EADS astrium

Test Report **Herschel**

Title: Test Report For Integrated AVM SPIRE UFT

CI-No: 125200

Prepared by:	S. Hamer/TERMA AS	Date:	4th May 2007
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Issue	Date	Sheet	Description of Change	Release
1	04.05.07	All	Formal Issue	

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0 Test Summary

0.1 Unit tested

AVM SPIRE Warm Units

AVM2 DPU, PN: 00-SPIRE-00.00, S/N: 01

0.2 Applied Procedures:

AVM SPIRE Warm Units UFT	HP-2-ASED-TP-0142, Issue 1 Redlined
S/W Upload & Checksum Verification for AVM Spire DPU	ACS: HP-2-ASED-SD-0152 Issue 1

0.3 Procedure Execution Summary:

AVM SPIRE TRR:	21.02.2007	HP-ASP-MN-8836
AVM SPIRE Delta TRR:	21.03.2007	HP-ASP-MN-8919
AVM SPIRE WU UFT:	27.03.2007	see Appendix 1 for “as-run”
AVM SPIRE PTR:	28.03.2007	HP-ASP-MN-8944
Location:	Astrium-EADS, Friedrichshafen	
CCS Test Session Name:	2007_03_27_12_46_heregse_hpws23_REALTIME	
HPSDB Issue 6	26.03.2007	HP-2-ASP-LI-1285
CCS Environment:	H_ASTRIUM_ENV	

No procedure variations were generated during the test.

All non-compliances are recorded in the NCR Summary below and detailed further in section 3.

The following main observations were made during the test or in the post-test analysis of the data:

Section/ Step No.	Description	Item Affected	NCR Raised	Affects Test Objective
Pre-Test	I-EGSE Setup and Communication problems with HPCCS	IEGSE	YES	No
§ 7.2.1	SVM switch on configuration problem	HPCCS	3269	No
§ 7.2.4 - 7.2.10	Gaps in Spire TM packets observed during execution of Spire Unit/Mode script.	DPU/ DRCU Simulator	3271	No
§ 7.2.4 - 7.2.10	Unknown packets observed during execution of each Spire Unit/Mode script	HPCCS/ HPSDB	3273	No
§ 7.2.5, 7.2.7	SPIRE-WU-INT-SCU-02-P.tcl & SPIRE-WU-INT-MCU-02.tcl test scripts had to be executed twice to achieve the desired results. Believed to be a feature of the DRCU simulator.	DRCU Simulator	3274	No
ACS-152	SPIRE DPU S/W Upload, Copy & Boot Fails	TBI	3186	Not UFT

Table 1: AVM SPIRE Warm Units UFT & S/W Upload

0.4 Summary Conclusion

The AVM SPIRE Unit Functional Test (UFT) has been successfully performed using version 2.2D of the DPU OBSW and DRCU simulator.

The upload of version 2.2G DPU OBSW was not possible due to an anomaly in copying/running the uploaded software (NCR ASED-3186 refers), therefore the repeat UFT was not performed.

All main objectives for the SPIRE UFT have been met.

A number of Non-Conformance Reports (as listed above) were raised, prior to, or during the test but none have affected the test objectives.

0.5 Open Issues:

- SPIRE AVM DPU OBSW upload and write to EEPROM plus repeat UFT.
- IEGSE configuration and operation for the remaining AIT activities (action on IEGSE working group). Note the IEGSE configuration has now been updated to resolve the issue observed prior to the execution of the UFT.

1 Scope

This document reports on the UFT performed on the AVM SPIRE Instrument warm units to check correct operation after they have been electrically integrated with the FM SVM using the Herschel CCS.

It is also addresses the (failed) software upload/running of version 2.2G software to the SPIRE DPU EEPROM.

1.1 Objective

The objectives of the UFT and software upload were:

1. To check as much as possible the correct functional operation of the integrated AVM SPIRE warm units;
2. To check the capability of uploading directly to SPIRE DPU EEPROM new software via the nominal satellite TC interface using the provided OBSM TCL tool. Thereby updating the DPU OBSW version from 2.2D to 2.2G;
3. To re-check the correct functional operation of the AVM SPIRE warm units after software upload;
4. To act as baseline procedure on which the SPIRE specific aspects of the satellite level SFT and IST procedures can be developed;

The UFT verified the following for nominal SPIRE warm units (no redundant units present on AVM):

- Power on/off of AVM SPIRE Prime (CDMS/PCDU Interface) warm units (DPU + DRCU Simulator)
- Health Status HKTM Acquisition from SPIRE Prime (CDMS Interface)
- DRCU Simulated SCU/MCU/DCU High/Low Speed Link Checks

1.2 Test Flow

This UFT test flow was structured to reflect nominal operations of SPIRE as much as possible to enable re-use for PFM and higher-level Satellite tests (SFT and IST).

The flow is as follows:

1. Power on and configure EGSE for test
2. Power on and configure SVM for test
3. Power on NOMINAL SPIRE warm units and enable Mil1553B-bus interface

4. Simulated SCU Prime Low Speed Link Check
5. Simulated SCU Prime High Speed Link Check
6. Simulated MCU Prime Low Speed Link Check
7. Simulated MCU Prime High Speed Link Check
8. Simulated DCU Prime Low Speed Link Check
9. Simulated DCU Prime High Speed Link Check
10. Disable Mil1553B-bus interface and Power off NOMINAL SPIRE warm units
11. Power off SVM
12. Switch off all EGSE

2 Documents/Drawings

2.1 Applicable Documents

AD 1 Unit Functional Test of Integrated AVM SPIRE HP-2-ASED-TP-142

2.2 Reference Documents

None

2.3 Other Documents

None

2.4 Acronyms & Abbreviations

See "as-run" procedure.

3 Main Observations and Problems Identified

3.1 IEGSE – CCS Interface (NCRs: 3047, 3048, 3064, 3112)

Observed: Pre-Test

A significant number of problems on IEGSE configuration and interface to the HPCCS had to be resolved before the test could be started.

It was agreed that the necessary information would be included to an IEGSE setup procedure for all Instruments to be produced by the I-EGSE working group.

3.2 HPCCS Configuration Problem During SVM Switch On (NCR-3269)

Observed: Section 7.2.1 Step 1.3

During switch on of SVM for SPIRE UFT using test script: Z010999MCVT001_POWERON.tcl a number of commands were not executed by the CDMS (see attached command log). Investigation showed that the TM/TC DFE configuration prior to the start of switch on had changed for MAP ID and VCID and the test script used this information to set the final configuration resulting in the blocking of several CDMS commands. The MAP ID was zero (High Priority Cmds) when 1 (Normal Cmds) was expected, and VCID was 1 (TTRB) when zero (TTRA) was expected.

The DFE was configured correctly and the sub-test script D102159SCV032TIMESYNCRO.tcl was re-run successfully.

It was also noted that the TM/TC DFE PC was not synchronized to CCS and appeared to have updated to GMT Daylight time (1hr in advance of UTC).

3.3 Missing Packets Observed at Start of Instrument Simulation Modes (NCR-3271)

Observed: Section 7.2.4 – 7.2.10

HPCCS reports gaps in SSC, during SPIRE mode tests. Specifically:

Last packet received on APID 1282 at 17:01 SSC 1658

Next packet received on APID 1282 at 17:07 SSC 1979

SPIRE-WU-INT-SCU-01-P executed at 17:07

Last packet received on APID 1280 at 17:22 SSC 2286

Next packet received on APID 1280 at 17:27 SSC 2450

SPIRE-WU-INT-MCU-01-P executed at 17:27

Last packet received on APID 1280 at 17:39 SSC 3357

Next packet received on APID 1280 at 17:44 SSC 3501

SPIRE-WU-INT-DCU-01-P executed at 17:43

3.4 Unknown Packet Types Reported from SPIRE on HPCCS (NCR-3273)

Observed: Section 7.2.4 – 7.2.10

HPCCS reports unknown type 1 packets (1,1), (1,3), (1,7) for APID 1280 when SPIRE test scripts are executed. This is similar to the anomaly seen during HIFI AVM UFT (NCR-0874 refers).

Unknown packets are also report for type (5,1) packets during execution of DPU & DRCU start test scripts (again for APID 1280).

During execution of MCU Low/High rate mode scripts unknown type (21,4) packets are reported on APID 1288.

Possibly an HPSDB or HPCCS issue.

3.5 SCU & MCU High Rate Modes Scripts Require Repeat Execution (NCR-3274)

Observed: Section 7.2.5 – 7.2.7

SPIRE-WU-INT-SCU-02-P.tcl & SPIRE-WU-INT-MCU-02.tcl test scripts had to be executed twice to achieve the desired results. This is believed to be a feature of the DRCU simulator but this needs to be confirmed. Documentary explanation is required, as the DRCU simulator will be used in IST RMS development.

3.6 Procedure Changes

Several updates and clarifications in the UFT procedure were required. The procedure was redlined accordingly for inclusion, where relevant, in the FM UFT procedure. Main updates covered:

- DRCU simulated parameters expected to go “out-of-limits” referenced in wrong section
- Clarification of SPIRE parameter to be used for time synchronisation verification – has subsequently been provided by SPIRE
- Reference to execute a non-existent DPU switch-off script (non expected)

3.7 SPIRE DPU S/W Upload, Copy & Boot Fails (NCR-ASP-3186)

The planned upload to DPU EEPROM of OBSW version 2.2.G under cover of ACS HP-2-ASED-SD-0152 was unsuccessful because the precursor test with version 2.2.D failed. The sequence of events performed were as follows:

- Upload 2.2.D ICD_14 image file format to Data Memory address 4000hex, Memory Id 11hex using Boot Software (BSW).
- The OBSM upload tool used for the first step also attempts to dump the data memory after upload but this failed. It is understood the BSW does not support this functionality.
- Execute SPIRE BSW command LOAD_TC_AND_BOOT (SCD11505), which is supposed to copy the OBSW from data memory to program memory and force boot the OBSW.

On execution of the LOAD_TC_AND_BOOT, the OBSW did not start as expected and there was no further response from the DPU. The DPU was switched off and on again to confirm that it was still operational. It was agreed to postpone the software upload pending further investigation by SPIRE responsible in to the cause of the problem.

No EEPROM write was performed during the software upload activities and therefore version 2.2.D is still resident in EEPROM on the DPU AVM WU.

4 Conclusion

The UFT is considered to have successfully met its test objectives in verifying the functional health of the AVM SPIRE warm units (DPU) using version 2.2.D of the DPU OBSW.

All problems observed and NCRs raised during the UFT were primarily related to the EGSE configuration, database, procedural or operational issues.

The upload of version 2.2.G DPU OBSW was not possible due to a failure in copying/running of the uploaded software (NCR 3186 refers), therefore the repeat UFT was not performed. Due to this no as-run procedures are available for either of these activities. Investigations, under NRB control, are ongoing into the root cause of the OBSW upload/copy to program memory/boot failure.

All procedures have been redlined for update in readiness for the FM SPIRE UFT.

5 Appendix 1: AVM SPIRE UFT As-Run Procedure

MASTER
REDLINED ISSUE 1
PRE - SOFTWARE UPLOAD

Title: **Unit Functional Test of Integrated AVM SPIRE**

CI-No: 125200

Prepared by:	S. Hamer/TERMA AS	Date:	20th February 2007
Checked by:	S. Idler		20.02.2007
Product Assurance:	R. Stritter		21.02.07
Configuration Control:	W. Wietbrock		21.02.07
Project Management:	W. Fricke		21/02/07

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DraftA	16.02.07	All	First Draft Issue	
1.0	20.02.07	All	First Formal Issue	

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1 Scope

This document describes the set of functional tests to be performed on the AVM SPIRE Instrument to check correct operation using the Herschel CCS after it has been electrically integrated with the FM SVM.

Specifically the functional test will verify the following for both prime (and redundant – FM only) SPIRE warm units:

- **Power on/off of AVM SPIRE (CDMS/PCDU Interface) warm unit and DRCU Simulator**
- **Health Status HKTM Acquisition from SPIRE (CDMS Interface)**
- **Check of SCU Prime Low & High Speed Links**
- **Check of MCU Prime Low & High Speed Links**
- **Check of DCU Prime Low & High Speed Links**

Constraint

This test shall only be executed upon successful completion of the AVM SPIRE integration activities as defined in ref. AD1.

1.1 Objective

The objective of the test is twofold:

1. To check as much as possible the correct functional operation of the integrated AVM SPIRE warm units.
2. To act as baseline procedure on which the SPIRE specific aspects of the satellite level SFT and IST procedures can be developed.

1.2 Test Flow

This test flow is structured to reflect nominal operations of the AVM SPIRE as much as possible to enable re-use for PFM and higher-level Satellite tests (SFT and IST).

The flow is as follows:

1. Power on and configure 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 Simulator

5. Check of SCU Prime Low & High Speed Links
6. Check of MCU Prime Low & High Speed Links
7. Check of DCU Prime Low & High Speed Links
8. Power off MCU Prime
9. Power off DRCU Simulator
10. Disable Mil1553B-bus interface and Power off SPIRE Prime DPU
11. Power off SVM
12. Switch off all EGSE

2 Documents/Drawings

2.1 Applicable Documents

AD 1	AVM SPIRE Integration to Herschel SVM Worksheet	AAS: EWI071
AD 2	Herschel PCDU & CDMS Nominal Switch On/Off Procedure	HP-2-ASED-PR-070 in preparation
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	DRCU Simulator HW/SW User Manual Iss. 1.0	
AD 9	SPIRE I-EGSE Set-Up, Issue 1.1	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	Herschel Instrument Testing on AVM	H-P-1-ASP-TN-0852
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 Warm Units Integration Test Procedures Iss. 1.3	SPIRE-RAL-PRC-2680
RD 7	SPIRE Functional Test Specification Iss. 1.4	SPIRE-RAL-DOC-001652
RD 8	SPIRE ILT Warm Functional Test	SPIRE-RAL-PRC-002322

	Procedure Iss. 1.2	
RD 9	SPIRE Instrument User Manual Iss. 1.0	SPIRE-RAL-PRJ-002395
RD 10	H/P OBT-UTC Time Synchronisation Technical Note Iss. 1.3	PT-CMOC-OPS-TN-6604-OPS- OGH
RD 11	Operating Manual DRCU Simulator, Iss 1	SPIRE-STK-PRC-001744
RD 12	DRCU SIM H_S User Manual, v1.5	SPIRE-STK-PRJ-001915

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
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	(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	(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 Requirements to be verified

This is purely a functional health check of the AVM SPIRE warm units and interfaces. No specific requirements are to be verified.

4 Configuration

The figure below shows the overall EGSE/Satellite configuration for the test.

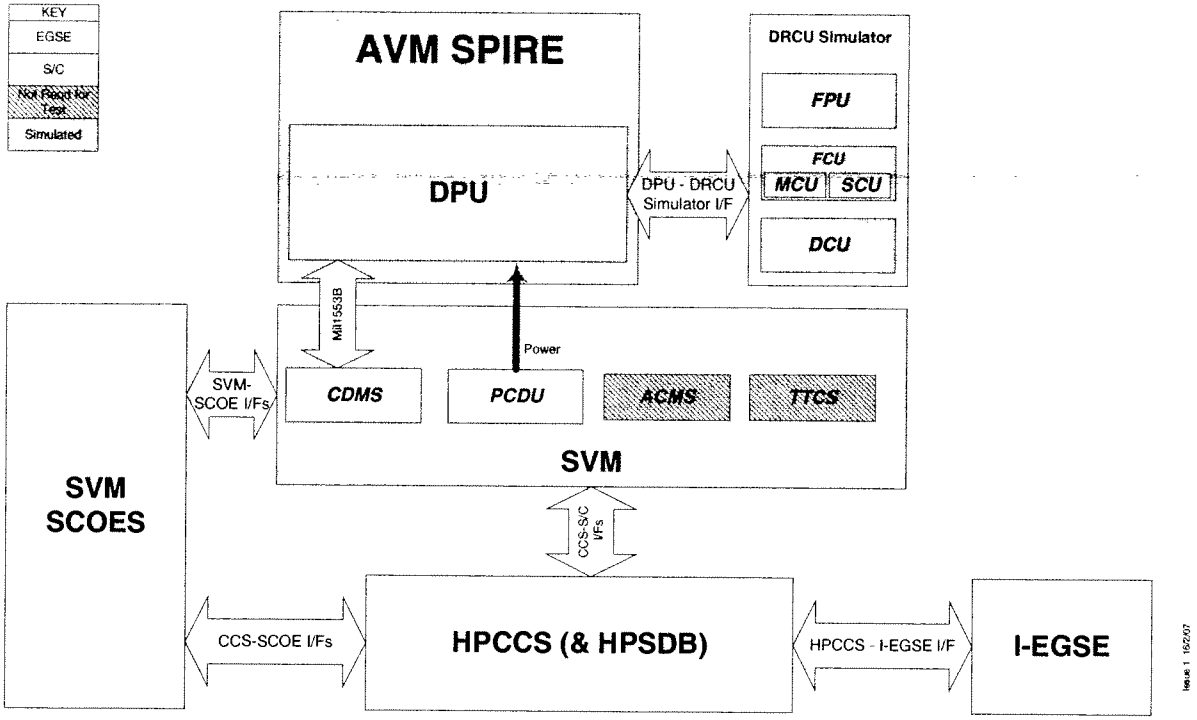

Figure 4-1: AVM SPIRE UFT Configuration

4.1 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.

4.2 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 9.

4.3 Set-up

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

The following test scripts are required for execution on the HPCCS:

Number	Tcl Script Name	Comment	Confirmed
1	SPIRE-WU-INT-DPU-ON-P	DPU Prime power on sequence	
2	SPIRE-WU-INT-DRCU-ON-P	DRCU PRIME Power up	
3	SPIRE-WU-INT-SCU-01-P	SCU Low Speed Link check	
4	SPIRE-WU-INT-SCU-02-P	SCU High Speed Link check	
5	SPIRE-WU-INT-MCU-01-P	MCU Low Speed Link check	
6	SPIRE-WU-INT-MCU-02-P	MCU High Speed Link check	
7	SPIRE-WU-INT-DCU-01-P	DCU Low Speed Link check	
8	SPIRE-WU-INT-DCU-02-P	DCU High Speed Link check	
9	SPIRE-WU-INT-MCU-OFF-P	MCU power off	
10	SPIRE-WU-INT-DRCU-OFF-P	DRCU PRIME power off	
11	SPIRE-WU-INT-DPU-OFF-P	DPU Prime power off sequence	
12	SubscribeParams	Subscribe Parameters sequence	

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

HPCCS Software	Version	Comment	Confirmed Installed
SPIRE MIB version	2.2.G2	Valid for both versions of DPU software.	

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

I-EGSE Software	Version	Comment
SPIRE MIB version	2.2.G2	Valid for both versions of DPU software.
SCOS version	2.3e patch 5	

5 Conditions

5.1 Personnel

Responsibility	Name / Organisation
Test Director	B. Collaudin
Test Conductor	A. Roppe
EGSE Operator	S. Hamer
Electrical Engineer	N/A
Specialist Engineer	N/A
Element Cognizant	S. Idler
PA Responsible	B. Barlage
Instrument Representative	A. Dowell
Customer Representative	B. Collaudin
ESA Representative	C. Schamberg

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	1599	✓	
Temperature	22°C ±3°C	20.9 °C	✓	
Rel. Humidity	40 % - 60 %	46 %	✓	
Pressure	970 to 1050 mbar	965.8 hPa	✓	

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 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 when handling SPIRE units.

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

SPIRE DRCU Simulator PC and interconnected with the SPIRE AVM DPU in accordance with AD 8.

6 Verification Requirements and Test Criteria

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 TRB will be held before completion of this activity and therefore only a preliminary assessment of the test success can be provided to allow any disconnection of 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

AVM Integration to Herschel SVM Test Procedure ref. AD 1 SHALL be successfully completed before execution of this procedure.

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

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		OK			
1.2	Confirm DRCU Simulator is connected and configured correctly i.a.w. AD 8	OK		OK			
1.3	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			OK	13:22 Start (UTC)		
1.4	Record Test Session Name:	2007_03_27_12_46_heresse_hpw23_REALTIME_ASTRIUM_ENV.					
1.5	Confirm that EGSE and Satellite are in the correct configuration as per AD 2	OK		OK			
1.6	If not already selected, from HPCCS command CDMU to use SPIRE Bus Profile (Profile 3): SelectActiveSCBP **DH049160** **DC819160** **=3**	OK		OK	AND: ZAD07999 SPIRE Bus Profile		

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
1.6	Verify correct bus profile selected: **DEF5F160**	3		3		SVH	
1.7	Switch on & configure SPIRE I-EGSE i.a.w. **AD5 & AD 9**						
1.8	Confirm SPIRE I-EGSE is in the correct configuration as per AD5 & AD 9	OK		OK		SVH	
1.9	From HPCCS Test Conductor console issue command to connect to SPIRE I-EGSE **connect HIEGSE**						
1.10	Confirm from HPCCS and SPIRE I-EGSE that the connection has been established	OK		OK.		SVH	
	START OF SPIRE UFT						

7.2.2 Switch On SPIRE PRIME DPU

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	SWITCH ON DPU PRIME						
	DPU-A Power On Initial Conditions: DPU-A OFF						
2.1	Verify the following PCDU telemetry to verify DPU-A Off: LCL11 Status **SpireHsdN_L11** **WM32C565** LCL11 current **SpireHsN_L11** **WM308565**	OFF =0.0A	+/-0.046A	OFF 0.0.	AND: ZAD03999 MIM: LCL_HERSCHEL	SVH	

Step-No.	Test-Step-Description			Nominal Value	Tolerance	Actual Value	Remarks	P	N
2.2	Disable CDMU FDIR while DPU switched ON and forced boot (RTA SPIRE used but not relevant) by issuing the following CMDS telecommand and verify on-board execution (x = don't care, either 0 or 1) :								
		ConfigureSDBFDIR		**DC005161**	OK	OK		SAH	
	RTA	**DH011161**	**=21**				**SPIRE-A**		
	F0	**DH018161**	**=x**				RTA ON		
	F1	**DH019161**	**=x**				RTA Alive		
	F2	**DH020161**	**=x**				RTA Well_TC		
	F3	**DH021161**	**=x**				RTA Well_TM		
	F4	**DH022161**	**=x**				RTA Valid		
	F5	**DH023161**	**=x**				RTA Vital/Non-vital		
	F6	**DH024161**	**=x**				RT Nominal Unit		
	F7	**DH025161**	**=x**				RT TM Retry On/Off		
	F8	**DH026161**	**=x**				Bus A Active		
	F9	**DH027161**	**=x**				Bus A Healthy/Unhealthy		
	F10	**DH028161**	**=x**				Bus B Healthy/Unhealthy		
	F11	**DH029161**	**=0**				SDBFDIR Disable		
	M0	**DH030161**	**=0**				Mask F0		
	M1	**DH031161**	**=0**				Mask F1		
	M2	**DH032161**	**=0**				Mask F2		
	M3	**DH033161**	**=0**				Mask F3		
	M4	**DH034161**	**=0**				Mask F4		
	M5	**DH035161**	**=0**				Mask F5		
	M6	**DH036161**	**=0**				Mask F6		

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	M7 DH037161 =0				Mask F7		
	M8 DH038161 =0				Mask F8		
	M9 DH039161 =0				Mask F9		
	M10 DH040161 =0				Mask F10		
	M11 DH041161 =1				Mask F11		
	CNT DH042161 =1				**Vital RT Loop (1)**		
	M_C DH043161 =0				**Mask for CNT**		
2.3	Verify FDIR disabled **DEFJ4160**	**DISABLED**		DISABLED	AND: ZAD07999	INH	
2.4	Switch on RTA and enable Bus A on SPIRE DPU-A (RTA=21) by issuing the following CMDS telecommand and verify on-board execution (x = don't care, either 0 or 1) : **ConfigureSDBFDIR**	**DC005161**	OK	OK			
	RTA DH011161 =21				**SPIRE-A**		
	F0 DH018161 =1				**RTA ON**		
	F1 DH019161 =1				**RTA Alive**		
	F2 DH020161 =1				**RTA Well_TC**		
	F3 DH021161 =1				**RTA Well_TM**		
	F4 DH022161 =1				**RTA Valid**		
	F5 DH023161 =x				RTA Vital/Non-vital		
	F6 DH024161 =0				**RT Nominal Unit**		
	F7 DH025161 =x				RT TM Retry On/Off		
	F8 DH026161 =0				**Bus A Active**		
	F9 DH027161 =x				Bus A Healthy/Unhealthy		
	F10 DH028161 =x				Bus B Healthy/Unhealthy		

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	F11 DH029161 =x				SDBFDIR Enable/Disable		
	M0 DH030161 =1				Mask F0		
	M1 DH031161 =1				Mask F1		
	M2 DH032161 =1				Mask F2		
	M3 DH033161 =1				Mask F3		
	M4 DH034161 =1				Mask F4		
	M5 DH035161 =0				Mask F5		
	M6 DH036161 =1				Mask F6		
	M7 DH037161 =0				Mask F7		
	M8 DH038161 =1				Mask F8		
	M9 DH039161 =0				Mask F9		
	M10 DH040161 =0				Mask F10		
	M11 DH041161 =0				Mask F11		
	CNT DH042161 =1				**Vital RT Loop (1)**		
	M_C DH043161 =0				**Mask for CNT**		
2.5	After 10secs verify SPIRE-A RTA ON: **SPIREA_OnOff DED1G161** **SPIREA_DeadAliv DED1H161** **SPIREA_WellStiTM DED1J161** **SPIREA_ValidInval DED1K161** **SPIREA_WellStiTC DED1Z161**	 ON Alive Well Valid Well		 ON Alive Well Valid Well	AND: ZAD12999		
2.6	Power on DPU-A by issuing the following **SwOn_SpireHSPDU_N_L11** telecommand (CDMS-TC(8,4,112,5)) and verify on-board execution: **DC11D170**	 OK		 OK			
2.7	Verify the following PCDU telemetry to verify DPU-A ON:						

Step-No.	Test-Step-Description			Nominal Value	Tolerance	Actual Value	Remarks	P	N
	LCL11 (DPU-A) Status **STS_LCL**11 **WM32C565** LCL11 (DPU-A) current **ITLM_LCL**11 **WM308565**			ON 0.46 A	 +/- 0.046 A	ON 0.48 A		SM	
2.8	HPCCS Operator to inform SPIRE Responsible that SPIRE DPU Nominal powered			OK		OK		SM	
2.9	On HPCCS start test script SubscribeParams.tcl to handle command parameter packets sent from the I-EGSE			OK		OK.	Already Running from previous	SM	
2.10	On HPCCS start SPIRE-WU-INT-DPU-START-P.tcl test script to configure DPU			OK					
2.11	Enable CDMU FDIR (RTA SPIRE used but not relevant) by issuing the following CMDS telecommand and verify on-board execution (x = don't care, either 0 or 1) : **ConfigureSDBFDIR**			**DC005161**	OK	OK		SM	
	RTA	**DH011161**	**=21**				**SPIRE-A**		
	F0	**DH018161**	=x				RTA ON		
	F1	**DH019161**	=x				RTA Alive		
	F2	**DH020161**	=x				RTA Well_TC		
	F3	**DH021161**	=x				RTA Well_TM		
	F4	**DH022161**	=x				RTA Valid		
	F5	**DH023161**	=x				RTA Vital/Non-vital		
	F6	**DH024161**	=x				RT Nominal Unit		
	F7	**DH025161**	=x				RT TM Retry On/Off		
	F8	**DH026161**	=x				Bus A Active		
	F9	**DH027161**	=x				Bus A Healthy/Unhealthy		

Step-No.	Test-Step-Description			Nominal Value	Tolerance	Actual Value	Remarks	P	N
	F10	DH028161	=x				Bus B Healthy/Unhealthy		
	F11	DH029161	=1				**SDBFDIR Enable**		
	M0	DH030161	=0				Mask F0		
	M1	DH031161	=0				Mask F1		
	M2	DH032161	=0				Mask F2		
	M3	DH033161	=0				Mask F3		
	M4	DH034161	=0				Mask F4		
	M5	DH035161	=0				Mask F5		
	M6	DH036161	=0				Mask F6		
	M7	DH037161	=0				Mask F7		
	M8	DH038161	=0				Mask F8		
	M9	DH039161	=0				Mask F9		
	M10	DH040161	=0				Mask F10		
	M11	DH041161	=1				**Mask F11**		
	CNT	DH042161	=1				**Vital RT Loop (1)**		
	M_C	DH043161	=0				Mask for CNT		
2.12	Verify FDIR (re-)enabled						AND: ZAD07999		
			DEFJ4160	ENABLED		ENABLED		SAM	

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
2.13	Check that Nominal and Critical HK packets are arriving at the CCS: **SPIRE Nominal HK:** • (type ,subtype) : (3,25) • APID : 0x502 **SPIRE Critical HK:** • (type ,subtype) : (3,25) • APID: 0x500 **When the HK requests start being generated several HK parameters will go Out of Limits (Hard).** **This is a design feature of the DRCU Simulator and cannot be avoided.**	OK		OK		SM	
	PLIAP5V	-/OOL		NOT CHECKED AS DRCU NOT ON AT THIS STEP			
	PLIAP9V	-/OOL					
	PLIAM9V	-/OOL					
	SLIAP5V	-/OOL					
	SLIAP9V	-/OOL					
	SLIAM9V	-/OOL					
	LIAPiTEMP	-/OOL					
	LIASiTEMP	-/OOL					
	BIASTEMP	-/OOL					
	DAQTEMP	-/OOL					
2.14	On I-EGSE check that THSK parameter is refreshing every second	OK		OK		SM	
2.15	On I-EGSE check that TM2N parameter is incrementing by 1 every second	OK		OK		SM	
2.16	On I-EGSE check that TM1N parameter is incrementing by 1 every 2 second	OK		OK		SM	

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
2.17	On CCS check the consistency of the SPIRE on board time to the HCDMU time and the CCS. *	OK		OK	Parameter SMTZTSSD (TSYNC)	SNW	
2.18	On IEGSE check the consistency between SCOS time and THSK and QLA time.	OK		OK	33 secs difference as expected. TAI ↔ UTC	SNW	
	SPIRE PRIME DPU POWER ON COMPLETE						

7.2.3 Switch ON DRCU (Simulator) Prime

Step	Description	Expected Values	Tolerance	Actual Values	Remark	Pass/ Fail
3.1	On HPCCS execute TCL script SPIRE-WU-INT-DRCU-~~ON-STEP1-P~~.tcl START-P-STEP1	OK		OK		SNW Pass
3.2	On I-EGSE check that THSK parameter is not refreshing anymore	OK		OK		SNW Pass
3.3	On I-EGSE check that TM2N parameter is not incrementing anymore	OK		OK		SNW Pass
3.4	Start DRCU simulator application software: ***It is assumed that the DRCU simulator PC is already ON. Double click on the Transmit.exe icon on the desktop of the PC to start the application software.***	OK		OK		Pass SNW
3.5	On HPCCS Execute TCL script SPIRE-WU-INT-DRCU-ON-STEP2-P.tcl START-P-STEP2	OK		OK		Pass SNW
3.6	On I-EGSE check that THSK parameter is again refreshing every second	OK		OK		SNW Pass
3.7	On I-EGSE check that TM2N parameter is	OK		OK.		SNW Pass

Step	Description	Expected Values	Tolerance	Actual Values	Remark	Pass/ Fail
	again incrementing every second					

7.2.4 Check correct functioning of the SCU PRIME Low Speed Link

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Pass/ Fail
4.1	On HPCCS Execute TCL script SPIRE-WU-INT-SCU-01-P.tcl		OK	OK	Pass SNM
4.2	On I-EGSE verify:	SCUTEMPSTAT SUBKSTAT	0/0xFFFF 0/1	0/0xFFFF 0/1.	Pass SNM

Gaps in SSC. for 1280 then settles down

NCR raqd

7.2.5 Check correct functioning of the SCU PRIME High Speed Link

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Pass/ Fail
5.1	On HPCCS Execute TCL script SPIRE-WU-INT-SCU-02-P.tcl		OK	OK OK Retry	Pass SNM
5.2	On I-EGSE verify: SM D ON S2C	SCUFRAMECNT TM5N	0/31 0x3FFF/1	0/0 NOK 0x3FFF/1 62 6	Pass (Retry)
5.3	Verify that two telemetry packets with : • (type,subtype): (21,1). • APID : 0x508 have been received at CCS		OK	NOK OK 4pkts	Pass SNM on retry

NCR raqd for all repeat TS exec

7.2.6 Check correct functioning of the MCU PRIME Low Speed Link

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Pass/ Fail
6.1	On HPCCS Execute TCL script SPIRE-WU-INT-MCU-01-P.tcl		OK	OK.	Pass
6.2	On I-EGSE check that the MCU is booted up successfully	MCUBITSTAT	0/-/1	0 / 1.	Pass

7.2.7 Check correct functioning of the MCU PRIME High Speed Link

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After		Pass/ Fail
7.1	On HPCCS Execute TCL script SPIRE-WU-INT-MCU-02-P.tcl		OK	OK	Retry	Pass Pass
7.2	On I-EGSE Record the values of MCUFRAMECNT at the start and end of the test	MCUFRAMECNT	**AVM**: 0/~300	0 / 200	200 / 500	Pass Pass on retry
7.3	Verify that the following type of MCU telemetry packets have been received at the CCS : ENG: - (type,subtype): (21,3). - APID 0x508 BSM - (type,subtype): (21,1).		OK	NOK 3packets	5pkts 3pkts	Pass Pass on retry Pass

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Pass/ Fail
	- APID 0x508 SMEC -(type,subtype): (21,1). - APID 0x508			3pkts | 3pkts	Pass OK

7.2.8 *Check correct functioning of the DCU PRIME Low Speed Link*

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Pass/ Fail
8.1	On HPCCS Execute TCL script SPIRE-WU-INT-DCU-01-P.tcl		OK	OK	Pass
8.2	On I-EGSE check that:	PSWBIAS PMWBIAS PLWBIAS	0/0xff/0 0/0xff/0 0/0xff/0	0 | 0xff | 0 0 | 0xff | 0 0 | 0xff | 0	Pass

7.2.9 *Check correct functioning of the DCU PRIME High Speed Link*

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Pass/ Fail
9.1	On HPCCS Execute TCL script SPIRE-WU-INT-DCU-02-P.tcl		OK	OK	Pass SMH
9.2	On I-EGSE check that:	DCUFRAMECNT	AVM: 0/~700	0 / 3700 /	Pass SMH
9.3	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		OK	OK OK OK OK OK OK OK	Pass SMH

7.2.10 Switch Off MCU Prime

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Pass/ Fail
10.1	On HPCCS Execute TCL script SPIRE-WU-INT-MCU-OFF-P.tcl		OK	OK	Pass
10.2	On I-EGSE check that the MCU is switched off:	MCUBITSTAT	1/-/0	1 / 0.	Pass

7.2.11 Switch Off DRCU Simulator

Step	Description	Parameter	Expected Values Before/After	Actual Values Before/After	Pass/ Fail
11.1	On HPCCS Execute TCL script SPIRE-WU-INT-DRCU-OFF-P.tcl		OK	OK	Pass
11.2	On I-EGSE Check that THSK parameter is not refreshing anymore	THSK	Not refreshing	OK	Pass
11.3	On I-EGSE Check that TM2N parameter is not incrementing anymore	TM2N	Not incrementing	OK	Pass
11.4	Stop DRCU Simulator application software		OK	OK	Pass

7.2.12 Switch Off SPIRE DPU Prime Unit

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	SWITCH OFF DPU PRIME						
	DPU-A Power Off						
	Initial Conditions: DPU-A ON						
12.1	~~On HPCCS start SPIRE-WU-INT-DPU-OFF-P.tcl test script to configure DPU.~~	~~OK~~		N/A.	NOT PERFORMED NO SCRIPT READ PVS:		
12.2	Verify the following PCDU telemetry to verify DPU-A On: LCL11 Status **SpireHsdN_L11** **WM32C565** LCL11 current **SpireHsN_L11** **WM308565**	ON 0.46 A	+/- 0.046 A	ON 0.46	AND: ZAD03999 MIM: LCL_HERSCHEL	P SWA	
12.3	Disable and Switch off RTA SPIRE DPU-A (RTA=21) by issuing the following CMDS telecommand and verify on-board execution (x = don't care) : **ConfigureSDBFDIR**	**DC005161**	OK	OK		SWA	
	RTA DH011161 =21				**SPIRE-A**		
	F0 DH018161 =0				**RTA OFF**		
	F1 DH019161 =x				RTA Alive		
	F2 DH020161 =x				RTA Well_TC		
	F3 DH021161 =x				RTA Well_TM		
	F4 DH022161 =0				**RTA Invalid**		
	F5 DH023161 =x				RTA Vital/Non-vital		
	F6 DH024161 =x				RT Nominal Unit		
	F7 DH025161 =x				RT TM Retry On/Off		
	F8 DH026161 =x				Bus A Active		

Procedure Updated

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	F9 DH027161 =x				Bus A Healthy/Unhealthy		
	F10 DH028161 =x				Bus B Healthy/Unhealthy		
	F11 DH029161 =x				SDBFDIR Enable/Disable		
	M0 DH030161 **=1**				**Mask F0**		
	M1 DH031161 =0				Mask F1		
	M2 DH032161 =0				Mask F2		
	M3 DH033161 =0				Mask F3		
	M4 DH034161 **=1**				**Mask F4**		
	M5 DH035161 =0				Mask F5		
	M6 DH036161 =0				Mask F6		
	M7 DH037161 =0				Mask F7		
	M8 DH038161 =0				Mask F8		
	M9 DH039161 =0				Mask F9		
	M10 DH040161 =0				Mask F10		
	M11 DH041161 =0				Mask F11		
	CNT DH042161 **=1**				**Vital RT Loop (1)**		
	M_C DH043161 =0				**Mask for CNT**		
12.4	After 10secs verify SPIRE-A RTA OFF: **SPIREA_OnOff DED1G161** **SPIREA_ValidInval DED1K161**	 OFF Invalid		 OFF Invalid	AND: ZAD12999		
12.5	Power off DPU-A by issuing the following **SwOff_SpireHSPDU_N_L11** telecommand (CDMS-TC(8,4,112,5)) and verify on-board execution: **DC11B170**	 OK		 OK			

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
12.6	Verify the following PCDU telemetry to verify DPU-A OFF: LCL11 (DPU-A) Status **STS_LCL**11 **WM32C565** LCL11 (DPU-A) current **ITLM_LCL**11 **WM308565**	 OFF 0.0 A	 +/- 0.046A	 OFF 0.0A	AND: ZAD03999 MIM: LCL_HERSCHEL	SWH	
12.7	HPCCS Operator to inform SPIRE Responsible that SPIRE DPU Prime powered off	OK		OK.		SWH	
12.8	On HPCSS terminate SubscribeParams test script.	OK		OK.		SWH	
	SPIRE DPU PRIME POWER OFF COMPLETE						

7.2.13 Switch On Redundant SPIRE Units

Not to be executed for AVM SPIRE

7.2.14 Switch On Redundant DRCU (Simulator)

Not to be executed for AVM SPIRE

7.2.15 Check correct functioning of the SCU REDUNDANT Low Speed Link

Not to be executed for AVM SPIRE

7.2.16 Check correct functioning of the SCU REDUNDANT High Speed Link

Not to be executed for AVM SPIRE

7.2.17 Check correct functioning of the MCU REDUNDANT Low Speed Link

Not to be executed for AVM SPIRE

7.2.18 Check correct functioning of the MCU REDUNDANT High Speed Link

Not to be executed for AVM SPIRE

7.2.19 Check correct functioning of the DCU REDUNDANT Low Speed Link

Not to be executed for AVM SPIRE

7.2.20 Check correct functioning of the DCU REDUNDANT High Speed Link

Not to be executed for AVM SPIRE

7.2.21 Switch Off MUC Redundant

Not to be executed for AVM SPIRE

7.2.22 Switch Off DRCU Simulator

Not to be executed for AVM SPIRE

7.2.23 Switch Off Redundant SPIRE Units

Not to be executed for AVM SPIRE

7.2.24 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						
13.1	From HPCCS Test Conductor console issue command to disconnect from SPIRE I-EGSE **disconnect HIEGSE**	OK					
13.2	Confirm from HPCSS and SPIRE I-EGSE that the disconnection was successful	OK					
13.3	Switch OFF I-EGSE i.a.w. AD 5						
13.4	Switch OFF Satellite/SVM, HPCCS and SCOEs i.a.w. procedure AD 2 Sections 7.7 to 7.11	OK					
13.5	Confirm both Satellite and EGSE powered down	OK					
	End Conditions: Satellite and EGSE OFF						
	END OF TEST						

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.
	See Test Report			

Table 8.2-1: Non-Conformance Record Sheet

8.3 Sign-off Sheet

	Date	Signature
Test Manager		
Operator		
PA Responsible		
ESA Representative		

DS: 65535 ID: SA_1_5 Title: DPU AND OBS PARAMETERS Sample Time: 2007.086.16.46.02.650 Workstation: hpws23

NAME	DESCRIPTION	VALUE	UNIT
SMS0N500	SID	00000301	HEX
SM10N500	OBSID	00000D05	HEX
SM20N500	BBID	00000000	HEX
SM2LN500	BBFULLTYPE	********	
SM00M500	MODE	********	
SM00N500	STEP	00000000	HEX
SM00T500	THSK	2007.086.16.46.02.107	HEX
SM01T500	TRESET	1958.001.00.00.00.000	HEX
SM01N500	TCRECV	000000E6	HEX
SM02N500	TCRECN	00000072	HEX
SM03N500	TCEXEC	000000E6	HEX
SM04N500	TCEXEN	00000072	HEX
SMT0N500	TM1N	00000343	HEX
SMT1N500	TM2N	00000344	HEX
SMT2N500	TM3N	00003FFF	HEX
SMT3N500	TM4N	00003FFF	HEX
SMT4N500	TM5N	00003FFF	HEX
SMT2T500	TSYNC	2007.086.16.46.01.867	HEX
SMT3T500	TDIFF	2007.086.16.32.05.855	HEX
SMM0F500	MEMSTAT_1	00000000	HEX
SMM1F500	MEMSTAT_2	00000001	HEX
SMM2F500	MEMSTAT_3	0000A41E	HEX
SM00F500	MONSTAT	00000222	HEX
SM01F500	EVENTSTAT	00000000	HEX
SMV0N500	VMSTAT	0000FFFF	HEX
SMV1N500	VM1STAT	0000FFFF	HEX
SMV2N500	VM2STAT	0000FFFF	HEX
SMV3N500	VM3STAT	0000FFFF	HEX
SMV4N500	VMSTATAFX	0000FFFF	HEX
SMT0M500	TMMODE	NOMINAL	
SM_0B500	CPULOAD	00000028	HEX
SM_1B500	LSLOAD	00089B20	HEX

NAME	DESCRIPTION	VALUE	UNIT
SMD0V505	DPUP5V	4.99	V
SMD1V505	DPUP15V	14.79	V
SMD2V505	DPUM15V	-14.93	V
SMD0K505	DPUTEMP	301.92	K
SMD3V505	DPUP2_5V	2.48	V
SMD2N505	OBSVER	00002204	HEX
SM0EN500	OBSVER1	2	
SM0FN500	OBSVER2	2	
SM05F500	OBSVER3	D	
SMT5N500	LOSTTCBLOCK	00000000	HEX
SMT6N500	LOSTEVBLOCK	00000000	HEX
SMT7N500	LOSTHKBLOCK	00000000	HEX
SMT8N500	LOSTSDBLOCK	00000000	HEX
SMT9N500	LOSTNTBLOCK	00000000	HEX
SMF0F500	FIFO_DF_FLAG	00000007	HEX
SM06F500	DCULSIFSTAT	ALIVE	
SM07F500	DCUHSIFMODE	TRANSPARENT	
SM08F500	MCULSIFSTAT	ALIVE	
SM09F500	MCUHSIFMODE	TRANSPARENT	
SM0AF500	SCULSIFSTAT	ALIVE	
SM0BF500	SCUHSMODE	TRANSPARENT	

Sep 2.17

DS: 65535 ID: ZAD079 Title: CDMS HK-0x0000 EssHigh 7 of 8 Sample Time: 2007.086.16.45.57.867 Workstation: hpws23

NAME	DESCRIPTION	VALUE	UNIT
DEEXJ160	RMB_fromTTR-RMA	ENABLED	
DEEXK160	RMB_fromTTR-RMB	ENABLED	
DEECF160	MM_BANK_POWER_A	0	
DEECG160	PWR_Sts_BankA0	OFF	
DEECH160	PWR_Sts_BankA1	OFF	
DEECZ160	PWR_Sts_BankA2	OFF	
DEECJ160	PWR_Sts_BankA3	OFF	
DEED0160	MM_BANK_POWER_B	0	
DEECK160	PWR_Sts_BankB0	OFF	
DEECL160	PWR_Sts_BankB1	OFF	
DEECM160	PWR_Sts_BankB2	OFF	
DEECN160	PWR_Sts_BankB3	OFF	
DEEX0160	PM_RS	10	
DEEX1160	PMA_R0_TTR-RM_A	RESET	
DEEX2160	PMA_R1_TTR-RM_A	SET	
DEEX3160	PMB_R0_TTR-RM_B	RESET	
DEEX4160	PMB_R1_TTR-RM_B	SET	
DEK8F160	StartupConfig	0	
DEK8G160	ActiveTM-OBT	A	
DEK8H160	PwrOnResetRegA	0	
DEK8J160	PwrOnResetRegB	0	
DEK8K160	PM_relay_0	0	
DEK8L160	StartupSurvNom	Nominal	
DEEP0160	PDEC_MON_A	0	
DEEP1160	Lock_A	No Start Seq	
DEEP2160	TC5_Status_A	Inactive	
DEEP3160	TC4_Status_A	Inactive	
DEEP4160	TC3_Status_A	Inactive	
DEEP5160	TC2_Status_A	Inactive	
DEEP6160	TC1_Status_A	Inactive	
DEEP7160	TC0_Status_A	Inactive	

NAME	DESCRIPTION	VALUE	UNIT
DEEPF160	PDEC_MON_B	0	
DEEPG160	Lock_B	No Start Seq	
DEEPH160	TC5_Status_B	Inactive	
DEEPZ160	TC4_Status_B	Inactive	
DEEPJ160	TC3_Status_B	Inactive	
DEEPK160	TC2_Status_B	Inactive	
DEEPL160	TC1_Status_B	Inactive	
DEEPM160	TC0_Status_B	Inactive	
DEMRF160	TME_BITRATE	150 Kbps	
DEF5F160	BSW_SDB_ActProf	3	
DEFJ0160	BSW_SDB_BC_CFG	7	
DEFJ1160	Active_Bus_A_B	BUS_A	
DEFJ2160	BusA_HealthySts	Healthy	
DEFJ3160	BusB_HealthySts	Healthy	
DEFJ4160	SDB_FDIR	ENABLED	
DELK0160	BSW_TcFvResult	Success	
DEMF0160	BSW_TM_MODE	AllVc	
DEL20160	BSW_SGM_Sts	6	
DEL21160	SGM_A_WriteProt	TRUE	
DEL22160	SGM_B_WriteProt	TRUE	
DEL23160	SgmReadWriteAcc	FALSE	
DEF10160	BSW_CPU_LOAD	14	
DEL50160	BSW_ObtCycBound	2007.086.16.45.57.867	
DEMMF160	BSW_TM_VC0_Que	0	
DEJHF160	BSW_SeqCntError	22	
DEJJ0160	BSW_SeqCntEvent	5	
DEJJF160	BSW_SeqCntExcep	0	
DEFPF160	BSW_SDBACCTcNOK	0	
DE882170	FdirPid	0	
DE883170	FdirPseq	0	
DE886170	ObcpReceivePid	0	

Step 2.17

TM Packet History display printout from time: 2007.086.16.32.09.234 to time: 2007.086.16.32.10.357
Current printout time: 2007.088.15.56.55.256 FILTER MODE: INACTIVE DISPLAY MODE: BRIEF STATISTIC: OFF
Number of printed lines: 30

Mnemonic	Generation Time	Reception Time	VC	APID	SSC	Type	STyp	PI1	PI2	DS	SPID	GSID	TmT	TmQ	F	D
CCS_IF_0022	2007.086.16.32.10.357	2007.086.16.31.37.376	0	2043	285	3	25	22	0	65535	250022964		PG	G	E	E
TCEcho Pkt	2007.086.16.32.10.328	2007.086.16.32.10.328	0	2016	1535	0	0	0	0	65535	132		PR	N	E	E
CCS_IF_0021	2007.086.16.32.10.255	2007.086.16.31.37.274	0	2043	284	3	25	21	0	65535	250021964		PG	G	E	E
CCS_IF_0020	2007.086.16.32.10.153	2007.086.16.31.37.172	0	2043	283	3	25	20	0	65535	250020964		PG	G	E	E
SAS SCOE HK	2007.086.16.32.10.143	2007.086.16.32.10.155	0	2024	110	3	25	3	0	65535	250003952		PG	G	E	E
UnknownPkt	2007.086.16.32.10.133	2007.086.16.32.16.168	0	1280	83	1	7	0	0	65535	133		PG	G	E	E
TCVerif Pkt	2007.086.16.32.10.133	2007.086.16.32.16.168	0	1280	83	1	7	0	0	65535	70004000		PG	G	E	E
UnknownPkt	2007.086.16.32.10.133	2007.086.16.32.16.165	0	1280	82	1	3	0	0	65535	133		PG	G	E	E
TCVerif Pkt	2007.086.16.32.10.133	2007.086.16.32.16.165	0	1280	82	1	3	0	0	65535	70004000		PG	G	E	E
UnknownPkt	2007.086.16.32.10.133	2007.086.16.32.16.165	0	1280	81	1	1	0	0	65535	133		PG	G	E	E
TCVerif Pkt	2007.086.16.32.10.133	2007.086.16.32.16.165	0	1280	81	1	1	0	0	65535	70004000		PG	G	E	E
CCS_IF_0019	2007.086.16.32.10.051	2007.086.16.31.37.070	0	2043	282	3	25	19	0	65535	250019964		PG	G	E	E
SAS PROT HK	2007.086.16.32.10.045	2007.086.16.32.10.060	0	2024	109	3	25	8	0	65535	250008952		PG	G	E	E
CCS_IF_0018	2007.086.16.32.09.949	2007.086.16.31.36.968	0	2043	281	3	25	18	0	65535	250018964		PG	G	E	E
SAS SAS HK	2007.086.16.32.09.916	2007.086.16.32.09.929	0	2024	108	3	25	7	0	65535	250007952		PG	G	E	E
D_H_Hk_EssHR	2007.086.16.32.09.867	2007.086.16.32.16.168	0	16	3132	3	25	0	0	65535	260130999		PG	G	E	E
D_H_Dgn_BSW3	2007.086.16.32.09.867	2007.086.16.32.13.161	4	18	8894	3	26	21260	0	65535	260137999		PG	G	E	E
D_H_CCU_B_DC	2007.086.16.32.09.867	2007.086.16.32.13.160	4	18	8893	3	26	23210	0	65535	260843999		PG	G	E	E
D_H_CCU_A_DC	2007.086.16.32.09.867	2007.086.16.32.13.160	4	18	8892	3	26	22430	0	65535	260840999		PG	G	E	E
D_H_Hk_P1	2007.086.16.32.09.867	2007.086.16.32.13.160	4	18	8891	3	25	8192	0	65535	260132999		PG	G	E	E
CCS_IF_0017	2007.086.16.32.09.847	2007.086.16.31.36.866	0	2043	280	3	25	17	0	65535	250017964		PG	G	E	E
SAS LPS HK	2007.086.16.32.09.777	2007.086.16.32.09.791	0	2024	107	3	25	6	0	65535	250006952		PG	G	E	E
CCS_IF_0016	2007.086.16.32.09.745	2007.086.16.31.36.764	0	2043	279	3	25	16	0	65535	250016964		PG	G	E	E
SNOMHK000559	2007.086.16.32.09.659	2007.086.16.32.11.161	4	1282	4	3	25	769	0	65535	190002559		PG	G	E	E
CCS_IF_0015	2007.086.16.32.09.643	2007.086.16.31.36.662	0	2043	278	3	25	15	0	65535	250015964		PG	G	E	E
CCS_IF_0014	2007.086.16.32.09.541	2007.086.16.31.36.561	0	2043	277	3	25	14	0	65535	250014964		PG	G	E	E

Spike NCR Data

CCS_IF_0013	2007.086.16.32.09.438	2007.086.16.31.36.457	0	2043	276	3	25	13	0	65535	250013964	PG	G	E	E
CCS_IF_0012	2007.086.16.32.09.336	2007.086.16.31.36.355	0	2043	275	3	25	12	0	65535	250012964	PG	G	E	E
TCEcho Pkt	2007.086.16.32.09.327	2007.086.16.32.09.327	0	2016	1534	0	0	0	0	65535	132	PR	N	E	E
CCS_IF_0011	2007.086.16.32.09.234	2007.086.16.31.36.253	0	2043	274	3	25	11	0	65535	250011964	PG	G	E	E

END OF DOCUMENT

	Name	Dep./Comp.
X	Alberti von Mathias Dr.	ASG22
	Baldock Richard	FAE12
	Barlage Bernhard	AED13
	Bayer Thomas	ASA42
	Brune Holger	ASA45
	Edelhoff Dirk	AED2
	Fehringer Alexander	ASG13
X	Fricke Wolfgang Dr.	AED 65
	Geiger Hermann	ASA42
	Grasl Andreas	OTN/ASA44
	Grasshoff Brigitte	AET12
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	Koelle Markus	ASA43
X	Koppe Axel	AED312
X	Kroeker Jürgen	AED65
X	La Gioia Valentina	Terma
	Lang Jürgen	ASE252
	Langenstein Rolf	AED15
	Langfermann Michael	ASA41
X	Maukisch Jan	ASA43
X	Much Christoph	ASA43
	Müller Jörg	ASA42
X	Müller Martin	ASA43
	Peltz Heinz-Willi	ASG13
	Pietroboni Karin	AED65
	Platzer Wilhelm	AED2
	Reichle Konrad	ASA42
	Runge Axel	OTN/ASA44
	Schink Dietmar	AED32
	Schlosser Christian	OTN/ASA44
	Schmidt Rudolf	FAE12
	Schmidt Thomas	ASA42
	Schuler Günter	ASA42

	Name	Dep./Comp.
	Schweickert Gunn	ASG22
X	Sonn Nico	ASG51
	Steininger Eric	AED32
X	Stritter Rene	AED11
	Suess Rudi	OTN/ASA44
	Wagner Klaus	ASG22
X	Wietbrock Walter	AET12
	Wöhler Hans	ASG22
	Wössner Ulrich	ASE252
	Theunissen Martijn/Dutch S pace	ASA43
X	Martin Olivier	ASA43
X	Alcatel Alenia Space Cannes	AAS-F
	Alcatel Alenia Space Torino	AAS-I
X	ESA/ESTEC	ESA
	Instruments:	
	MPE (PACS)	MPE
X	RAL (SPIRE)	RAL
	SRON (HIFI)	SRON
	Subcontractors:	
	Alcatel Alenia Space Antwerp	ABSP
	Austrian Aerospace	AAE
	Austrian Aerospace	AAEM
	BOC Edwards	BOCE
	Dutch Space Solar Arrays	DSSA
	EADS Astrium Sub-Subsyst. & Equipment	ASSE
	EADS CASA Espacio	CASA
	EADS CASA Espacio	ECAS
	European Test Services	ETS
	Patria New Technologies Oy	PANT
	SENER Ingenieria SA	SEN

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

	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	Martin Olivier	ASA43
	Grasshoff Brigitte	AET12	X	Theunissen Martijn	DutchSpace
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