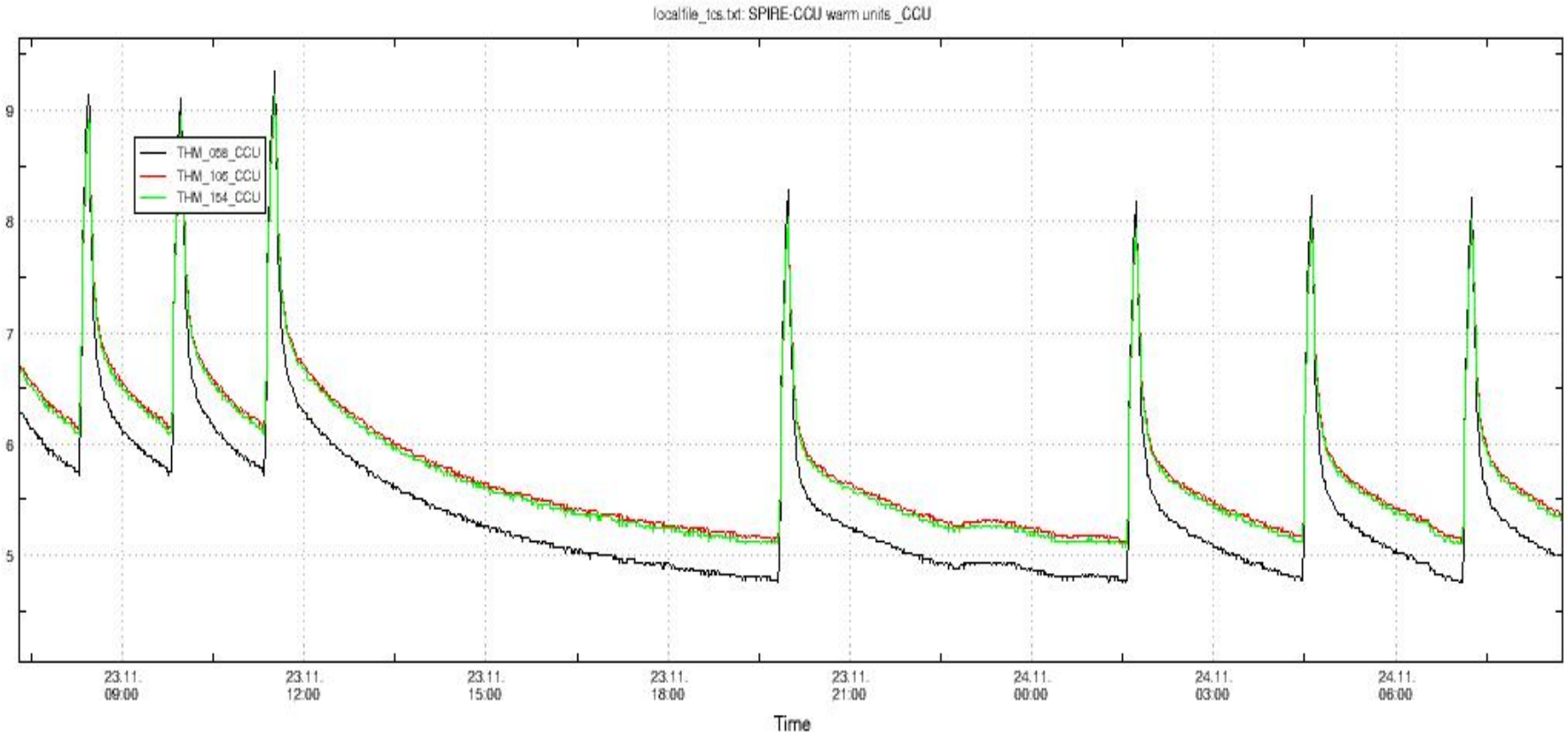
	Date	Signature
Test Manager		
Operator		
PA Responsible		
ESA Representative		

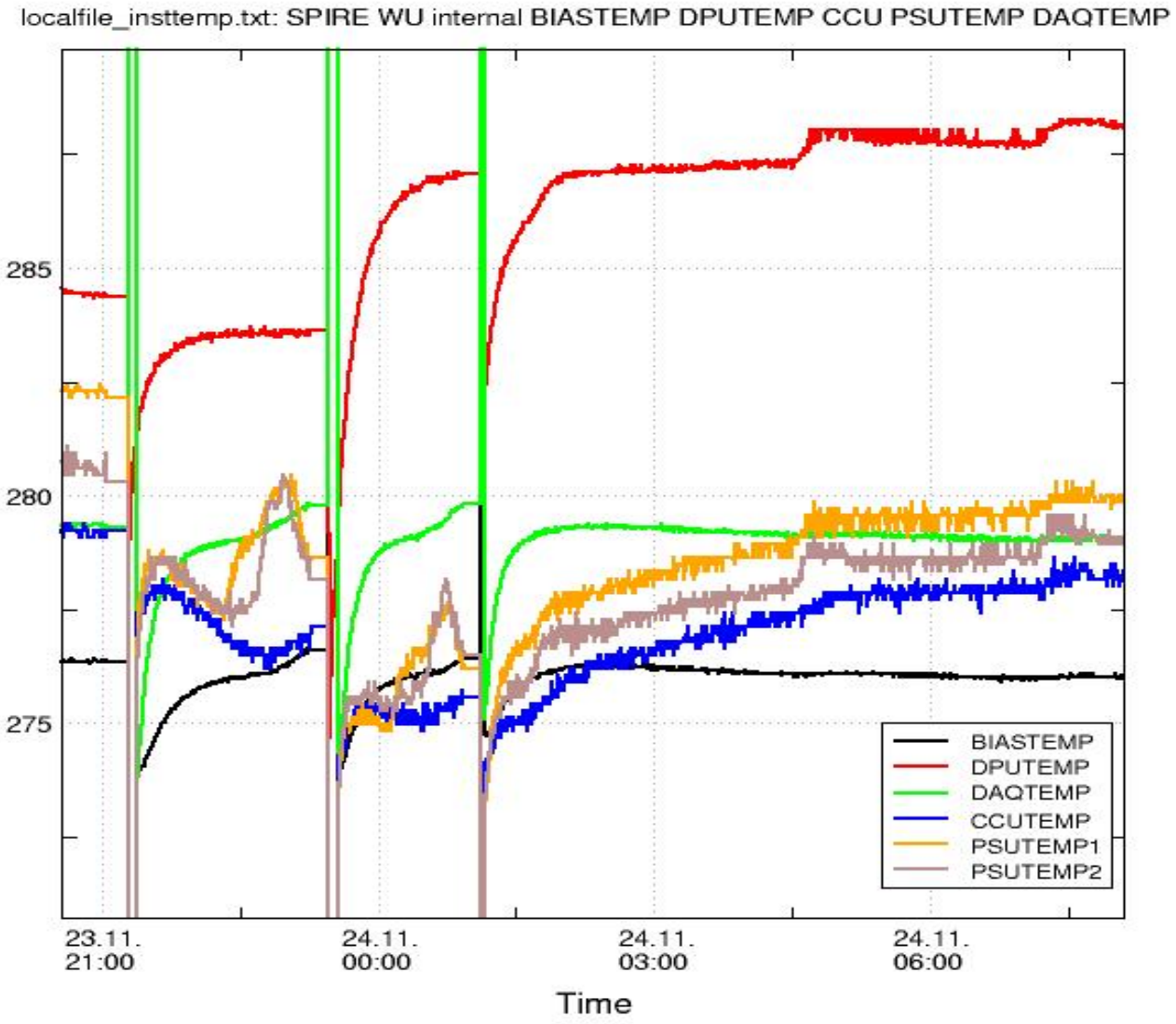
END OF DOCUMENT

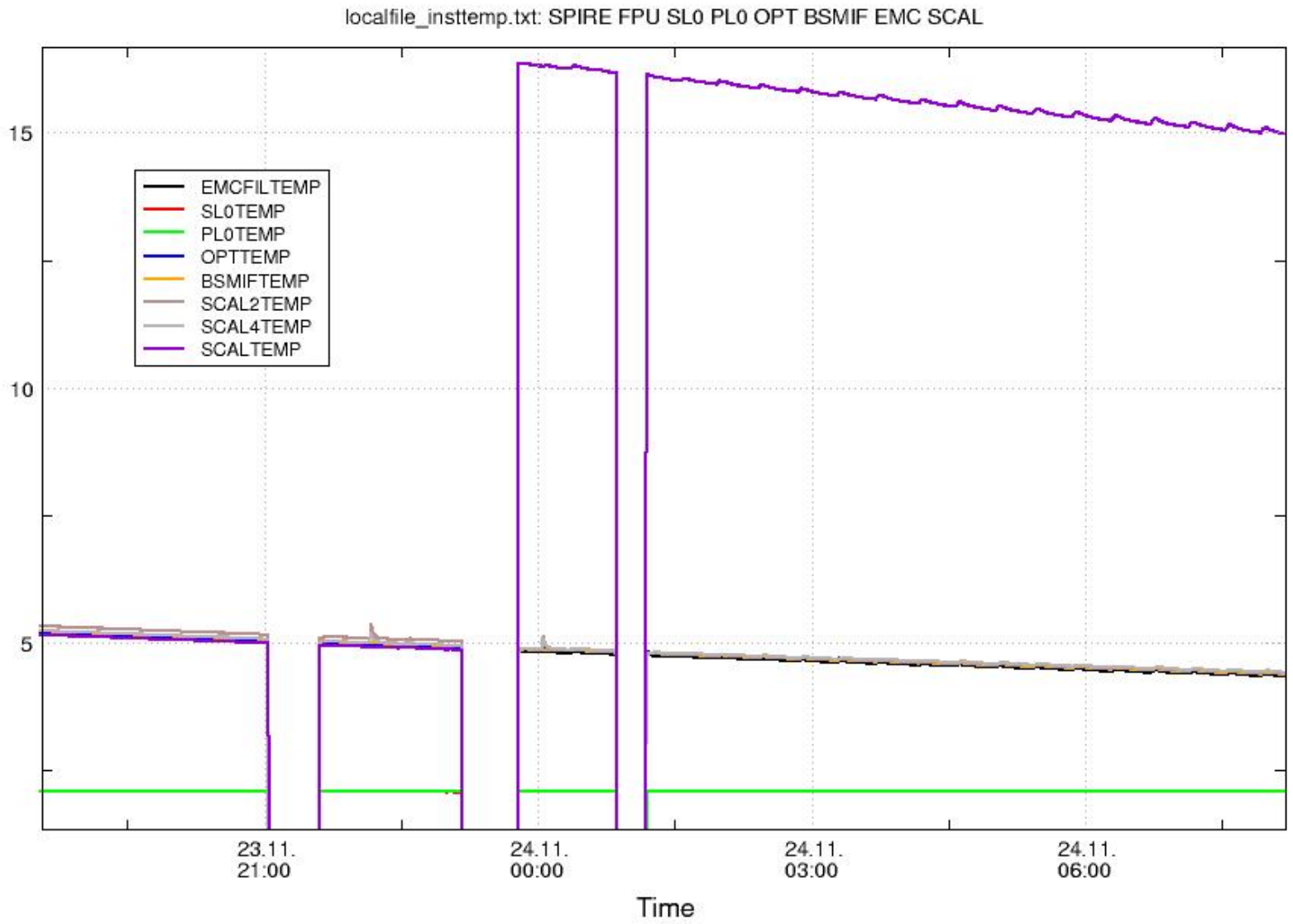
	Name	Dep./Comp.
	Baldock Richard	FAE12
	Barlage Bernhard	AED13
	Bayer Thomas	ASA42
	Brune Holger	ASA45
	Chen Bing	HE Space
	Davis William	Captec
	Edelhoff Dirk	AED21
	Fehringer Alexander	ASG15
X	Fricke Wolfgang Dr.	AED 65
	Geiger Hermann	ASA42
	Grasl Andreas	OTN/ASA44
	Grasshoff Brigitte	AET12
X	Hamer Simon	Terma
	Hanka, Erhard	FI522
	Hendrikse Jeffrey	HE Space
X	Hendry David	Terma
	Hengstler Reinhold	ASA42
	Hinger Jürgen	ASG23
X	Hohn Rüdiger	AED65
	Hopfgarten Michael	AET32
	Huber Johann	ASA42
	Hund Walter	ASE252
X	Idler Siegmund	AED312
	Iványi von András	FAE12
	Jahn Gerd Dr.	ASG23
X	Kölle Markus	ASA43
	König Werner	AET32
X	Koppe Axel	AED312
X	Kroeker Jürgen	AED65
	La Gioia Valentina	Terma
	Lang Jürgen	ASE252
	Langenstein Rolf	AED15
	Langfermann Michael	ASA41
	Liberatore Danilo	Rhea
X	Martin Olivier	Altec
X	Maukisch Jan	ASA43
X	Much Christoph	ASA43
X	Müller Martin	ASA43
	Pietroboni Karin	AED65
	Reichle Konrad	ASA42
	Runge Axel	OTN/ASA44
	Saal Christoph	External
	Schink Dietmar	AED321
	Schmidt Thomas	AED15
	Schweickert Gunn	ASG23
X	Sonn Nico	ASG51
	Steininger Eric	AED321
X	Stritter Rene	AED11

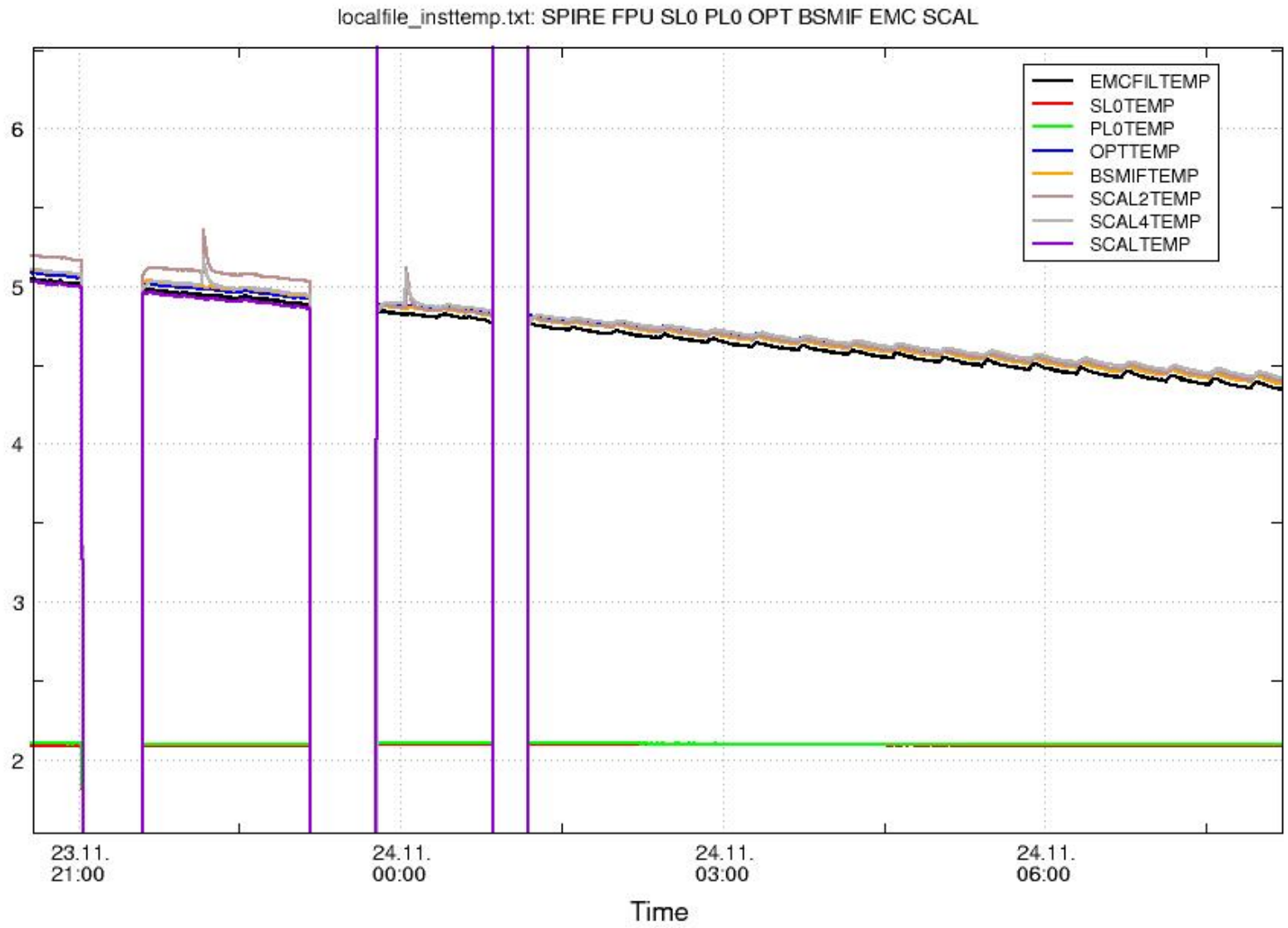
	Name	Dep./Comp.
	Suess Rudi	OTN/ASA44
X	Theunissen Martijn	ASA43
	Vascotto Riccardo	HE Space
	Wagner Klaus	ASG23
X	Wietbrock Walter	AET12
	Wöhler Hans	ASG23
	Wössner Ulrich	ASE252
	Zumstein Armin	AED15
X	ESA/ESTEC	ESA
X	Thales Alenia Space Cannes	TAS-F
	Thales Alenia Space Torino	TAS-I
	Instruments:	
	MPE (PACS)	MPE
X	RAL (SPIRE)	RAL
	SRON (HIFI)	SRON
	Subcontractors:	
	Austrian Aerospace	AAE
	Austrian Aerospace	AAEM
	BOC Edwards	BOCE
	Dutch Space Solar Arrays	DSSA
	EADS Astrium Sub-Subsyst. & Equipment	ASSE
	EADS CASA Espacio	CASA
	EADS CASA Espacio	ECAS
	European Test Services	ETS
	Patria New Technologies Oy	PANT
	SENER Ingenieria SA	SEN
	Thales Alenia Space, Antwerp	TAS-ETCA

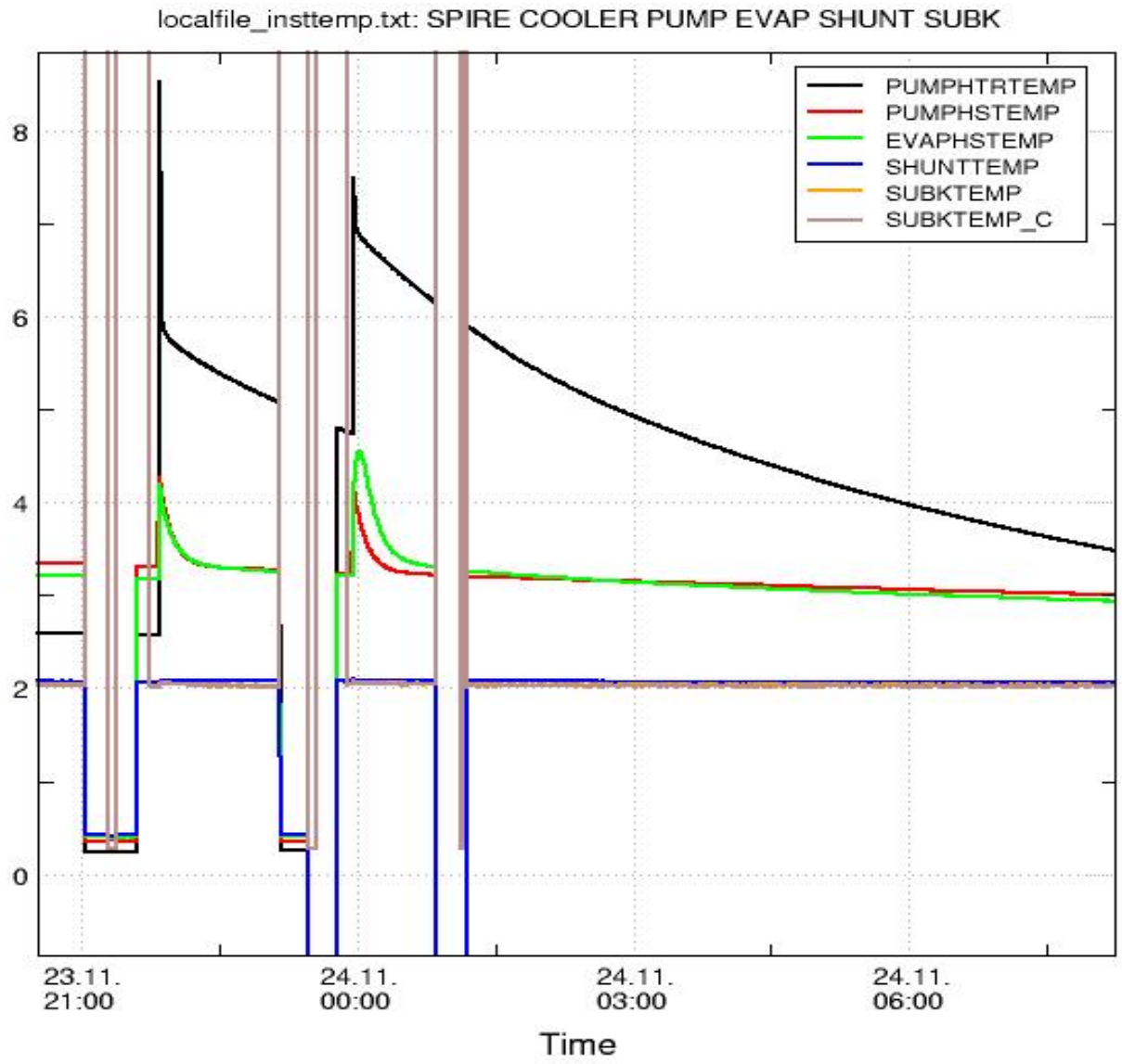
6 Appendix 2: SPIRE Temperatures during SFT in TV Cold


localfile_tcs.txt: SPIRE-CCU warm units _CCU
THM_058_CCU
THM_105_CCU
THM_154_CCU
9
8
7
6
5
23.11.
09:00
23.11.
12:00
23.11.
15:00
23.11.
18:00
23.11.
21:00
24.11.
00:00
24.11.
03:00
24.11.
06:00
Time


localfile_insttemp.txt: SPIRE WU internal BIASTEMP DPUTEMP CCU PSUTEMP DAQTEMP
285
280
275
BIASTEMP
DPUTEMP
DAQTEMP
CCUTEMP
PSUTEMP1
PSUTEMP2
23.11.
21:00
24.11.
00:00
24.11.
03:00
24.11.
06:00
Time


localfile_insttemp.txt: SPIRE FPU SL0 PL0 OPT BSMIF EMC SCAL
15
10
5
EMCFILTEMP
SL0TEMP
PL0TEMP
OPTTEMP
BSMIFTEMP
SCAL2TEMP
SCAL4TEMP
SCALTEMP
23.11.
21:00
24.11.
00:00
24.11.
03:00
24.11.
06:00
Time


localfile_insttemp.txt: SPIRE FPU SL0 PL0 OPT BSMIF EMC SCAL
EMCFILTEMP
SL0TEMP
PL0TEMP
OPTTEMP
BSMIFTEMP
SCAL2TEMP
SCAL4TEMP
SCALTEMP
6
5
4
3
2
23.11.
21:00
24.11.
00:00
24.11.
03:00
24.11.
06:00
Time


localfile_insttemp.txt: SPIRE COOLER PUMP EVAP SHUNT SUBK
PUMPHTRTEMP
PUMPHSTEMP
EVAPHSTEMP
SHUNTTEMP
SUBKTEMP
SUBKTEMP_C
8
6
4
2
0
23.11.
21:00
24.11.
00:00
24.11.
03:00
24.11.
06:00
Time

END OF DOCUMENT

	Name	Dep./Comp.		Name	Dep./Comp.
	Baldock Richard	FAE12		Theunissen Martijn	ASA43
	Barlage Bernhard	AED13	X	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			
X	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			
X	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
X	Maukisch Jan	ASA43			
X	Much Christoph	ASA43			
	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