EADS astrium

Test Procedure

Herschel

Title: **SPIRE FM Warm Functional Test**

CI-No: 125200

Prepared by:	S. Hamer/TERMA AS A. Koppe	Date:	22.10.2007
Checked by:	S. Idler		22.10.2007
Product Assurance:	R. Stritter		22.10.07
Configuration Control:	W. Wietbrock		23.10.07
Project Management:	W. Fricke		24/10/07

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Issue	Date	Sheet	Description of Change	Release
1.0	19.09.07	All	First Formal Issue	
2.0	22.10.07	All	Update to reflect RD2 issue 2.4 execution order	

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1 Scope

This document describes the set of warm functional tests to be performed on the SPIRE FM Instrument to check correct operation using the Herschel CCS after final mating between the HERSCHEL Cryostat and the SVM.

Specifically the functional test will verify the correct functioning of all subsystems at warm environmental conditions before cool down. Both redundancies are tested within this sequence.

Constraints

- This procedure requires the presence of SPIRE personnel as the I-EGSE will be required to assess the results online as part of the pass/fail criteria.
- Mechanism tests (marked in yellow in the sequence), which include opening and closing the internal SMEC Launch Latch shall only be performed with the Herschel Cryostat horizontal.
- Before carrying out the next procedure within the test sequence always ask for the go ahead by the SPIRE staff.
- Chapter 4 of this document specifies the sequence to be executed. Each of the steps in the sequence corresponds to procedures in sections 4.1 and 4.2.
- The procedure tables in section 4.1 and 4.2 include blank boxes where the actual values of parameters can be noted. Based on the comparison with the expected values the success or failure of a step should be recorded in the final column of the table.
- The last row in a procedure table should be used to record the overall Pass/Fail result of each test.
- 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 checkout 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
2. Power on and configure SVM for test

3. Power on NOMINAL SPIRE Prime DPU and enable Mil1553B-bus interface
4. Power on DRCU(FCU) Prime
5. Run Nominal warm SFT Procedures
6. Power off MCU Prime
7. Power off DRCU(FCU) Prime
8. Disable Mil1553B-bus interface and Power off SPIRE Prime DPU
9. Repeat Steps 3 – 8 for Spire Redundant warm SFT Procedures
10. Power off SVM
11. Switch off all EGSE

2 Documents/Drawings

2.1 Applicable Documents

AD 1	FM SPIRE PFM Final Electrical Integration Procedure	HP-2-ASED-TP-166
AD 2	Herschel PCDU & CDMS Nominal Switch On/Off Procedure	HP-2-ASED-PR-070
AD 3	Herschel SAT Emergency Switch Off Procedure	HP-2-ASED-PR-071
AD 4	PA Plan	HP-2-ASED-PL-0007
AD 5	I-EGSE Switch ON/OFF Procedure	TBI
AD 6	Test Specification for Herschel Instrument AVM & FM Tests Performed at Satellite Level	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 Warm Functional Test Procedures	SPIRE-RAL-PRC-2422, iss. 2.4
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. 1.0	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.

SMEC WFT procedures highlighted in yellow in the procedure require the spacecraft to be horizontal. All other procedures 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 shall be configured and connected to the HPCCS in accordance with AD 5 & AD 8.

3.3 Set-up

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

4 Test Sequence

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-WFT-DPU-START-P-SP	DPU ON PRIME	
2.	SPIRE-FM-WFT-DRCU-START-P-STEP1	DRCU ON PRIME Step1	
3.	SPIRE-FM-WFT-DRCU-START-P-STEP2	DRCU ON PRIME Step2	
4.	SPIRE-FM-WFT-FUNC-SCU-01-P	SCU science generation check	
5.	SPIRE-FM-WFT-FUNC-SCU-03-P	SCU DC thermometry check	
6.	SPIRE-FM-WFT-FUNC-SCU-06-P	SCU AC thermometry check	
7.	SPIRE-FM-WFT-FUNC-SCU-02-P	SCU Nominal Science Contents Check	
8.	SPIRE-FM-WFT-FUNC-SCU-07-P	Sorption Cooler Heater Check	
9.	SPIRE-FM-WFT-FUNC-SCU-04-P	Photometer Calibration Check	
10.	SPIRE-FM-WFT-FUNC-SCU-05-P	Spectrometer Calibration Check	
11.	SPIRE-FM-WFT-FUNC-SCU-08-P	SCU Test Pattern Check	
12.	SPIRE-FM-WFT-FUNC-MCU-01-P	MCU (Prime) Boot Check	
13.	SPIRE-FM-WFT-FUNC-MCU-02-P	MCU Nominal Frame Generation Check	
14.	SPIRE-FM-WFT-FUNC-MCU-03-P	MCU Nominal Science Contents Check	
15.	SPIRE-FM-WFT-FUNC-MCU-04-P	MCU Test Pattern Check	
16.	SPIRE-FM-WFT-FUNC-BSM-01-P	BSM (Prime) Chop/Jiggle Sensor Check	
17.	SPIRE-FM-WFT-FUNC-BSM-02C-P	BSM (Prime) Chop Sensor Polarity Check	
18.	SPIRE-FM-WFT-FUNC-BSM-02J-P	BSM (Prime) Jiggle Sensor Polarity Check	
19.	SPIRE-FM-WFT-FUNC-BSM-03-P	BSM (Prime) Open Loop Dynamics Check	
20.	SPIRE-FM-WFT-FUNC-BSM-05A-P	BSM (Prime) Open Loop Chop Test	
21.	SPIRE-FM-WFT-FUNC-BSM-05B-P	BSM (Prime) Closed Loop Chop Test	
22.	SPIRE-FM-WFT-FUNC-BSM-06-P	BSM (Prime) operational Mode Check	
23.	SPIRE-FM-WFT-BSM-OFF-P	BSM (Prime) Switch OFF	

No.	Tcl Script Name	Comment	Confirmed
24.	SPIRE-FM-WFT-FUNC-DCU-01-P	DCU Nominal Science Packet Generation Check PRIME	
25.	SPIRE-FM-WFT-FUNC-DCU-02-P	DCU High Speed Link Check PRIME	
26.	SPIRE-FM-WFT-FUNC-DCU-03-P	DCU Test pattern Check PRIME	
27.	SPIRE-FM-WFT-FUNC-DCU-04-PHOT-P	Photometer LIAs Check PRIME	
28.	SPIRE-FM-WFT-FUNC-DCU-13-PHOT-P	Photometer BDAs Integrity Check PRIME	
29.	SPIRE-FM-WFT-FUNC-DCU-14-PHOT-P	Photometer BDAs Noise Check PRIME	
30.	SPIRE-FM-WFT-PDET-OFF-P	Photometer BDAs Switch OFF PRIME	
31.	SPIRE-FM-WFT-FUNC-DCU-04-SPEC-P	Spectrometer LIAs Check PRIME	
32.	SPIRE-FM-WFT-FUNC-DCU-11-SPEC-P	Spectrometer BDAs Integrity Check PRIME	
33.	SPIRE-FM-WFT-FUNC-DCU-13-SPEC-P	Spectrometer BDAs Integrity Check PRIME	
34.	SPIRE-FM-WFT-FUNC-DCU-14-SPEC-P	Spectrometer BDAs Noise Check PRIME	
35.	SPIRE-FM-WFT-SDET-OFF-P	Spectrometer BDAs Switch OFF PRIME	
36.	SPIRE-FM-WFT-MCU-OFF-P	MCU Switch OFF PRIME	
37.	SPIRE-FM-WFT-SCU-OFF-P	SCU Switch OFF PRIME	
38.	SPIRE-FM-WFT-DRCU-OFF-P	DRCU Switch OFF PRIME	
39.	SPIRE-FM-WFT-FUNC-SMEC-01-P	SMEC Encoder and LVDT check PRIME	
40.	SPIRE-FM-WFT-FUNC-SMEC-03-P	SMEC Encoder Levels Check PRIME	
41.	SPIRE-FM-WFT-FUNC-SMEC-02A-P	SMEC Open Launch Latch PRIME	
42.	SPIRE-FM-WFT-FUNC-SMEC-04A-P	SMEC Open Loop Position check PRIME	
43.	SPIRE-FM-WFT-FUNC-SMEC-09-P	SMEC Open Loop Scan check PRIME	
44.	SPIRE-FM-WFT-FUNC-SMEC-07-P	SMEC Closed Loop Scan check PRIME	
45.	SPIRE-FM-WFT-FUNC-SMEC-02B-P	SMEC Close Launch Latch PRIME	
46.	SPIRE-FM-WFT-SMEC-OFF-P	SMEC Switch OFF PRIME	
	REDUNDANT UNIT SCRIPTS		
47.	SPIRE-FM-WFT-DPU-START-R-PP	DPU ON REDUN	

No.	Tcl Script Name	Comment	Confirmed
48.	SPIRE-FM-WFT-DRCU-START-R-STEP1	DRCU ON REDUN Step1	
49.	SPIRE-FM-WFT-DRCU-START-R-STEP2	DRCU ON REDUN Step2	
50.	SPIRE-FM-WFT-FUNC-SCU-01-R	SCU Nominal Science Packet Generation Check REDUN.	
51.	SPIRE-FM-WFT-FUNC-SCU-03-R	SCU DC Thermometry Check REDUN.	
52.	SPIRE-FM-WFT-FUNC-SCU-06-R	SCU AC Thermometry Check REDUN.	
53.	SPIRE-FM-WFT-FUNC-SCU-02-R	SCU Nominal Science Contents Check REDUN.	
54.	SPIRE-FM-WFT-FUNC-SCU-04-R	Photometer Calibrator Check REDUN.	
55.	SPIRE-FM-WFT-FUNC-SCU-05-R	Spectrometer Calibrator Check REDUN.	
56.	SPIRE-FM-WFT-FUNC-SCU-07-R	Sorption Cooler Heaters Check REDUN.	
57.	SPIRE-FM-WFT-FUNC-SCU-08-R	SCU Test Pattern Check REDUN.	
58.	SPIRE-FM-WFT-FUNC-MCU-01-R	MCU Boot Check REDUN.	
59.	SPIRE-FM-WFT-FUNC-MCU-02-R	MCU Nominal Science Packet Generation Check REDUN.	
60.	SPIRE-FM-WFT-FUNC-MCU-03-R	MCU Nominal Science Contents Check REDUN.	
61.	SPIRE-FM-WFT-FUNC-MCU-04-R	MCU Test Pattern Check REDUN	
62.	SPIRE-FM-WFT-FUNC-BSM-01-R	BSM Chop/Jiggle Sensors Check REDUN.	
63.	SPIRE-FM-WFT-FUNC-BSM-02c-R	BSM Chop Sensor Polarity Check REDUN.	
64.	SPIRE-FM-WFT-FUNC-BSM-02j-R	BSM Jiggle Sensor Polarity Check REDUN.	
65.	SPIRE-FM-WFT-FUNC-BSM-03-R	BSM Open Loop Dynamics Check REDUN.	
66.	SPIRE-FM-WFT-FUNC-BSM-05A-R	BSM Open Loop Chop Test REDUN.	
67.	SPIRE-FM-WFT-FUNC-BSM-05B-R	BSM Closed Loop Chop Test REDUN.	
68.	SPIRE-FM-WFT-FUNC-BSM-06-R	BSM Operational Mode Check REDUN	
69.	SPIRE-FM-WFT-BSM-0FF-R	BSM Switch OFF REDUN.	
70.	SPIRE-FM-WFT-FUNC-DCU-01-R	DCU Nominal Science Packet Generation Check REDUN.	

No.	Tcl Script Name	Comment	Confirmed
71.	SPIRE-FM-WFT-FUNC-DCU-02-R	DCU High Speed Link Check REDUN.	
72.	SPIRE-FM-WFT-FUNC-DCU-03-R	DCU Test pattern Check REDUN.	
73.	SPIRE-FM-WFT-FUNC-DCU-04-PHOT-R	Photometer LIAs Check REDUN.	
74.	SPIRE-FM-WFT-FUNC-DCU-11-PHOT-R	Photometer BDAs Switch ON Check REDUN.	
75.	SPIRE-FM-WFT-FUNC-DCU-13-PHOT-R	Photometer BDAs Integrity Check REDUN.	
76.	SPIRE-FM-WFT-FUNC-DCU-14-PHOT-R	Photometer BDAs Noise Check REDUN.	
77.	SPIRE-FM-WFT-PDET-OFF-R	Photometer BDAs Switch OFF REDUN.	
78.	SPIRE-FM-WFT-FUNC-DCU-04-SPEC-R	Spectrometer LIAs Check REDUN.	
79.	SPIRE-FM-WFT-FUNC-DCU-11-SPEC-R	Spectrometer BDAs Integrity Check REDUN.	
80.	SPIRE-FM-WFT-FUNC-DCU-13-SPEC-R	Spectrometer BDAs Integrity Check REDUN.	
81.	SPIRE-FM-WFT-FUNC-DCU-14-SPEC-R	Spectrometer BDAs Noise Check REDUN.	
82.	SPIRE-FM-WFT-SDET-OFF-R	Spectrometer BDAs switch OFF REDUN.	
83.	SPIRE-FM-WFT-MCU-OFF-R	MCU Switch OFF REDUN.	
84.	SPIRE-FM-WFT-SCU-OFF-R	SCU Switch OFF REDUN.	
85.	SPIRE-FM-WFT-DRCU-OFF-R	DRCU Switch OFF REDUN	
86.	SPIRE-FM-WFT-FUNC-SMEC-01-R	SMEC Encoder and LVDT Check REDUN.	
87.	SPIRE-FM-WFT-FUNC-SMEC-03-R	SMEC Encoder Levels Check REDUN.	
88.	SPIRE-FM-WFT-FUNC-SMEC-02A-R	SMEC Open Launch Latch REDUN.	
89.	SPIRE-FM-WFT-FUNC-SMEC-04A-R	SMEC Open Loop Position Check REDUN.	
90.	SPIRE-FM-WFT-FUNC-SMEC-09-R	SMEC Open Loop Scan Check REDUN.	
91.	SPIRE-FM-WFT-FUNC-SMEC-07-R	SMEC Closed Loop Scan Check REDUN.	
92.	SPIRE-FM-WFT-FUNC-SMEC-02B-R	SMEC Close Launch Latch REDUN.	
93.	SPIRE-FM-WFT-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			

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 required for this test and will be connected to the HPCCS in accordance with AD 5.

5.4.4 OGSE

None.

5.4.5 Special Equipment

None.

6 Verification Requirements and Test Criteria

This is a functional check of all SPIRE PFM subsystems in warm 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.

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.

7.2 Step by Step Procedure

7.2.1 EGSE & Satellite Switch On

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					
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	Record Test Session Name:						
1.4	Confirm that EGSE and Satellite are in the correct configuration as per AD 2	OK					
1.7	Switch on & configure SPIRE I-EGSE i.a.w. **AD5 & AD 8**						

Enter Date/Time:			**Sign Off:**	

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
1.8	Confirm SPIRE I-EGSE is in the correct configuration as per AD5 & AD 8	OK					
1.9	From HPCCS Test Conductor console issue command to connect to SPIRE I-EGSE **connect HSPIREEGSE**						
1.10	Confirm from HPCCS and SPIRE I-EGSE that the connection has been established	OK					
1.11	On HPCCS start the following test script: **ALL_SubscribeParams.tcl**	OK					
	START OF SPIRE WFT						
1.12	Load Synoptics INSTRUMENTS on HPCCS to display SPIRE status overview						

7.2.2 Switch On SPIRE PRIME DPU & DRCU

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	SWITCH ON DPU PRIME						
	Initial Conditions: DPU-A & DRCU A OFF						
2.1	On HPCCS execute the following test script to power on the SPIRE DPU and DRCU. **S102999SCVT009_ASDWFTSPIR_PWR_ON_P.tcl** Respond to the prompts as listed below:				AND: ZAD07999, ZAD14999 MIM: LCL_HERSCHEL		

Enter Date/Time:			Sign Off:	

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	The test script (calling the specific SPIRE scripts as appropriate) powers ON the DPU and enables the MilBus before forcebooting the ASW (NB: currently powers ON DPU using secondary partition). The DRCU is then powered and configured.						
2.2	Check that Nominal and Critical HK packets are arriving at the HPCCS: **SPIRE Nominal HK:** • (type ,subtype) : (3,25) • APID : 0x502 (1282) **SPIRE Critical HK:** • (type ,subtype) : (3,25) • APID: 0x500 (1280)	OK					
2.3	On I-EGSE/HPCCS check that THSK parameter is refreshing every second	OK					
2.4	On I-EGSE check that TM2N parameter is incrementing by 1 every second	OK					
2.5	On I-EGSE check that TM1N parameter is incrementing by 1 every 2 second	OK					
2.6	On HPCCS check the consistency of the SPIRE on board time to the HCDMU time and the CCS (need to clarify if SPIRE requests a time verification report as part of DPU ON sequence).	OK					
2.7	On IEGSE check the consistency between SCOS time and THSK and QLA time.	OK					
2.8	Continue test script by responding to prompt						

Enter Date/Time:			**Sign Off:**	

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	SWITCH ON DRCU PRIME						
2.9	When prompted by test script:						
2.10	On I-EGSE/HPCCS check that THSK parameter is not refreshing anymore	OK					
2.11	On I-EGSE/HPCCS check that TM2N parameter is not incrementing anymore	OK					
2.12	Continue test script by responding to prompt to power on DRCU						
2.13	On I-EGSE check that THSK parameter is refreshing every second	OK					
2.14	On I-EGSE check that TM2N parameter is incrementing by 1 every second	OK					
2.15	Continue test script by responding to prompt						
	SPIRE PRIME DPU & DRCU POWER ON COMPLETE						

Enter Date/Time:			**Sign Off:**	

7.2.3 Warm Functional Tests - Nominal

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

Version	2.4
Date	16th Oct. 2007
Purpose	SCU science packet generation check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • DPU AND OBS PARAMETERS & FUNCTIONAL TEST 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-WFT-FUNC-SCU-01-P.tcl	SCUFRAMECNT TM5N	0/31 0x3FFF/1		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

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

Version	2.4
Date	16th Oct. 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-WFT-FUNC-SCU-03-P.tcl	—	—	—	—
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	0/0xFFFF/0xFFFF		

Enter Date/Time:			**Sign Off:**	

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
4	**Configure the SFT PARAMETERS display to show the RAW values of SCU DC thermometry channels.** Record the 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]**	PUMPHTRTEMP PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	— — — — — — — — — — — — — — — —		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

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

Version	2.4
Date	16th Oct. 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-WFT-FUNC-SCU-06-P.tcl	—	—	—	—
2	**Wait for the parameter BBFULLTYPE to get set to SCU_AC_Therm**				
3	A few seconds later record the value of parameter SUBKSTAT	SUBKSTAT	0/1/1		
4	**Configure the SFT PARAMETERS display to show the RAW values of SCU AC thermometry channel.** Record the value of SCU AC thermometry channel if it indicates an open circuit. Nominal value should show a short circuit status (or RAW ~ -32768) **Non Nominal (Open Circuit Criterion): RAW reading in the range [0, -100]**	SUBKTEMP	—		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

Enter Date/Time:			Sign Off:	

7.2.3.4 Procedure SPIRE-FM-WFT-FUNC-SCU-02-P

Version	2.4
Date	16th Oct. 2007
Purpose	SCU Nominal Science Contents Check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • DPU AND OBS PARAMETERS & FUNCTIONAL TEST PARAMETERS displays are selected on the CCS
Duration	5 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-WFT-FUNC-SCU-02-P.tcl	SCUFRAMECNT TM5N	31/62 1/3		
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

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

Version	2.4
Date	16th Oct. 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
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail Criteria	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-WFT-FUNC-SCU-04-P.tcl **The expected values during the test should be monitored when parameter BBFULLTYPE in the FUNCTIONAL TEST 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		
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Final Configuration: Unchanged

Enter Date/Time:			**Sign Off:**	

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

Version	2.4
Date	16th Oct. 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
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	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-WFT-FUNC-SCU-05-P.tcl	—	—	—	
2	**Wait for the parameter BBFULLTYPE to get set to SCAL4_Check**	BBFULLTYPE	SCAL4_Check	—	
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	—	
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	—	
6	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.7 Procedure SPIRE-FM-WFT-FUNC-SCU-07-P

Version	2.4
Date	16th Oct. 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
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail Criteria	Sorption cooler heat switches and pump heater show expected voltages

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-SCU-07-P.tcl	—	—	—	—
2	**Wait for the parameter BBFULLTYPE to get set to Cooler_Htr_Chk**	BBFULLTYPE	Cooler_Htr_Chk		
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		
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		
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		
6	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—

Enter Date/Time: Test Result (Pass/Fail): Sign Off:

7.2.3.8 Procedure SPIRE-FM-WFT-FUNC-SCU-08-P

Version	2.4
Date	16th Oct. 2007
Purpose	SCU test pattern check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • DPU AND OBS PARAMETERS & FUNCTIONAL TEST PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail Criteria	SCU Test Pattern generated agrees with the one generated on a previous execution.

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-SCU-08-P.tcl	SCUFRAMECNT TM5N	62/93 3/5		
2	**Wait for the I-EGSE staff to confirm the success of the test.**				
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

Enter Date/Time:			Sign Off:	

7.2.3.9 Procedure SPIRE-FM-WFT-FUNC-MCU-01-P

Version	2.4
Date	16th Oct. 2007
Purpose	MCU (PRIME) Boot Check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCU voltages and board temperatures show expected ‘ON’ values

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-MCU-01-P.tcl	—	—	—	—
2	Check that the MCU is booted up successfully	MCUBITSTAT	0/1/1		
3	Check MCU HK parameter values and ensure that the values are refreshing	MCUP5V - V MCUP14V - V MCUM14V - V MCUP15V - V MCUM15V- V MCUMACTEMP - K MCUSMECTEMP - K MCUBSMTEMP - K	~ 5.0 ± 0.2 ~ 14.0 ± 0.6 ~ -14.0 ± 0.6 ~ 15.0 ± 0.6 ~ -15.0 ± 0.7 ~300 ~300 ~300		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.10 Procedure: SPIRE-FM-WFT-FUNC-MCU-02-P

Version	2.4
Date	16th Oct. 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.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified MCU HK parameters show expected increment

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-MCU-02-P.tcl	MCUFRAMECNT	0/~ 6000	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.11 Procedure: SPIRE-FM-WFT-FUNC-MCU-03-P

Version	2.4
Date	16th Oct. 2007
Purpose	MCU Nominal Science Contents Check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	Unchanged.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified MCU HK parameters show expected increment

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-MCU-03-P.tcl	MCUFRAMECNT	~6000/~ 6297 Should increment by 297	—	—
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**				
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.12 Procedure: SPIRE-FM-WFT-FUNC-MCU-04-P

Version	2.4
Date	16th Oct. 2007
Purpose	MCU Test Pattern Check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	Unchanged.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCU Test Pattern generated agrees with the one generated on a previous execution.

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-MCU-04-P.tcl	MCUFRAMECNT	N/N+99	—	—
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**				
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.13 Procedure SPIRE-FM-WFT-FUNC-BSM-01-P

Version	2.4
Date	16th Oct. 2007
Purpose	BSM (PRIME) Chop/Jiggle Sensor Check.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK Parameters CHOPSENSPWR and JIGGSENSPWR show expected ON values.

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.3.14 Procedure SPIRE-FM-WFT-FUNC-BSM-02C-P

Version	2.4
Date	16th Oct. 2007
Purpose	BSM (PRIME) Chop Sensor Polarity Check.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	CHOPSENSSIG HK parameter increments in the same direction as the commanded positions

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-BSM-02C-P.tcl	—	—	—	—
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**				

Test Result (Pass/Fail):

Enter Date/Time:			**Sign Off:**	

7.2.3.15 Procedure SPIRE-FM-WFT-FUNC-BSM-02J-P

Version	2.4
Date	16th Oct. 2007
Purpose	BSM (PRIME) Jiggle Sensor Polarity Check.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	JIGGSENSSIG HK parameter increments in the same direction as the commanded positions

Procedure Steps:

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

7.2.3.16 Procedure SPIRE-FM-WFT-FUNC-BSM-03-P

Version	2.4
Date	16th Oct. 2007
Purpose	BSM (PRIME) Open Loop Dynamics Check.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	CHOPSENSSIG/JIGGSENSIG HK parameter evolve in the same direction as the commanded positions

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Procedure Steps:

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

7.2.3.17 Procedure SPIRE-FM-WFT-FUNC-BSM-05A-P

Version	2.4
Date	16th Oct. 2007
Purpose	BSM (PRIME) Open Loop Chop Test
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS

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Duration	5 minutes
Pass/Fail criteria	The BSM Chops in between the commanded positions

Procedure Steps:

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

7.2.3.18 Procedure SPIRE-FM-WFT-FUNC-BSM-05B-P

Version	2.4
Date	16th Oct. 2007
Purpose	BSM (PRIME) Closed Loop Chop Test
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	BSM is in closed loop mode
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database.

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	• CCS is up and running • CHOP PARAMETERS and JIGGLE PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	The BSM Chops in between the commanded positions

Enter Date/Time:			**Sign Off:**	

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.3.19 Procedure SPIRE-FM-WFT-FUNC-BSM-06-P

Version	2.4
Date	16th Oct. 2007
Purpose	BSM (PRIME) Operational Mode Check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON. BSM is in closed loop.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • CHOP PARAMETERS and JIGGLE PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	The BSM Chops in between the commanded positions

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.3.20 Procedure SPIRE-FM-WFT-BSM-OFF-P

Version	2.4
Date	16th Oct. 2007
Purpose	BSM (PRIME) Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are ON
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. BSM Chop/Jiggle sensors are OFF.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	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-WFT-BSM-OFF-P.tcl	—	—	—	—
2	Check that the power to the BSM sensors is switched off	CHOPSENSPWR JIGGSENSPWR	1/-/0 1/-/0		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.21 Procedure SPIRE-FM-WFT-FUNC-DCU-01-P

Version	2.4
Date	16th Oct. 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
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified 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-WFT-FUNC-DCU-01-P.tcl	DCUFRAMECNT	n/n+700		
Test Result (Pass/Fail):					

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7.2.3.22 Procedure SPIRE-FM-WFT-FUNC-DCU-02-P

Version	2.4
Date	16th Oct. 2007
Purpose	To check the correct functioning of the DCU PRIME High Speed Link
Initial configuration	SPIRE DPU and DRCU PRIME are switched ON, SPIRE HK is being produced and MCU is booted.
Final configuration	Unchanged
Preconditions	• SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • I-EGSE is up and running • DCU PARAMETERS display is selected on the CCS • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	The following DCU telemetry packet types are received at the IEGSE with : Full Photometer: - (type,subtype): (21,1). - APID 0x504 PSW - (type,subtype): (21,2). - APID 0x504 PMW -(type,subtype): (21,2). - APID 0x504 PLW -(type,subtype): (21,2). - APID 0x504 Full Spectrometer: - (type,subtype): (21,1). - APID 0x506

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	SSW - (type,subtype): (21,2). - APID 0x506 SLW -(type,subtype): (21,2). - APID 0x506

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT--DCU-02-P.tcl	DCUFRAMECNT	n/n+700		

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Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
2	Verify that the following type of DCU science telemetry packets have been received at the CCS : Full Photometer: - (type,subtype): (21,1). - APID 0x504 PSW - (type,subtype): (21,2). - APID 0x504 PMW -(type,subtype): (21,2). - APID 0x504 PLW -(type,subtype): (21,2). - APID 0x504 Full Spectrometer: - (type,subtype): (21,1). - APID 0x506 SSW - (type,subtype): (21,2). - APID 0x506 SLW -(type,subtype): (21,2). - APID 0x506	—	—	—	

Enter Date/Time:			Sign Off:	

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

Enter Date/Time:			Sign Off:	

7.2.3.23 Procedure SPIRE-FM-WFT-FUNC-DCU-03-P

Version	2.4
Date	16th Oct. 2007
Purpose	DCU Test Pattern Check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU (Photometer/Spectrometer) Test Pattern generated agrees with the one generated on a previous execution.

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-DCU-03-P.tcl	DCUFRAMECNT	n/n+100		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.24 Procedure SPIRE-FM-WFT-FUNC-DCU-04-PHOT-P

Version	2.4
Date	16th Oct. 2007
Purpose	Photometer LIAs check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Photometer LIAs are ON.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-DCU-04-PHOT-P.tcl	—	—	—	—
2	Check that the Photometer LIAs are switched on	PLIAP5V PLIAP9V PLIAM9V	~0/ ~+5.17 ± 0.1V ~0/ ~+11.53 ± 0.1V ~0/ ~-11.53 ± 0.1V		
3	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.25 Procedure SPIRE-FM-WFT-FUNC-DCU-11-PHOT-P

Version	2.4
Date	16th Oct. 2007
Purpose	Photometer BDAs switch ON check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Photometer BDAs are ON.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-DCU-11-PHOT-P.tcl	—	—	—	—
2	Check that the Photometer detectors and LIAs are switched on	PSWJFETSTAT PMLWJFETSTAT PLIABITSTAT	0/-/0x3F 0/-/0x7F 1		
3	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.26 Procedure SPIRE-FM-WFT-FUNC-DCU-13-PHOT-P

Version	2.4
Date	16th Oct. 2007
Purpose	Photometer BDAs integrity check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Photometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	15 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.3.27 Procedure SPIRE-FM-WFT-FUNC-DCU-14-PHOT-P

Version	2.4
Date	16th Oct. 2007
Purpose	Photometer BDAs noise level check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Photometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Photometer BDAs signal show no excess noise

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.3.28 Procedure SPIRE-FM-WFT-PDET-OFF-P

Version	2.4
Date	16th Oct. 2007
Purpose	Photometer BDAs Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Photometer BDAs are ON
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Photometer BDAs are OFF
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.3.29 Procedure SPIRE-FM-WFT-FUNC-DCU-04-SPEC-P

Version	2.4
Date	16th Oct. 2007
Purpose	Spectrometer LIAs check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Spectrometer LIAs are ON.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-DCU-04-SPEC-P.tcl	—	—	—	—
2	Check that the Spectrometer LIAs are switched on	SLIAP5V - V SLIAP9V - V SLIAM9V - V	~0/ ~+5.23 ± 0.1 ~0/ ~+11.57 ± 0.1 ~0/ ~-11.54 ± 0.1		
3	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.30 Procedure SPIRE-FM-WFT-FUNC-DCU-11-SPEC-P

Version	2.4
Date	16th Oct. 2007
Purpose	Spectrometer BDAs switch ON check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Spectrometer BDAs are ON.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-DCU-11-SPEC-P.tcl	—	—	—	—
2	Check that the Spectrometer detectors are switched on	SPECJFETSTAT SLIABITSTAT	0/-/7 1		
3	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.31 Procedure SPIRE-FM-WFT-FUNC-DCU-13-SPEC-P

Version	2.4
Date	16th Oct. 2007
Purpose	Spectrometer BDAs integrity check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Spectrometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	12 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.3.32 Procedure SPIRE-FM-WFT-FUNC-DCU-14-SPEC-P

Version	2.4
Date	16th Oct. 2007
Purpose	Spectrometer BDAs noise check
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Spectrometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Spectrometers BDAs signal show no excess noise

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.3.33 Procedure SPIRE-FM-WFT-SDET-OFF-P

Version	2.4
Date	16th Oct. 2007
Purpose	Spectrometer BDAs Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Spectrometer BDAs are ON
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and Spectrometer BDAs are OFF
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

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

7.2.3.34 Procedure SPIRE-FM-WFT-FUNC-SMEC-01-P

Version	2.4
Date	16th Oct. 2007
Purpose	SMEC (PRIME) Encoder/LVDT Sensor Check.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Preconditions	• SPIRE DRCU PRIME is switched ON

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	• SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK Parameters SMECENCPWR and SMECLVDTPWR show expected ON values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-SMEC-01-P.tcl	—	—	—	—
2	Check that power to the SMEC LED and LVDT sensor is on	SMECENCPWR SMECLVDTPWR	0/-/6 0/1/1		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.35 Procedure SPIRE-FM-WFT-FUNC-SMEC-03-P

Version	2.4
Date	16th Oct. 2007
Purpose	SMEC (PRIME) Encoder Integrity Check.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCUENGSMECENCSIG1/2 increase as the encoder power is increased

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.3.36 Procedure SPIRE-FM-WFT-FUNC-SMEC-02A-P

Version	2.4
Date	16th Oct. 2007
Purpose	Open the SMEC Launch Latch (Unlatch it)
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and SMEC is latched
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and SMEC is ON and Unlatched
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	5 minutes
Pass/Fail criteria	TBD

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.3.37 Procedure SPIRE-FM-WFT-FUNC-SMEC-04A-P

Version	2.4
Date	16th Oct. 2007
Purpose	SMEC (PRIME) Open Loop Positioning Test.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	5 minutes
Pass/Fail criteria	SMEC moves to the commanded positions

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.3.38 Procedure SPIRE-FM-WFT-FUNC-SMEC-09-P

Version	2.4
Date	16th Oct. 2007
Purpose	SMEC (PRIME) Open Loop Scan Test.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	5 minutes
Pass/Fail criteria	SMEC performs a scan between the commanded positions

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.3.39 Procedure SPIRE-FM-WFT-FUNC-SMEC-07-P

Version	2.4
Date	16th Oct. 2007
Purpose	SMEC (PRIME) Close Loop Scan Test.
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Final configuration	SMEC is in closed loop
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	5 minutes
Pass/Fail criteria	SMEC performs a scan between the commanded positions and the loop remains closed

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-SMEC-INIT-P.tcl	SMECLOOPMODE	6/-/1		
2	Execute TCL script SPIRE-FM-WFT-FUNC-SMEC-07-P.tcl	—	—	—	—
3	**Wait for the I-EGSE staff to confirm the success or failure of this test**				
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.40 Procedure SPIRE-FM-WFT-FUNC-SMEC-02B-P

Version	2.4
Date	16th Oct. 2007
Purpose	Close the SMEC Launch Latch (Latch it)
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and SMEC is ON and unlatched
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted and SMEC is ON and Latched
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	TBD

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.3.41 Procedure SPIRE-FM-WFT-SMEC-OFF-P

Version	2.4
Date	16th Oct. 2007
Purpose	SMEC (PRIME) Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are ON.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted. SMEC Encoder and LVDT are OFF.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is booted. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail criteria	HK Parameters SMECENCPWR and SMECLVDTPWR show expected OFF values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute SPIRE-FM-WFT-SMEC-OFF-P.tcl	—	—	—	—
2	Check that the power to the SMEC sensors is switched off	SMECENCPWR SMECLVDTPWR	6/-/0 1/-/0		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.3.42 Procedure SPIRE-FM-WFT-MCU-OFF-P

Version	2.4
Date	16th Oct. 2007
Purpose	MCU PRIME Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is booted.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU PRIME is OFF.
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MCU PRIME is ON. • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail criteria	Specified MCU HK Parameter shows expected value.

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

Enter Date/Time:			Sign Off:	

7.2.3.43 Procedure SPIRE-FM-WFT-SCU-OFF-P

Version	2.4
Date	16th Oct. 2007
Purpose	SCU PRIME Switch OFF
Initial configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is ON.
Final configuration	SPIRE DPU and DRCU PRIME are ON and SPIRE HK is being produced and AC/DC thermometry is OFF
Preconditions	• SPIRE DRCU PRIME is switched ON • SPIRE MIB PRIME is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	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-WFT-SCU-OFF-P.tcl	—	—	—	—
2	A few seconds later record the value of parameter SCUTEMPSTAT	SCUTEMPSTAT	0xFFFF/-/0		
3	A few seconds later record the value of parameter SUBKSTAT	SUBKSTAT	1/-/0		
Test Result (Pass/Fail):					

7.2.4 Switch Off DRCU & DPU PRIME

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	SWITCH OFF DRCU PRIME						
	Initial Conditions: DPU-A & DRCU A ON						
4.1	On HPCCS execute the following test script to power on the SPIRE DPU and DRCU. **S102999SCVT011_ASDWFTSPIR_PWR_OFF_P.tcl** Respond to the prompts as listed below:				AND: ZAD07999, ZAD14999 MIM: LCL_HERSCHEL		
	The test script (calling the specific SPIRE scripts as appropriate) powers OFF the DRCU. The DPU is then powered OFF before disabling the Mil1553 bus interface.						
4.2	On I-EGSE/HPCCS check that THSK parameter is not refreshing anymore	OK					
4.3	On I-EGSE/HPCCS check that TM2N parameter is not incrementing anymore	OK					
4.4	Continue test script by responding to prompt						
	SWITCH OFF DPU PRIME						
4.5	Continue test script by responding to prompt						
	SPIRE PRIME DRCU & DPU POWER OFF COMPLETE						

Enter Date/Time:			**Sign Off:**	

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

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 ±45º • 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 Prime LPU LCL (LCL #25)**	LCL status	OFF/ /ON		State of LCL #25 switches to ON
2	**Send HL command #5 (LPU Enable Prime)**	LCL #25 current	0mA/ /130-180mA		Current between 130-180mA
4	**Send HL command #6 (LPU Disable Prime)**	LCL #25 current	130-180mA/ /0mA		Current off
5	**Un-power Prime LPU LCL (LCL # 25)**	LCL status	ON/ / OFF		State of LCL #25 switches to OFF
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.6 Switch On SPIRE REDUNDANT DPU & DRCU

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	SWITCH ON DPU REDUNDANT						
	Initial Conditions: DPU-B & DRCU B OFF						
6.1	On HPCCS execute the following test script to power on the SPIRE DPU and DRCU. **S102999SCVT010_ASDWFTSPIR_PWR_ON_R.tcl** Respond to the prompts as listed below:				AND: ZAD07999, ZAD14999 MIM: LCL_HERSCHEL		
	The test script (calling the specific SPIRE scripts as appropriate) powers ON the DPU and enables the MilBus before forcebooting the ASW (NB: currently powers ON DPU using secondary partition). The DRCU is then powered and configured.						
6.2	Check that Nominal and Critical HK packets are arriving at the HPCCS: **SPIRE Nominal HK:** • (type ,subtype) : (3,25) • APID : 0x502 (1282) **SPIRE Critical HK:** • (type ,subtype) : (3,25) • APID: 0x500 (1280)	OK					

Enter Date/Time:			Sign Off:	

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
6.3	On I-EGSE/HPCCS check that THSK parameter is refreshing every second	OK					
6.4	On I-EGSE check that TM2N parameter is incrementing by 1 every second	OK					
6.5	On I-EGSE check that TM1N parameter is incrementing by 1 every 2 second	OK					
6.6	On HPCCS check the consistency of the SPIRE on board time to the HCDMU time and the CCS (need to clarify if SPIRE requests a time verification report as part of DPU ON sequence).	OK					
6.7	On IEGSE check the consistency between SCOS time and THSK and QLA time.	OK					
6.8	Continue test script by responding to prompt						
	SWITCH ON DRCU REDUNDANT						
6.9	When prompted by test script:						
6.10	On I-EGSE/HPCCS check that THSK parameter is not refreshing anymore	OK					
6.11	On I-EGSE/HPCCS check that TM2N parameter is not incrementing anymore	OK					
6.12	Continue test script by responding to prompt to power on DRCU						
6.13	On I-EGSE check that THSK parameter is refreshing every second	OK					
6.14	On I-EGSE check that TM2N parameter is incrementing by 1 every second	OK					
6.15	Continue test script by responding to prompt						
	SPIRE REDUNDANT DPU & DRCU POWER ON COMPLETE						

Enter Date/Time:			**Sign Off:**	

Enter Date/Time:			Sign Off:	

7.2.7 Warm Functional Tests - Redundant

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

Version	2.3
Date	16th Oct. 2007
Purpose	SCU science packet generation check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • DPU AND OBS PARAMETERS & FUNCTIONAL TEST 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-WFT-FUNC-SCU-01-R.tcl	SCUFRAMECNT TM5N	0/31 0x3FFF/1		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

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

Version	2.3
Date	16th Oct. 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-WFT-FUNC-SCU-03-R.tcl	—	—	—	—
2	**Wait for the parameter BBFULLTYPE to get set to SCU_DC_Therm**				
3	A few seconds later record the	SCUTEMPSTAT	0/0xFFFF/0xFFFF		

Enter Date/Time:			**Sign Off:**	

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
	value of parameter SCUTEMPSTAT				
4	**Configure the SFT PARAMETERS display to show the RAW values of SCU DC thermometry channels.** Record the 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]**	PUMPHTRTEMP PUMPHSTEMP EVAPHSTEMP SHUNTTEMP EMCFILTEMP SL0TEMP PL0TEMP OPTTEMP BAFTEMP BSMIFTEMP SCAL2TEMP SCAL4TEMP SCALTEMP SMECIFTEMP SMECTEMP BSMTEMP	— — — — — — — — — — — — — — — —		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

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

Version	2.3
Date	16th Oct. 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-WFT-FUNC-SCU-06-R.tcl	—	—	—	—
2	**Wait for the parameter BBFULLTYPE to get set to SCU_AC_Therm**				
3	A few seconds later record the value of parameter SUBKSTAT	SUBKSTAT	0/1/1		
4	**Configure the SFT PARAMETERS display to show the RAW values of SCU AC thermometry channel.** Record the value of SCU AC thermometry channel if it indicates an open circuit. Nominal value should show a short circuit status (or RAW ~ -32768) **Non Nominal (Open Circuit Criterion): RAW reading in the range [0, -100]**	SUBKTEMP	—		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

Enter Date/Time:			Sign Off:	

7.2.7.4 Procedure SPIRE-FM-WFT-FUNC-SCU-02-R

Version	2.3
Date	16th Oct. 2007
Purpose	SCU Nominal Science Contents Check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • DPU AND OBS PARAMETERS & FUNCTIONAL TEST PARAMETERS displays are selected on the CCS
Duration	5 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-WFT-FUNC-SCU-02-R.tcl	SCUFRAMECNT TM5N	31/62 1/3		
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

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

Version	2.3
Date	16th Oct. 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
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail Criteria	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-WFT-FUNC-SCU-04-R.tcl **The expected values during the test should be monitored when parameter BBFULLTYPE in the FUNCTIONAL TEST 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		
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Final Configuration: Unchanged

Enter Date/Time:			**Sign Off:**	

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

Version	2.3
Date	16th Oct. 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
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	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-WFT-FUNC-SCU-05-R.tcl	—	—	—	
2	**Wait for the parameter BBFULLTYPE to get set to SCAL4_Check**	BBFULLTYPE	SCAL4_Check	—	
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	—	
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	—	
6	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.7 Procedure SPIRE-FM-WFT-FUNC-SCU-07-R

Version	2.3
Date	16th Oct. 2007
Purpose	Sorption Cooler Heater Check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and DC thermometry is ON
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail Criteria	Sorption cooler heat switches and pump heater show expected voltages

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-SCU-07-R.tcl	—	—	—	—
2	**Wait for the parameter BBFULLTYPE to get set to Cooler_Htr_Chk**	BBFULLTYPE	Cooler_Htr_Chk		
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		
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		
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		
6	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—

Enter Date/Time:	**Test Result (Pass/Fail):**	**Sign Off:**	

7.2.7.8 Procedure SPIRE-FM-WFT-FUNC-SCU-08-R

Version	2.3
Date	16th Oct. 2007
Purpose	SCU test pattern check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail Criteria	SCU Test Pattern generated agrees with the one generated on a previous execution.

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-SCU-08-R.tcl	SCUFRAMECNT TM5N	62/93 3/5		
2	**Wait for the I-EGSE staff to confirm the success of the test.**				
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.9 Procedure SPIRE-FM-WFT-FUNC-MCU-01-R

Version	2.3
Date	16th Oct. 2007
Purpose	MCU (REDUNDANT) Boot Check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCU voltages and board temperatures show expected ‘ON’ values

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-MCU-01-R.tcl	—	—	—	—
2	Check that the MCU is booted up successfully	MCUBITSTAT	0/1/1		
3	Check MCU HK parameter values and ensure that the values are refreshing	MCUP5V - V MCUP14V - V MCUM14V - V MCUP15V - V MCUM15V- V MCUMACTEMP - K MCUSMECTEMP - K MCUBSMTEMP - K	~ 5.0 ± 0.2 ~ 14.0 ± 0.6 ~ -14.0 ± 0.6 ~ 15.0 ± 0.6 ~ -15.0 ± 0.7 ~300 ~300 ~300		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.10 Procedure: SPIRE-FM-WFT-FUNC-MCU-02-R

Version	2.3
Date	16th Oct. 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.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified MCU HK parameters show expected increment

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-MCU-02-R.tcl	MCUFRAMECNT	0/~ 6000	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.11 Procedure: SPIRE-FM-WFT-FUNC-MCU-03-R

Version	2.3
Date	16th Oct. 2007
Purpose	MCU Nominal Science Contents Check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	Unchanged.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified MCU HK parameters show expected increment

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-MCU-03-R.tcl	MCUFRAMECNT	~6000/~ 6297 Should increment by 297	—	—
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**				
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.12 Procedure: SPIRE-FM-WFT-FUNC-MCU-04-R

Version	2.3
Date	16th Oct. 2007
Purpose	MCU Test Pattern Check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	Unchanged.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCU Test Pattern generated agrees with the one generated on a previous execution.

Procedure Steps:

Step	Description	Parameter - Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-MCU-04-R.tcl	MCUFRAMECNT	N/N+99	—	—
2	**Wait for the I-EGSE staff to confirm the success or failure of this test**				
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.13 Procedure SPIRE-FM-WFT-FUNC-BSM-01-R

Version	2.3
Date	16th Oct. 2007
Purpose	BSM (REDUNDANT) Chop/Jiggle Sensor Check.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK Parameters CHOPSENSPWR and JIGGSENSPWR show expected ON values.

Procedure Steps:

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

7.2.7.14 Procedure SPIRE-FM-WFT-FUNC-BSM-02C-R

Version	2.3
Date	16th Oct. 2007
Purpose	BSM (REDUNDANT) Chop Sensor Polarity Check.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	CHOPSENSSIG HK parameter increments in the same direction as the commanded positions

Enter Date/Time:			**Sign Off:**	

Procedure Steps:

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

7.2.7.15 Procedure SPIRE-FM-WFT-FUNC-BSM-02J-R

Version	2.3
Date	16th Oct. 2007
Purpose	BSM (REDUNDANT) Jiggle Sensor Polarity Check.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes

Enter Date/Time:			**Sign Off:**	

Pass/Fail criteria	JIGGSENSSIG HK parameter increments in the same direction as the commanded positions

Procedure Steps:

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

7.2.7.16 Procedure SPIRE-FM-WFT-FUNC-BSM-03-R

Version	2.3
Date	16th Oct. 2007
Purpose	BSM (REDUNDANT) Open Loop Dynamics Check.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running

Enter Date/Time:			Sign Off:	

	• FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	CHOPSENSSIG/JIGGSENSIG HK parameter evolve in the same direction as the commanded positions

Procedure Steps:

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

7.2.7.17 Procedure SPIRE-FM-WFT-FUNC-BSM-05A-R

Version	2.3
Date	16th Oct. 2007
Purpose	BSM (REDUNDANT) Open Loop Chop Test
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted.

Enter Date/Time:			**Sign Off:**	

	• SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	The BSM Chops in between the commanded positions

Procedure Steps:

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

7.2.7.18 Procedure SPIRE-FM-WFT-FUNC-BSM-05B-R

Version	2.3
Date	16th Oct. 2007
Purpose	BSM (REDUNDANT) Closed Loop Chop Test
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON.
Final configuration	BSM is in closed loop mode

Enter Date/Time:			**Sign Off:**	

Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • CHOP PARAMETERS and JIGGLE PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	The BSM Chops in between the commanded positions

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.7.19 Procedure SPIRE-FM-WFT-FUNC-BSM-06-R

Version	2.3
Date	16th Oct. 2007
Purpose	BSM (REDUNDANT) Operational Mode Check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON. BSM is in closed loop.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • CHOP PARAMETERS and JIGGLE PARAMETERS displays are selected on the CCS
Duration	5 minutes
Pass/Fail criteria	The BSM Chops in between the commanded positions

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.7.20 Procedure SPIRE-FM-WFT-BSM-OFF-R

Version	2.3
Date	16th Oct. 2007
Purpose	BSM (REDUNDANT) Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are ON
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. BSM Chop/Jiggle sensors are OFF.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	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-WFT-BSM-OFF-R.tcl	—	—	—	—
2	Check that the power to the BSM sensors is switched off	CHOPSENSPWR JIGGSENSPWR	1/-/0 1/-/0		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

Enter Date/Time:			Sign Off:	

7.2.7.21 Procedure SPIRE-FM-WFT-FUNC-DCU-01-R

Version	2.3
Date	16th Oct. 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
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Specified 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-WFT-FUNC-DCU-01-R.tcl	DCUFRAMECNT	n/n+700		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.22 Procedure SPIRE-FM-WFT-FUNC-DCU-02-R

Version	2.3
Date	16th Oct. 2007
Purpose	To check the correct functioning of the DCU REDUNDANT High Speed Link
Initial configuration	SPIRE DPU and DRCU REDUNDANT are switched ON, SPIRE HK is being produced and MCU is booted.
Final configuration	Unchanged
Preconditions	• SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • I-EGSE is up and running • DCU PARAMETERS display is selected on the CCS • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	The following DCU telemetry packet types are received at IEGSE with : Full Photometer: - (type,subtype): (21,1). - APID 0x505 PSW - (type,subtype): (21,2). - APID 0x505 PMW -(type,subtype): (21,2). - APID 0x505 PLW -(type,subtype): (21,2). - APID 0x505 Full Spectrometer: - (type,subtype): (21,1).

Enter Date/Time:			**Sign Off:**	

	- APID 0x507 SSW - (type,subtype): (21,2). - APID 0x507 SLW -(type,subtype): (21,2). - APID 0x507

Procedure Steps:

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT--DCU-02-R.tcl	DCUFRAMECNT	n/n+700		
2	Verify that the following type of DCU science telemetry packets have been received at the CCS : Full Photometer: - (type,subtype): (21,1). - APID 0x505 PSW - (type,subtype): (21,2). - APID 0x505 PMW -(type,subtype): (21,2). - APID 0x505 PLW -(type,subtype): (21,2). - APID 0x505 Full Spectrometer: - (type,subtype): (21,1). - APID 0x507 SSW - (type,subtype): (21,2). - APID 0x507 SLW -(type,subtype): (21,2). - APID 0x507	—	—	—	
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.23 Procedure SPIRE-FM-WFT-FUNC-DCU-03-R

Version	2.3
Date	16th Oct. 2007
Purpose	DCU Test Pattern Check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU (Photometer/Spectrometer) Test Pattern generated agrees with the one generated on a previous execution.

Procedure Steps:

Step	Description	Parameter	Expected Values Before/ After	Actual Values Before /After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-DCU-03-R.tcl	DCUFRAMECNT	n/n+100		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.24 Procedure SPIRE-FM-WFT-FUNC-DCU-04-PHOT-R

Version	2.3
Date	16th Oct. 2007
Purpose	Photometer LIAs check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Photometer LIAs are ON.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-DCU-04-PHOT-R.tcl	—	—	—	—
2	Check that the Photometer LIAs are switched on	PLIAP5V PLIAP9V PLIAM9V	~0/ ~+5.19 ± 0.1V ~0/ ~+11.54 ± 0.1V ~0/ ~-11.53 ± 0.1V		
3	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.25 Procedure SPIRE-FM-WFT-FUNC-DCU-11-PHOT-R

Version	2.3
Date	16th Oct. 2007
Purpose	Photometer BDAs switch ON check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Photometer BDAs are ON.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-DCU-11-PHOT-R.tcl	—	—	—	—
2	Check that the Photometer detectors and LIAs are switched on	PSWJFETSTAT PMLWJFETSTAT PLIABITSTAT	0/-/0x3F 0/-/0x7F 1		
3	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.26 Procedure SPIRE-FM-WFT-FUNC-DCU-13-PHOT-R

Version	2.3
Date	16th Oct. 2007
Purpose	Photometer BDAs integrity check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Photometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	15 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.7.27 Procedure SPIRE-FM-WFT-FUNC-DCU-14-PHOT-R

Version	2.3
Date	16th Oct. 2007
Purpose	Photometer BDAs noise level check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Photometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Photometer BDAs signal show no excess noise

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.7.28 Procedure SPIRE-FM-WFT-PDET-OFF-R

Version	2.3
Date	16th Oct. 2007
Purpose	Photometer BDAs Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Photometer BDAs are ON
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Photometer BDAs are OFF
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.7.29 Procedure SPIRE-FM-WFT-FUNC-DCU-04-SPEC-R

Version	2.3
Date	16th Oct. 2007
Purpose	Spectrometer LIAs check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Spectrometer LIAs are ON.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-DCU-04-SPEC-R.tcl	—	—	—	—
2	Check that the Spectrometer LIAs are switched on	SLIAP5V - V SLIAP9V - V SLIAM9V - V	~0/ ~+5.23 ± 0.1 ~0/ ~+11.57 ± 0.1 ~0/ ~-11.54 ± 0.1		
3	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.30 Procedure SPIRE-FM-WFT-FUNC-DCU-11-SPEC-R

Version	2.3
Date	16th Oct. 2007
Purpose	Spectrometer BDAs switch ON check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Spectrometer BDAs are ON.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-DCU-11-SPEC-R.tcl	—	—	—	—
2	Check that the Spectrometer detectors are switched on	SPECJFETSTAT SLIABITSTAT	0/-/7 1		
3	**Wait for the I-EGSE staff to confirm the success or failure of this test**	—	—	—	—
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.31 Procedure SPIRE-FM-WFT-FUNC-DCU-13-SPEC-R

Version	2.3
Date	16th Oct. 2007
Purpose	Spectrometer BDAs integrity check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Spectrometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	12 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.7.32 Procedure SPIRE-FM-WFT-FUNC-DCU-14-SPEC-R

Version	2.3
Date	16th Oct. 2007
Purpose	Spectrometer BDAs noise check
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Spectrometer BDAs are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	Spectrometers BDAs signal show no excess noise

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.7.33 Procedure SPIRE-FM-WFT-SDET-OFF-R

Version	2.3
Date	16th Oct. 2007
Purpose	Spectrometer BDAs Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Spectrometer BDAs are ON
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and Spectrometer BDAs are OFF
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	DCU HK parameters show expected values

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.7.34 Procedure SPIRE-FM-WFT-FUNC-SMEC-01-R

Version	2.3
Date	16th Oct. 2007
Purpose	SMEC (REDUNDANT) Encoder/LVDT Sensor Check.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	HK Parameters SMECENCPWR and SMECLVDTPWR show expected ON values.

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-FUNC-SMEC-01-R.tcl	—	—	—	—
2	Check that power to the SMEC LED and LVDT sensor is on	SMECENCPWR SMECLVDTPWR	0/-/6 0/1/1		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.35 Procedure SPIRE-FM-WFT-FUNC-SMEC-03-R

Version	2.3
Date	16th Oct. 2007
Purpose	SMEC (REDUNDANT) Encoder Integrity Check.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	MCUENGSMECENCSIG1/2 increase as the encoder power is increased

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.7.36 Procedure SPIRE-FM-WFT-FUNC-SMEC-02A-R

Version	2.3
Date	16th Oct. 2007
Purpose	Open the SMEC Launch Latch (Unlatch it)
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and SMEC is latched
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and SMEC is ON and Unlatched
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	5 minutes
Pass/Fail criteria	TBD

Procedure Steps:

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

7.2.7.37 Procedure SPIRE-FM-WFT-FUNC-SMEC-04A-R

Version	2.3
Date	16th Oct. 2007
Purpose	SMEC (REDUNDANT) Open Loop Positioning Test.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	5 minutes
Pass/Fail criteria	SMEC moves to the commanded positions

Procedure Steps:

Enter Date/Time:			**Sign Off:**	

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

7.2.7.38 Procedure SPIRE-FM-WFT-FUNC-SMEC-09-R

Version	2.3
Date	16th Oct. 2007
Purpose	SMEC (REDUNDANT) Open Loop Scan Test.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Final configuration	Unchanged
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	5 minutes
Pass/Fail criteria	SMEC performs a scan between the commanded positions

Enter Date/Time:			**Sign Off:**	

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.7.39 Procedure SPIRE-FM-WFT-FUNC-SMEC-07-R

Version	2.3
Date	16th Oct. 2007
Purpose	SMEC (REDUNDANT) Close Loop Scan Test.
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Final configuration	SMEC is in closed loop
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS • **The Herschel Cryostat should be tilted horizontal**
Duration	5 minutes
Pass/Fail criteria	SMEC performs a scan between the commanded positions and the loop remains closed

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/During/After	Actual Values Before/During/After	Success/ Failure
1	Execute TCL script SPIRE-FM-WFT-SMEC-INIT-R.tcl	SMECLOOPMODE	6/-/1		
2	Execute TCL script SPIRE-FM-WFT-FUNC-SMEC-07-R.tcl	—	—	—	—
3	**Wait for the I-EGSE staff to confirm the success or failure of this test**				
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.7.40 Procedure SPIRE-FM-WFT-FUNC-SMEC-02B-R

Version	2.3
Date	16th Oct. 2007
Purpose	Close the SMEC Launch Latch (Latch it)
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and SMEC is ON and unlatched
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted and SMEC is ON and Latched
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	5 minutes
Pass/Fail criteria	TBD

Procedure Steps:

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

7.2.7.41 Procedure SPIRE-FM-WFT-SMEC-OFF-R

Version	2.3
Date	16th Oct. 2007
Purpose	SMEC (REDUNDANT) Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are ON.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted. SMEC Encoder and LVDT are OFF.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is booted. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	3 minutes
Pass/Fail criteria	HK Parameters SMECENCPWR and SMECLVDTPWR show expected OFF values.

Enter Date/Time:			**Sign Off:**	

Procedure Steps:

Step	Description	Parameter – Unit	Expected Values Before/ During/ After	Actual Values Before/ During/ After	Success/ Failure
1	Execute SPIRE-FM-WFT-SMEC-OFF-R.tcl	—	—	—	—
2	Check that the power to the SMEC sensors is switched off	SMECENCPWR SMECLVDTPWR	6/-/0 1/-/0		
Test Result (Pass/Fail):					

7.2.7.42 Procedure SPIRE-FM-WFT-MCU-OFF-R

Version	2.3
Date	16th Oct. 2007
Purpose	MCU REDUNDANT Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is booted.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON and MCU REDUNDANT is OFF.
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MCU REDUNDANT is ON. • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	2 minutes
Pass/Fail criteria	Specified MCU HK Parameter shows expected value.

Enter Date/Time:			**Sign Off:**	

Procedure Steps:

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

Enter Date/Time:			**Sign Off:**	

7.2.7.43 Procedure SPIRE-FM-WFT-SCU-OFF-R

Version	2.3
Date	16th Oct. 2007
Purpose	SCU REDUNDANT Switch OFF
Initial configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is ON.
Final configuration	SPIRE DPU and DRCU REDUNDANT are ON and SPIRE HK is being produced and AC/DC thermometry is OFF
Preconditions	• SPIRE DRCU REDUNDANT is switched ON • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	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-WFT-SCU-OFF-R.tcl	—	—	—	—
2	A few seconds later record the value of parameter SCUTEMPSTAT	SCUTEMPSTAT	0xFFFF/-/0		
3	A few seconds later record the value of parameter SUBKSTAT	SUBKSTAT	1/-/0		
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.8 Switch Off DRCU & DPU REDUNDANT

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	SWITCH OFF DRCU REDUNDANT						
	Initial Conditions: DPU-A & DRCU B ON						
8.1	On HPCCS execute the following test script to power on the SPIRE DPU and DRCU. **S102999SCVT012_ASDWFTSPIR_PWR_OFF_R.tcl** Respond to the prompts as listed below:				AND: ZAD07999, ZAD14999 MIM: LCL_HERSCHEL		
	The test script (calling the specific SPIRE scripts as appropriate) powers OFF the DRCU. The DPU is then powered OFF before disabling the Mil1553 bus interface.						
8.2	On I-EGSE/HPCCS check that THSK parameter is not refreshing anymore	OK					
8.3	On I-EGSE/HPCCS check that TM2N parameter is not incrementing anymore	OK					
8.4	Continue test script by responding to prompt						
	SWITCH OFF DPU REDUNDANT						
8.5	Continue test script by responding to prompt						
	SPIRE REDUNDANT DRCU & DPU POWER OFF COMPLETE						

Enter Date/Time:			**Sign Off:**	

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

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 ±45º • 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)**	LCL status	OFF/ /ON		State of LCL #26 switches to ON
3	**Send HL command #21 (LPU Enable Redundant)**	LCL #26 current	0mA/ /130-180mA		Current between 130-180mA
4	**Send HL command #22 (LPU Disable Redundant)**	LCL #26 current	130-180mA/ /0mA		Current off
5	**Un-power Prime LPU LCL (LCL # 25)**	LCL status	ON/ / OFF		State of LCL #26 switches to OFF
Test Result (Pass/Fail):					

Enter Date/Time:			**Sign Off:**	

7.2.10 Satellite & EGSE Switch Off

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	Satellite & EGSE Switch Off						
	Initial Conditions: Nominal & Redundant SPIRE warm units OFF						
10.1	On HPCSS terminate **ALL_SubscribeParams.tcl** test script.	OK					
10.2	From HPCCS Test Conductor console issue command to disconnect from SPIRE I-EGSE **disconnect HSPIREEGSE**	OK					
10.3	Confirm from HPCSS and SPIRE I-EGSE that the disconnection was successful	OK					
10.4	Switch OFF I-EGSE i.a.w. AD 5						
10.5	Switch OFF Satellite/SVM, HPCCS and SCOEs i.a.w. procedure AD 2 Sections 7.7 to 7.11	OK					
10.6	Confirm both Satellite and EGSE powered down	OK					
	End Conditions: Satellite and EGSE OFF						
	END OF TEST						

Enter Date/Time:			**Sign Off:**	

7.2.11 SPIRE SAFE Switch Off

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

Version	2.4
Date	16th Oct. 2007
Purpose	To switch OFF the SPIRE instrument if an anomaly should occur
Initial configuration	SPIRE can be on ANY configuration as specified on the procedure steps
Final configuration	SPIRE is OFF
Preconditions	• SPIRE FM DPU is electrically integrated with the Herschel Satellite • SPIRE MIB REDUNDANT is imported in the CCS database. • CCS is up and running • FUNCTIONAL TEST PARAMETERS display is selected on the CCS
Duration	~5-8 minutes
Pass/Fail Criteria	SPIRE is OFF. All instrument subsystems are completely powered OFF.

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	SPIRE Main or Redundant SAFE Switch Off						
	Initial Conditions: Nominal or Redundant SPIRE warm units ON and anomaly requiring SAFE switch OFF has occurred. When executed as directed by SPIRE responsible the scripts below will perform the following actions: ▪ SPIRE-FM-WFT-PDET-OFF-P/R ▪ SPIRE-FM-WFT-BSM-OFF-P/R ▪ SPIRE-FM-WFT-SDET-OFF-P/R						

Enter Date/Time:			**Sign Off:**	

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	▪ SPIRE-FM-WFT-SMEC-OFF-P/R ▪ SPIRE-FM-WFT-MCU-OFF-P/R ▪ SPIRE-FM-WFT-SCU-OFF-P/R ▪ S102999SCVT011/012_ASDWFTSPIR_PWR_OFF_P/R						
11.1	If Nominal SPIRE warm units powered execute the following test script on the HPCSS to switch SPIRE off safely: **S102999SCVT013_ASDWFTSPIR_SAFE_OFF_P.tcl**	OK					
11.2	If Redundant SPIRE warm units powered execute the following test script on the HPCSS to switch SPIRE off safely: **S102999SCVT014_ASDWFTSPIR_SAFE_OFF_R.tcl**	OK					
	End Conditions: SPIRE Nominal or Redundant OFF						
	END OF SAFE Switch OFF						

Enter Date/Time:			**Sign Off:**	

8 Summary Sheets

8.1 Procedure Variation Summary

	Test Change		Curr. No.: Date Page of
Test designation	Test Procedure	Issue	Rev.
Test step changed	Reason for Change		
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.		Name	Dep./Comp.
X	Alberti von Mathias Dr.	ASG22		Schweickert Gunn	ASG22
	Baldock Richard	FAE12	X	Sonn Nico	ASG51
	Barlage Bernhard	AED13		Steininger Eric	AED32
	Bayer Thomas	ASA42	X	Stritter Rene	AED11
	Brune Holger	ASA45		Suess Rudi	OTN/ASA44
	Edelhoff Dirk	AED2		Wagner Klaus	ASG22
	Fehringer Alexander	ASG13	X	Wietbrock Walter	AET12
X	Fricke Wolfgang Dr.	AED 65		Wöhler Hans	ASG22
	Geiger Hermann	ASA42		Wössner Ulrich	ASE252
	Grasl Andreas	OTN/ASA44	X	Theunissen Martijn/Dutch Space	ASA43
	Grasshoff Brigitte	AET12	X	Martin Olivier	ASA43
X	Hamer Simon	Terma			
X	Hendry David	Terma			
	Hengstler Reinhold	ASA42			
	Hinger Jürgen	ASG22			
X	Hohn Rüdiger	AED65			
	Hölzle Edgar Dr.	AED32			
	Huber Johann	ASA42			
	Hund Walter	ASE252			
	Idler Siegmund	AED312			
	Ivády von András	FAE12			
	Jahn Gerd Dr.	ASG22			
	Kalde Clemens	ASM2			
	Kameter Rudolf	OTN/ASA42			
	Kettner Bernhard	AET42			
	Knoblauch August	AET32	X	Alcatel Alenia Space Cannes	AAS-F
X	Koelle Markus	ASA43		Alcatel Alenia Space Torino	AAS-I
X	Koppe Axel	AED312	X	ESA/ESTEC	ESA
X	Kroeker Jürgen	AED65			
X	La Gioia Valentina	Terma		**Instruments:**	
	Lang Jürgen	ASE252		MPE (PACS)	MPE
	Langenstein Rolf	AED15	X	RAL (SPIRE)	RAL
	Langfermann Michael	ASA41		SRON (HIFI)	SRON
X	Maukisch Jan	ASA43			
X	Much Christoph	ASA43			
	Müller Jörg	ASA42		**Subcontractors:**	
X	Müller Martin	ASA43		Alcatel Alenia Space Antwerp	ABSP
	Peltz Heinz-Willi	ASG13		Austrian Aerospace	AAE
	Pietroboni Karin	AED65		Austrian Aerospace	AAEM
	Platzer Wilhelm	AED2		BOC Edwards	BOCE
	Reichle Konrad	ASA42		Dutch Space Solar Arrays	DSSA
	Runge Axel	OTN/ASA44		EADS Astrium Sub-Subsyst. & Equipment	ASSE
	Schink Dietmar	AED32		EADS CASA Espacio	CASA
	Schlosser Christian	OTN/ASA44		EADS CASA Espacio	ECAS
	Schmidt Rudolf	FAE12		European Test Services	ETS
	Schmidt Thomas	ASA42		Patria New Technologies Oy	PANT
	Schuler Günter	ASA42		SENER Ingenieria SA	SEN