CARLO GAVAZZI SPACE SpA

HERSCHEL DPUs/ICU

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Titolo : *Title :*	HERSCHEL SPIRE DPU PFM FINAL ELECTRICAL INTERFACE AND FULL FUNCTIONAL PERFORMANCE TEST REPORT				

	Nome & Funzione *Name & Function*	Firma *Signature*	Data *Date*
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1. SCOPE

This document describes the test report applicable to the electrical and functional tests of the:

HERSCHEL SPIRE (Dpu) ASSEMBLY
C.I. HSDPU – PFM
p/n: 20-SPIRE-00.00 s/n: 01

The test to be performed according to the procedure HERS-SPIRE-PR-CGS-002 issue 2 is to demonstrate the compliance of the above item to the requirements specified in the applicable documents as part of the overall verification program.

2. DOCUMENTS

2.1 APPLICABLE DOCUMENTS

AD #	Doc Number	Issue	Date	Rev	Title
1	CNR.IFSI..2001.TR01	1.0	12/10/2001	NA	DPU Switch-on procedure
2	SCI-PT-ICD-7527	4.0	07/11/2003	NA	Herschel/Plank Packet Structure Interface Control Document
3	SPIRE-IFS-PRJ-001036	1.2	10/11/2004	NA	SPIRE OBS Software Specifications Document
4	SCI-PT-IIDA-04624	3.3	30/06/2004	NA	Herschel/Plank IID Part A
5	SCI-PT-IIDB-02124	3.3	21/06/2004	NA	Herschel/Plank IID Part B Instrument SPIRE
6	IFS/ICU/PL/1999-001	1.0	13/10/2000	NA	Product Assurance Plan for the FIRST-DPU/ICU Subsystem
7	SPIRE-IFS-PRJ-000650	1.4	24/03/2003	NA	SPIRE DPU ICD
8	SPIRE-RAL-PRJ-000592	1.1	29/03/2001	NA	SPIRE Instruments Qualification Requirements
9	SPIRE-RAL-PRJ-000034	1.2	30/05/2003	NA	SPIRE Instruments Requirements Document
10	SPIRE-RAL-PRJ-000450	4.0	01/06/2003	NA	SPIRE System Budget
11	AS4112	NA	01-11-89	NA	SAE International Aerospace Standard
12	ECSS Q-60	A	19-04-96	NA	EEE Components
13	SPIRE-IFS-PRJ-000444	1.4	10/11/2004	NA	SPIRE OBS User Requirements Document
14	SPIRE-SAP-PRJ-001364	1.1	25/06/2004	NA	DRCU / DPU ICD
15	SPIRE-RAL-PRJ-001969	1Draft	23/03/2004	NA	SPIRE Peak-up Mode Requirements
16	SPIRE-RAL-PRJ-001855	2Draft	7/01/2004	NA	SPIRE Autonomy Requirements
17	SCI-PT-RS-07360	2.2	30/09/2003	NA	Herschel/Plank Operations Interface Requirements Document
18	IFS/OBS/PL/2000-001	1.1	02/04/2004	NA	Herschel Space Observatory DPU/ICU On Board Software Product Assurance Plan
19	HERS-GEN-SQ-CGS-001	2	10/07/2005	NA	Herschel DPUs/ICU Boot Software User Requirements
20	HERS-SPIRE-PR-CGS-002	2	March 2006	NA	Herschel SPIRE DPU PFM Electrical and Functional Performance Test

2.2 REFERENCE DOCUMENTS

RD #	Doc Number	Issue	Date	Rev	Title
1	SPIRE-RAL-PRJ-001078	2.0	15/11/2004	NA	SPIRE Data ICD
2	SPIRE-IFS-DOC-001393	1.4	19/11/2004	NA	SPIRE ON-Board Software Acceptance Test Report
3	CNR.IFSI.2003.TR01	2.1	21/09/2004	NA	SPIRE DPU Virtual Machine
4	HERS-SPIRE-IC-CGS-001	2	Jan. 2005	NA	Herschel SPIRE HW Interface Control Document
5	HERS-GEN-PL-CGS-004	1	22/04/2005	NA	Boot-SW Verification and Validation Plan/Acceptance Test
6	HERS-GSE-RP-CGS-001	1	15/11/2004	NA	Herschel DPU/ICUs Ground Support Equipment Design Report
7	HERS-GEN-SP-CGS-001	1	13/12/2004	NA	Herschel DPUs/ICU DC/DC Board Specification
8	SPIRE-IFS-PRJ-001391	1.1	29/12/2004	NA	SPIRE On-Board Software User Manual
9	N.A.	N.A.	16/05/2003	NA	RT54SX32S High Iccl Inrush Current

3. ACRONYMS

C.I.	Configuration Item. Also called Part Number (P/N)
CGS	Carlo Gavazzi Space
DPU	Data Processing Unit
GUI	Graphical User Interface
I/F	Interface
NA	Not Applicable
P/N	Part Number. Also called Configuration Item C.I.
PA	Product Assurance
PDU	Power Distribution Unit
PFM	Proto Flight Model
PVS	Procedure Variation Sheet
QA	Quality Assurance
S/N	Serial Number
S/S	Subsystem
TC	Tele Command
TM	Telemetry
UUT	Unit Under Test
VM	Virtual Machine
VMEC	Virtual Machine Executable Code

4. PARTICIPANTS REQUIRED

4.1 GENERAL

All tests have been performed under QA surveillance in accordance with, and following detailed procedure of applicable PA Plan. Start of the Test has been notified to Prime Contractor and/or Customer as applicable.

4.2 RESPONSIBILITY

The technical responsibility for testing and test results is up to the Space Infrastructure and Science Department.

QA is responsible for ensuring that all the agreed procedures are carefully observed, that test equipment and instrumentation used during testing is calibrated and within validity date: that the test data sheets are recorded in the Test Report and signed by the operators and QA witnesses, that all non conforming condition and test results are properly documented and notified to the Prime Contractor, and that all requirements of applicable PA Plan, specification and Statement of Work pertaining to the acceptance tests, are fully satisfied.

4.3 QA WITNESS OF TEST AND SIGN-OFF

QA inspector, or its delegate, witnessed the tests described in this procedure in accordance to the requirement specified in the applicable PA Plans.

4.4 NON CONFORMANCE AND FAILURES

Any malfunction/defect occurred during the test has been processed along the Non Conformance Procedure described in the applicable PA Plans.

4.5 CALIBRATION REQUIREMENTS

All instruments used for testing were calibrated.

Evidence of certification has been provided by a label attached to the instruments itself, showing the calibration date, the expiring date and the signature of the operator.

5. TEST ARTICLE

The test article consists of:

HERSCHEL SPIRE (Dpu) ASSEMBLY
C.I. HSDPU – PFM
p/n: 20-SPIRE-00.00 s/n: 01

Before starting the test, the P/N and SN of the test article tested have been recorded on the step-by-step procedure sheets under the table cell “UNIT UNDER TEST”.

6. TEST CONFIGURATION

The test set up needed to demonstrate the compliance to each requirement is shown in Table 6.1 “REQUIREMENTS CROSS REFERENCE”. It must provide a simulation of the Herschel SPIRE DPU operating environment focused on the functional/electrical aspects.

The test set-up consists of the EGSE facility equipped as depicted in
Figure 6-1.

The EGSE is mainly by two functional blocks according to the GSE specification
OCOE. Overall Checkout Equipment
SCOE Special Checkout Equipment

The OCOE include the following components:

Test Conductor Station: main purpose of this section is to send tele-command and to receive telemetry packets, it is based on SCOS2000 that gives the possibility, as explained in the software descrition, to create log files and access to TC/TM Database.
Spacecraft Simulator Front End: it is in charge of simulating the Spacecraft interface (Power bus and MIL-STD-1553B)

The SCOE functional block include the following components
Instruments Subsystems Simulator: it is in charge of simulate the instruments subsystems installed on the satellite: HIFI, PACS and SPIRE. It will provide HIFI, SPIRE, PACS subsystems data and power interfaces to DPUs/ICU

An EGSE block diagram is presented in
Figure 6-1.

The hardware components of the previous blocks are:

6.1 OCOE: OVERALL CHECKOUT EQUIPMENT

Test Conductor Station:

PC, Pentium4 based, on which is installed SCOS2000 and the operating system is Linux SUSE (Remarks: Originally a Sun workstation with OS Soiaris foreseen)
Ethernet switch 8 channels

Spacecraft Simulator:

PC, Pentium 4 based, on which is installed Windows 2000 and the simulation software of the CDMS; on the PCI bus of the PC is installed a board 1553B
COTS power Supply 28 V with two 80W output channels (at least)

6.2 SCOE: SPECIAL CHECKOUT EQUIPMENT

Instruments Simulators:

PC, Pentium 4 based, on which is installed Windows 2000 and the simulation software of the PACS instrument; on the PCI bus of the PC is installed a board PCI Spacewire

PC, Pentium 4 based, on which is installed Linux Slackware and the simulation software of the HIFI instrument; on the PCI bus of the PC is installed a dedicated board for the communication with HIFI instrument

PC, Pentium 4 based, on which is installed Windows 2000 and the simulation software of the SPIRE instrument; on the PCI bus of the PC is installed a dedicated board for the communication with SPIRE instrument

Electronic Load with six input channels (for HIFI)

To test SPIRE DPU it is necessary to simulate the communication with instrument; the simulation of the following lines are foreseen:

- 1 Transmission line for the simulation of the communication with DCU subsystem (type: Low Speed Data Link)
- 1 Transmission line for the simulation of the communication with SCU subsystem (type: Low Speed Data Link)
- 1 Transmission line for the simulation of the communication with MCU subsystem (type: Low Speed Data Link)
- 1 Reception line for the simulation of the communication with DCU subsystem (type: Low Speed Data Link)
- 1 Reception line for the simulation of the communication with SCU subsystem (type: Low Speed Data Link)
- 1 Reception line for the simulation of the communication with MCU subsystem (type: Low Speed Data Link)
- 1 Reception line for the simulation of the communication with DCU subsystem (type: High Speed Data Link)
- 1 Reception line for the simulation of the communication with SCU subsystem (type: High Speed Data Link)
- 1 Reception line for the simulation of the communication with MCU subsystem (type: High Speed Data Link)

To summarize the following lines are foreseen:

- 3 TX low Speed data Link
- 3 RX Low Speed Data Link
- 3 RX High Speed Data Link

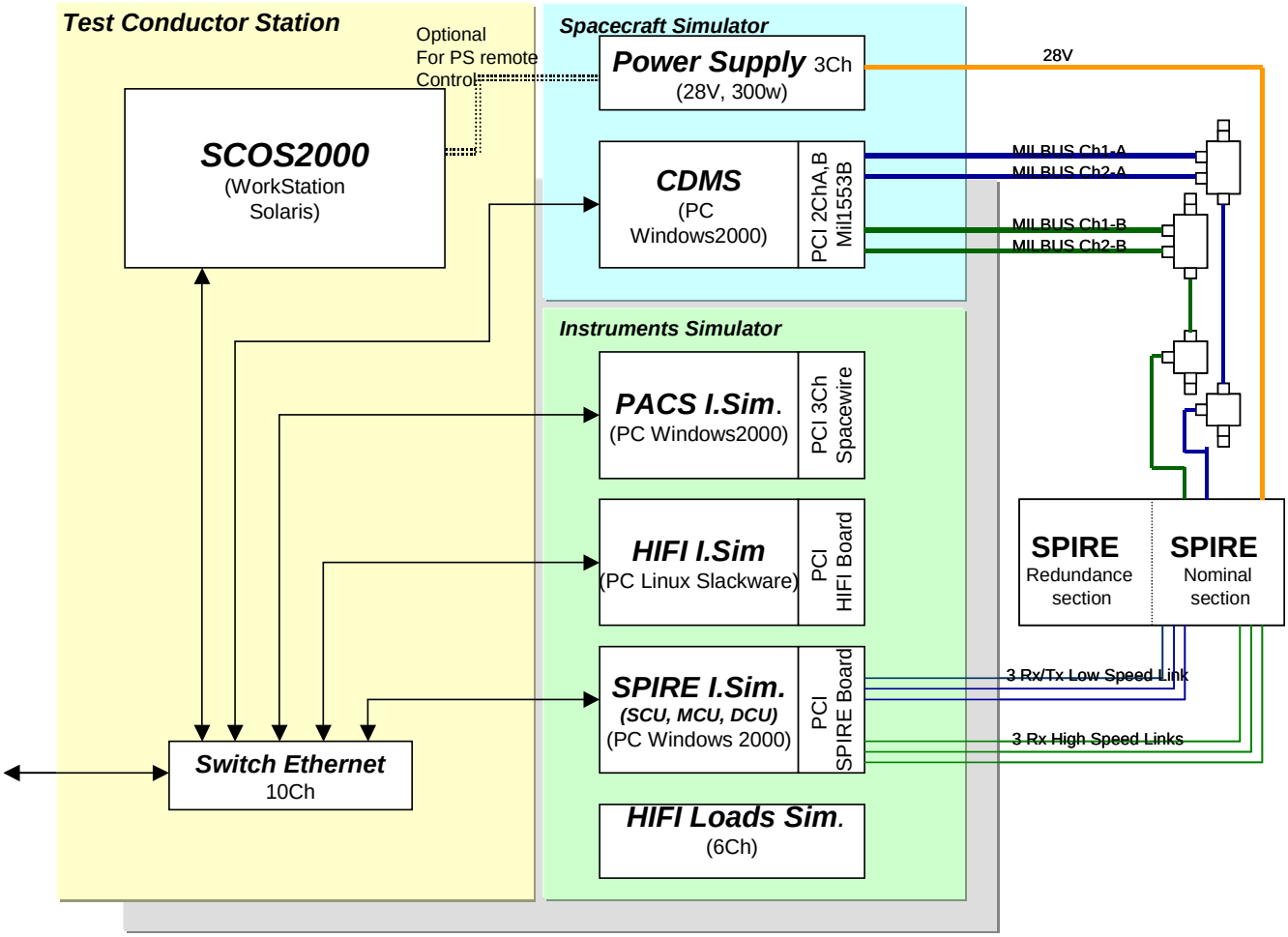

Figure 6-1: EGSE configuration during SPIRE Tests

6.3 DPU SOFTWARE AND RT ADDRESS CONFIGURATION

In this chapter is described the configuration used during the test of SPIRE DPU unit as for the boot software as for the application software (OBS). Moreover also the remote terminal addresses of the unit are indicated.

6.3.1 BOOT SOFTWARE

The Boot Software written in the PROM for the nominal and the redundant sections is 12-GEN-05.00 ver 2.0.

In the following tables are reassumed the Boot Software Telemetry Messages that have set the APID always at 0x500 for nominal section and 0x501 for the redundant section. APID on telecommand is always 0x500 for both section.The cnt of the first packet is set to 0

MSG Num.	**Test ID**	**Event ID** (Word #9)	**SID** (Word #10)	**Packet Counter** (Word #15)	**TC_PKT_ECHO**		**State** (Word #18)
					TC_PKT_ID (Word #16)	**TC_PKT_SEQ_CTRL** (Word #17)	
1.	C2 to C16 E2 to E16	0x8008	0x0003	0	0xABAB	0xCDCD	0xAAAA
2.	O1-O3	0x8001	0x00FF	0	0xABAB	0xCDCD	0xAAAA
3.	O2-O4	0x8002	0x00FF	0	0xABAB	0xCDCD	0xAAAA
4.	C 17.8 E 17.8	0x8003	0x00FF	0	0xABAB	0xCDCD	0xAAAA
5.	C 15.7 E 15.7	0x8007	0x0001	0	0xABAB	0xCDCD	0xAAAA

Table 6-1: TM Packet Event Fixed part

MSG Num.	**Test ID**	**MemType and Num of Error** (Word #19)	**Page Address Failed** (Word #20)
1.	O1-O3	0x4001	0x0009
2.	O2-O4	0x8001	0x0006
3.	C 15.7 E 15.7	0x4001	0x0800

Table 6-2: TM Packet Event Variable part

MSG Num.	Test ID	Event ID (Word #9)	SID (Word #10)	Packet Counter (Word #15)	TC_PKT_ECHO		State (Word #18)
					TC_PKT_ID (Word #16)	TC_PKT_SEQ_CTRL (Word #17)	
1.	Section C and E: Steps: 2.4, 12.5, 15.4, 16.4, 16.9, 16.14	0x8111	0x0003	TC	0x1D00	TC Pkt Counter	0xBBBB
2.	Section C and E: Steps: 2.4, 16.14	0x8111	0x0003	TC	0x1D00	TC Pkt Counter	0xCCCC
3.	Section C and E: Steps: 2.8,16.17 and 17.7	0x8111	0x0003	TC	0x1D00	0xD000	0xD0D0
4.	Section C and E: Steps: 3.6,4.6, 5.6	0x8111	0x0003	TC	0x1D00	0xD000	0xCAFE
5.	C 6.6 E 6.6	0x8004	0x0009	TC	0x1D00	0xD000	0xAAAA
6.	C 7.9 E 7.9	0x8004	0x0009	TC	0x1D00	0xD000	0xAAAA
7.	C 8.6 E 8.6	0x8004	0x0009	TC	0x1D00	0xD000	0xAAAA
8.	C 9.6 E 9.6	0x8004	0x0009	TC	0x1D00	0xD000	0xAAAA
9.	C 10.6 E 10.6	0x8004	0x0009	TC	0x1D00	0xD000	0xAAAA
10.	C 11.6 E 11.6	0x8004	0x0009	TC	0x1D00	0xD000	0xAAAA
11.	C 12.6 E 12.6	0x8004	0x0009	TC	0x1D00	0xC012 0xC024	0xAAAA
12.	C 13.4 E 13.4	0x8004	0x0009	TC	0x1D00	0xC000	0xAAAA
13.	C 14.4 E 14.4	0x8004	0x0009	TC	0x1D00	0xC000	0xAAAA
14.	C 16.7 E 16.7	0x8111	0x0003	TC	0x1D00	0xD000	0xDAD0

Table 6-3: TM Packet Acknowledge Fixed part

MSG Num.	Test ID	MemID (Word #19)	Error Code (Word #20)	FCS Computed (Word #21)	FCS Read (Word #22)	Checksum ID (Word #23)	DM Start Address (Word #24,#25)
1.	C 6.6 E 6.6	0xAAAA	0x0008	0x49A5	0xFFFF	0x0002	0xAAAA AAAA
2.	C 7.9 E 7.9	0x0500	0x000C	0xAAAA	0xAAAA	0xAAAA	0XAAAA AAAA
3.	C 8.6 E 8.6	0x00FF	0x0010	0xAAAA	0xAAAA	0xAAAA	0xAAAA AAAA
4.	C 9.6 E 9.6	0x00FF	0x0011	0xAAAA	0xAAAA	0xAAAA	0xAAAA AAAA
5.	C 10.6 E 10.6	0xFF04	0x000E	0xAAAA	0xAAAA	0xAAAA	0xAAAA AAAA
6.	C 11.6 E 11.6	0x08FF	0x000B	0xAAAA	0xAAAA	0xAAAA	0xAAAA AAAA
7.	C 12.5 E 12.5	0x0011	0x0009	0xAAAA	0xAAAA	0xAAAA	0x0000 4400 0x0000 4800
8.	C 13.4 E 13.4	0x0011	0x0008	FCS Computed	FCS Read from TC	0x0001	0x0000 4000
9.	C 14.4 E 14.4	0x00FF	0x0007	0xAAAA	0xAAAA	0xAAAA	0x0000 4000

Table 6-4: TM Packet Acknowledge Variable part

6.3.2 OBS APPLICATION SOFTWARE

The OBS is provided by IFSI and basically it is the OBS version 1 with the following few modification.

- capability to perform the jump_to_boot command
- wait states in Data memory

The identification of this version of software on SCOS HK Data windows is version 1.2.p.
The APID of the transmitted TM packet is 0x500 for the nominal section, whereas it is 0x501 for the redundant section.
This version of OBS does not permit to completely write the EEPROM primary and secondary partitions but it is possible only to duplicate only the first page of telecommands in the two partitions. The first page, that is duplicated in both the partition, points the other pages of telecommands written only in the primary partition of EEPROM.

6.3.3 REMOTE TERMINAL ADDRESSES

For the nominal section of the SPIRE DPU Unit the MIL-STD-1553B Remote Terminal address is 21 while for the redundant section the Remote Terminal address is 22.

6.4 POWER-ON PROCEDURE

To avoid the high current state of FPGA RT54SX32S, Actel recommends to add significant delay after power down to next power up cycle to avoid an additional current. At ambient temperature (25℃) this delay is equal to 4,3 minutes.
For more informations see Actel Technical Field Alert RD9.

6.5 NOTES ON THE TEST PROCEDURE

Note that in the test procedure sections labeled as TPi (with i from 1 to 5) all commands are to be sent from SCOS2000 unless otherwise noted.

When a command is to be sent from SCOS2000, the procedure is to go on the Manual Stack window, click on the File, Load Stack button and select the stack file from the list. Press ok. The stack files are available at path: "**/home/sops23e/CMD/SPIRE/STACKS**".
Then press ARM and GO to send out one after the other all the TC of the list.

Unless otherwise noted, each test procedure labeled as TPi starts from the final conditions of the previous one.

When a telemetry packet is indicated as TM (x,y), x stands for packet type and y stands for packet subtype.

In the procedure the TM(x,y) reported in expected value column is expressed in decimal form, while in CDMS GUI x and y are displayed in hexadecimal form. Moreover in the PacketDisplay Tool the visualization of TM(x,y) is expressed in decimal form.

6.6 REQUIREMENTS CROSS REFERENCE

Cross reference among requirements and procedure steps is provided in Table 6-5

REQ. n°	Specification / REQ. ID / Description	PROCEDURE VERIFICATION	REMARKS
Hardware Requirements			
HW1	AD4 / 5.9.5.1 / Bus Voltage 5.9.5.2 / Main Bus Characteristics	B3, C.	
HW2	AD4 / 5.9.5.4 / Power Distribution	B3, C1, D1.	
HW3	AD4 / 5.9.5.6 / Power Demand	C1, D1.	
HW5	AD5 / 5.9.6.3 / Interface circuits	B1	
HW6	AD4 / 5.10.3.4 / Isolation between primary power lines and the structure of the hosting S/C	B2	
HW7	AD4 / 5.14.2.15 / DC Resistance between Shield Ground Pin and Equipment Chassis	B2	
Boot-Software Requirements			
BS1	AD19 / BSRD-011	C1 to C16 E1 to E16	
BS2	AD19 / BSRD-012	Sections C and E: 2, 12, 13,14,15 and 16	
BS3	AD19 / BSRD-013	Sections C and E: 2,3,4,5 and 16	
BS4	AD19 / BSRD-020	C1 to C16 E1 to E16	
BS5	AD19 / BSRD-030	C1 to C16 E1 to E16	
BS6	AD19 / BSRD-040	C1 to C16 E1 to E16	
BS7	AD19 / BSRD-050	C1 to C16 E1 to E16	
BS8	AD19 / BSRD-060	C1 to C16 E1 to E16	
BS9	AD19 / BSRD-080	C1 to C16 E1 to E16	
BS10	AD19 / BSRD-090	C1 to C16 E1 to E16	
BS11	AD19 / BSRD-100	C1 to C16 E1 to E16	
BS12	AD19 / BSRD-110	C1 to C16 E1 to E16	
BS13	AD19 / BSRD-120	C6, E6	
BS14	AD19 / BSRD-130	C1, E1	

REQ. n°	Specification / REQ. ID / Description	PROCEDURE VERIFICATION	REMARKS
BS15	AD19 / BSRD-140	C17, E17	
BS16	AD19 / BSRD-150	C6,E6	
BS17	AD19 / BSRD-155	C7,C10 and C11 E7,E10 and E11	
BS18	AD19 / BSRD-170	Section C and E: 2,3,4,5 and 16	
BS19	AD19 / BSRD-180	C2, E2	
BS20	AD19 / BSRD-190	C2, E2	
BS21	AD19 / BSRD-200	C2, E2	
BS22	AD19 / BSRD-210	C2, E2	
BS23	AD19 / BSRD-220	C2, E2	
BS24	AD19 / BSRD-230	C2, E2	
BS25	AD19 / BSRD-240	C6, E6	
BS26	AD19 / BSRD-260	Sections C and E: 2,3,4,5 and 16	
BS27	AD19 / BSRD-270	Sections C and E: 2,3,4,5 and 16	
BS28	AD19 / BSRD-280	Sections C and E: 2,3,4,5 and 16	
BS29	AD19 / BSRD-290	Sections C and E: 2,3,4,5 and 16	
BS30	AD19 / BSRD-300	Sections C and E: 2,3,4,5 and 16	
BS31	AD19 / BSRD-310	Sections C and E: 2,3,4,5 and 16	
BS32	AD19 / BSRD-320	Sections C and E: 2,3,4,5 and 16	
BS33	AD19 / BSRD-330	C4 and C5 E4 and E5	
BS34	AD19 / BSRD-340	C4 and C5 E4 and E5	
BS35	AD19 / BSRD-350	C4 and C5 E4 and E5	
BS36	AD19 / BSRD-355	C4 and C5 E4 and E5	
BS37	AD19 / BSRD-370	C4 and C15 E4 and E15	
BS38	AD19 / BSRD-380	Sections C and E. 2,3,4,5,15 and 16	
BS39	AD19 / BSRD-400	Sections C and E. 2,3,4,5,15 and 16	
BS40	AD19 / BSRD-410	C1 to C16 E1 to E16	
BS41	AD19 /	C1 to C16	

REQ. n°	Specification / REQ. ID / Description	PROCEDURE VERIFICATION	REMARKS
	BSRD-420	E1 to E16	
BS42	AD19 / BSRD-430	C1 to C16 E1 to E16	
Software Requirements			
SW1	AD13 / UR-TC3 / Initialization and configuration	TP2	
SW2	AD13 / UR-TM2 / Initialization and configuration	TP2	
SW3	AD13 / UR-TC3 / Spacecraft interface	TP2	
SW4	AD13 / UR-TM2 / Spacecraft interface	TP2 TP5	
SW5	AD13 / UR-TC8 / Telecommand	TP2	
SW6	AD13 / UR-TC11 / Telecommand	TP2	
SW7	AD13 / UR-TC20 / Telecommand	TP1 TP2 TP3 TP4 TP5	
SW8	AD13 / UR-TC1 / Telecommand	TP2 TP3 TP4 TP5	
SW9	AD13 / UR-GE3 / Telecommand	TP2 TP3 TP4 TP5	
SW10	AD13 / UR-GE4 / Telecommand	TP2 TP3 TP4 TP5	
SW11	AD13 / UR-GE5 / Telecommand	TP2 TP3 TP4 TP5	
SW12	AD13 / UR-TC10 / Telecommand	TP2 TP3 TP4 TP5	
SW13	AD13 / UR-TC14 / Telecommand	TP2 TP3 TP4 TP5	
SW14	AD13 / UR-TC16 / Telecommand	TP2 TP3 TP4 TP5	
SW15	AD13 / UR-TM1 / Telemetry	TP2 TP3 TP4 TP5	
SW16	AD13 /	TP2	

REQ. n°	Specification / REQ. ID / Description	PROCEDURE VERIFICATION	REMARKS
	UR-TC5 / Telemetry		
SW17	AD13 / UR-TC15 / Telemetry	TP2	
SW18	AD13 / UR-TM14 / Telemetry	TP3	
SW19	AD13 / UR-TM15 / Telemetry	TP3	
SW20	AD13 / UR-TM17 / Telemetry	TP3	
SW21	AD13 / UR-GE3 / Telemetry	TP3	
SW22	AD13 / UR-GE4 / Telemetry	TP3	
SW23	AD13 / UR-GE5 / Telemetry	TP3	
SW24	AD13 / UR-GE13 / Telemetry	TP3 TP5	
SW25	AD13 / UR-TM11 / Telemetry	TP3	
SW26	AD13 / UR-TM9 / Telemetry	TP3	
SW27	AD13 / UR-TM12 / Telemetry	TP3	
SW28	AD13 / UR-TM13 / Telemetry	TP3	
SW29	AD13 / UR-TM16 / Telemetry	TP3	
SW30	AD13 / UR-SM9 / Telemetry	TP3	
SW31	AD13 / UR-TM18 / Telemetry	TP5	
SW32	AD13 / UR-TM4 / Telemetry	TP3	
SW33	AD13 / UR-TM7 / Telemetry	TP5	
SW34	AD13 / UR-TM6 / Telemetry	TP5	
SW35	AD13 / UR-FU10 / Functional and operational	TP4	
SW36	AD13 / UR-GE11 / Functional and operational	TP4	
SW37	AD13 / UR-TC18 / Functional and operational	TP4	
SW38	AD13 / UR-SM8 / Functional and operational	TP2	
SW39	AD13 / UR-TC19 / Memory management	TP2	
SW40	AD13 / UR-TM9 / Memory management	TP2	
SW41	AD13 / UR-TM12 / Memory management	TP2 TP3 TP4	
SW42	AD13 / UR-SM10 / Memory management	TP2	

REQ. n°	Specification / REQ. ID / Description	PROCEDURE VERIFICATION	REMARKS
SW43	AD13 / UR-SM11 / Memory management	TP2	
SW44	AD13 / UR-TM5 / Memory management	TP5	
SW45	AD13 / UR-SM4 / Memory management	TP2	
SW46	AD13 / UR-SM6 / Memory management	TP2	
SW47	AD13 / UR-TC14 / Subsystem interface	TP2	
SW48	AD13 / UR-SY3 / Subsystem interface	TP3	
SW49	AD13 / UR-FU11 / Subsystem interface	TP5	
SW50	AD13 / UR-GE9 / Subsystem interface	TP5	
SW51	AD13 / UR-GE10 / Subsystem interface	TP5	
SW52	AD13 / UR-GE8 / Subsystem interface	TP5	
SW53	AD13 / UR-SY1 / Synchronization	TP3	
SW54	AD13 / UR-SY2 / Synchronization	TP3	
SW55	AD8 / BSRD-330	TP6	

Table 6-5: REQUIREMENTS CROSS REFERENCE

7. INSTRUMENTATION AND TEST EQUIPMENT

The complete list of the instrumentation used during the test is recorded in Table 7-1.

N.	EQUIPMENT	MANUFACTURER	P/N	S/N	ACCURACY (*)	NEXT CAL. DATE	REMARKS
1	MicroOhm Meter	HP	34420A	US3600197S		19/04/2006	
2	Digit Multimeter	Agilent	34401A	MY41030390		17/04/2006	
3	Multimeter	Fluke	187	83320195		18/04/2006	

Table 7-1: INSTRUMENT LIST

(*) Where not specified the accuracy is as stated on the instrument manufacturer data sheet

8. TEST CONDITION

- The CI has been tested in its defined configuration: it was properly closed, all electrical loads were present and the CI interface function(s) were simulated.

- Unless otherwise specified, all measurements have been performed at the following ambient condition:

Temperature	25 ℃ +/- 3℃
Relative humidity	Between 30% and 60% of RH
Pressure	Ambient
Cleanliness	100000

- All tests, unless otherwise specified, have been performed internally to CGS laboratories in a proper area. General disposition were applied to maximize personnel safety from potential hazards.

- Connectors savers have been used as applicable to protect the UUT interface connectors.

- Skilled personnel has been employed

- All used instruments met the necessary accuracy and not caused degradation of the UUT performances.

9. TEST PROCEDURE VARIATION SHEET

In case that for any reason the test procedure has to be changed, the change shall be described in a Procedure Variation Sheet (PVS) as shown in the next page.

The PVS shall contain:

- Reference to the test procedure to be changed
- Reference to the relevant test, procedure page and paragraph
- Description of the change, possibly in the form was….is…..
- Reason for change
- Test Engineer, QA, Test conductor signatures and dates
- Customer signature and date (when required).

Each PVS is identified by a reference number provided in sequential order.

All the generated PVS are collected in a dedicated section of the Test Report.

PROCEDURE VARIATION SHEET ref. N°:

Test Procedure Ref.:	Page Revised:	Paragraph Revised:

Description of Change:

Reason for Change:

CONCURRENCE

Test Cond.	QA	System Eng.		Customer
Date	Date	Date		Date

10. TEST DATA SHEETS

The step-by-step report sheets are provided in the following pages. These test report is structured as follow:

TEST SETUP

A PREPARE THE TEST ENVIRONMENT

OPEN BOX TESTS:

The following test must be executed with the box open since the EZ-ICE probe must be plugged on the CPU board.

O OPEN UNIT BOOT SOFTWARE TESTS OF MAIN AND REDUNDANT SECTION

CLOSED BOX TESTS:

ELECTRICAL INTERFACES TEST:

B PRIMARY INPUTS ELECTRICAL ISOLATION, CONNECTORS SHELL & GROUND PINS BONDING AND SURVIVAL TEST

FUNCTIONAL TESTS:

C FUNCTIONAL TEST OF MAIN SECTION WITH 28V POWER SUPPLY AND MIL-STD-1553B CHANNEL A

D LONG DURATION TEST OF MAIN SECTION WITH 28V, 26V AND 29V POWER SUPPLY AND MIL-STD-1553B CHANNEL A OR B

E FUNCTIONAL TEST OF REDUNDANT SECTION WITH 28V POWER SUPPLY AND MIL-STD-1553B CHANNEL A

F LONG DURATION TEST OF REDUNDANT SECTION WITH 28V, 26V AND 29V POWER SUPPLY USING MIL-STD-1553B CHANNEL A OR B

10.1 DATA SHEETS FILLING UP

The following fields of the data sheets:

- UUT DATA (including Model, Item, C.I., S/N)
- Measured value

have been filled up during the test performances and are part of this Test Report together with photographs, sketches, etc. eventually useful to document the test execution/result.

Remarks field have been used as a minimum to provide, where appropriate, reference to NCRs and PVS.

Test Report reference data has been added in the relevant field.

Each data sheet (including the attachements) has been certifed by QA stamp and signature together with the Test Conductor signature and date.

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
A	**PREPARE THE TEST ENVIRONMENT**			
A1	**CABLES CONNECTION FOR MAIN SECTION TEST**			
A 1.1	Install the SPIRE DPU on the test bench		OK	
A 1.2	Inspect the test article about any type of foreign elements		OK	
A 1.3	Check if the PDU is OFF. If not, turn the PDU OFF.		OK	
A 1.4	Connect the power cable coming from the EGSE connector **POWER-CHANNEL1** to the **J01** connector on the Unit.		OK	
A 1.5	Check if the MIL-STD-1553B Network is compliant with Figure 10-1 and Table 10-1.		OK	
A 1.6	Connect the cable labeled **DPU-CHA** of the MIL-STD-1553B network with the connector **J03** on the Unit.		OK	
A 1.7	Connect the cable labeled **DPU-CHB** of the MIL-STD-1553B network with the connector **J04** on the Unit.		OK	
A 1.8	Connect the cable coming from the **DCU EGSE connector** on the SPIRE SUBSYSTEM INTERFACE panel to the **J07** connector on the Unit.		OK	
A 1.9	Connect the cable coming from the **MCU EGSE connector** on the SPIRE SUBSYSTEM INTERFACE panel to the **J08** connector on the Unit.		OK	
A 1.10	Connect the cable coming from the **SCU EGSE connector** on the SPIRE SUBSYSTEM INTERFACE panel to the **J09** connector on the Unit.		OK	

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS

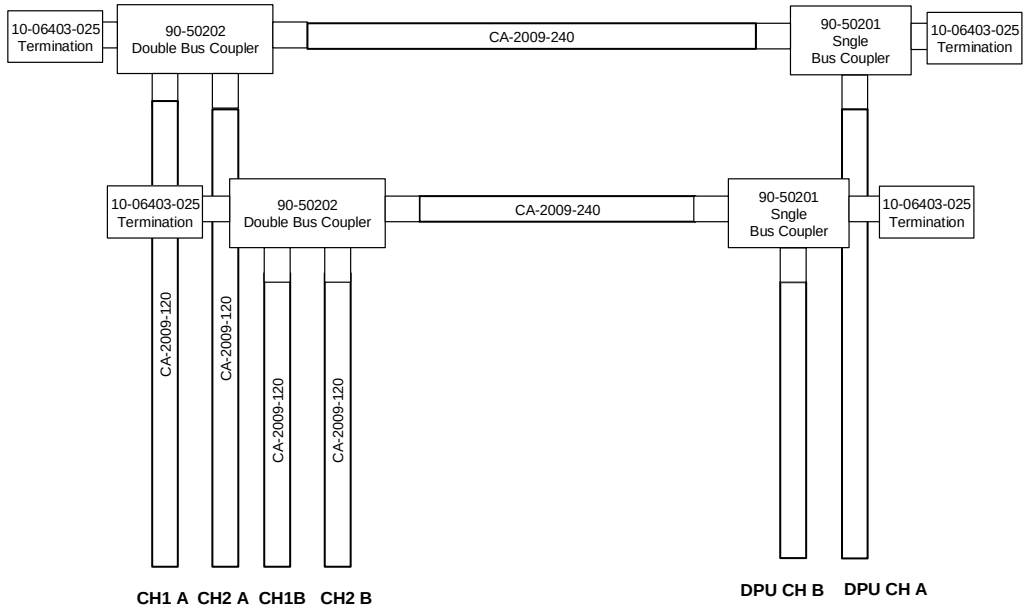

Figure 10-1: MIL-STD-1553B NETWORK

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS

MIL-STD-1553B NETWORK		
ID Cable	Qty	Name
CA-2009-120	4	Cavo MIL-STD-1553B TWINAX 78ohm
CA-2009-240	2	Cavo MIL-STD-1553B TWINAX 78ohm
	2	Cavo MIL-STD-1553B TWINAX 78ohm
90-50202	2	Double Bus Coupler
90-50201	2	Single Bus Coupler
10-06403-025	4	Termination 78 Ohm

Table 10-1: MIL-STD-1553B Network

Connectors (EGSE)	CABLE	Connectors on the Unit
CH1A (see Figure 10-1)	MIL-STD-1553B	J03 DPU CH B (see Figure 10-1)
CH2A (see Figure 10-1)	MIL-STD-1553B	
CH1B (see Figure 10-1)	MIL-STD-1553B	J04 DPU CH A (see Figure 10-1)
CH2B (see Figure 10-1)	MIL-STD-1553B	
DCU	DPU SPIRE S/S I/F CABLE	J07 main, J10 redundant
MCU	DPU SPIRE S/S I/F CABLE	J08 main, J11 redundant
SCU	DPU SPIRE S/S I/F CABLE	J09 main, J12 redundant

Table 10-2: SPIRE Simulator Test Configuration

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
A2	**CABLES CONNECTION FOR REDUNDANT SECTION TEST**			
A 2.1	Install the SPIRE DPU on the test bench		OK	
A 2.2	Inspect the test article about any type of foreign elements		OK	
A 2.3	Check if the PDU is OFF. If not, turn the PDU OFF.		OK	
A 2.4	Connect the power cable coming from the EGSE connector **POWER-CHANNEL1** to the **J02** connector on the Unit.		OK	
A 2.5	Check if the MIL-STD-1553B Network is compliant with Figure 10-1 and Table 10-1.		OK	
A 2.6	Connect the cable labeled **DPU-CHA** of the MIL-STD-1553B network with the connector **J05** on the Unit.		OK	
A 2.7	Connect the cable labeled **DPU-CHB** of the MIL-STD-1553B network with the connector **J06** on the Unit.		OK	
A 2.8	Connect the cable coming from the **DCU EGSE** connector on the SPIRE SUBSYSTEM INTERFACE panel to the **J10** connector on the Unit.		OK	
A 2.9	Connect the cable coming from the **MCU EGSE** connector on the SPIRE SUBSYSTEM INTERFACE panel to the **J11** connector on the Unit.		OK	
A 2.10	Connect the cable coming from the **SCU EGSE** connector on the SPIRE SUBSYSTEM INTERFACE panel to the **J12** connector on the Unit.		OK	

DATE: 21/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
A3	**EGSE START- UP**			
A 3.1	Turn ON the PDU on the EGSE. Turn on the Fault Current Switch and then the Circuit Breakers.		OK	
A 3.2	**SCOS2000 setup** Turn on the SCOS2000 workstation		OK	
A 3.3	Login as **sops23e** with Password **.TestControl** **NOTE:** If the password is not correct, for example for a typing error, an error message will appear. Proceed paying attention to typing the correct inputs. Remember that login names and passwords are case sensitive.	The user desktop is displayed	OK	
A 3.4	From a shell window run the following commands: **cd ~/local-bin** and press <enter>. **StartRouterSPIRE** and press <enter>.	Two windows appear: **router** and **RouterS2Kgateway** (see Figure 10-2).	OK	
A 3.5	From a shell window in **/home/sops23e** run the following command **Set_links_SPIRE_MIB** then press <enter>.		OK	
A 3.6	From a shell window run the following command: **s2.start** and press <enter>.	**S2K R2.3E - Startup & overview of scos1** window appears (see Figure 10-3).	OK	
A 3.7	Click on the **EGSEsrv** button	Several buttons are toggled (see Figure 10-3).	OK	
A 3.8	Click on the **Start button** and confirm when requested pressing the **continue** button	Esa SCOS-2000 bar appears at the top of the screen and SCOS-2000 og at the bottom of the screen(see Figure 10-2 and	OK	

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
		Figure 10-4). Wait for the selected buttons to turn green (seeFigure 10-5).		
A 3.9	Disable warning bell. Press button **Alarm tone disable**, click alarm checkbox and confirm.		OK	
A 3.10	From **esa SCOS-2000** bar, click on the **Users** button	**SCOS-2000 - Roles and Privileges** window appears	OK	
A 3.11	Login as **Matt** user, role **SUPE_001,** password **Matt** .		OK	
A 3.12	From **S2K R2.3E-Startup & overview of scos1**, select **MON1** and **MSTK2** buttons, click on **Start** button and confirm when requested.	Two windows appear: **Telemetry Desktop** and **SCOS-2000 Manual Stack 1 W/S: scos1 S/C HERSCHEL (**see Figure 10-6 and Figure 10-7**).**	OK	
A 3.13	On the telemetry desktop window, select **AND** button at bottom left of the window and choose **DPU and OBS parameters**		OK	
A 3.14	Go to the **/home/sops23e** directory		OK	
A 3.15	Run script **exif.start**		OK	
A 3.16	Select buttons **Exif_TMM**, **Exif_CHM**, **Exif_TM1**, **Exif_CH1** and **TOPE1**, then press **Start** and Confirm		OK	
A 3.17	At this point the SCOS2000 system is up and running		OK	
A 3.18	**Start the DRCU Simulator PC.**		OK	
A 3.19	Make sure that the cables DCU, MCU, SCU are well connected from SPIRE PC to the SPIRE unit.		OK	
A 3.20	After the execution of system hardware start-up, screen of the Operating System appears.		OK	

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS

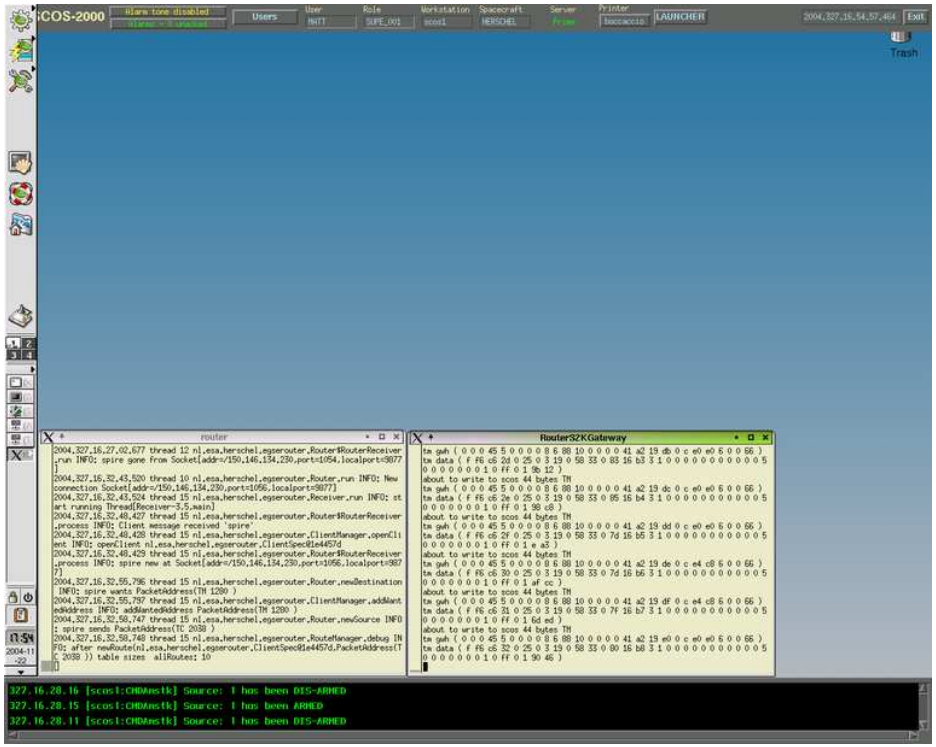

Figure 10-2 Router and RouterS2Kgateway windows.

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS

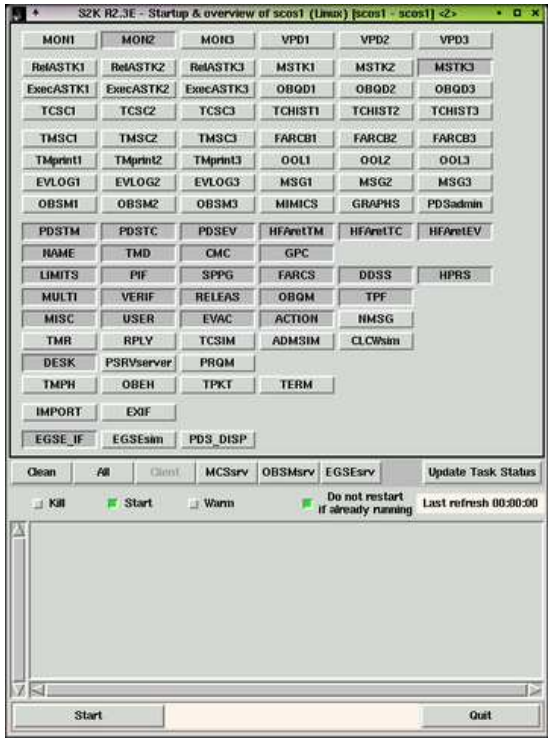

Figure 10-3 S2K R2.3E - Startup & overview of scos1 window.

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS

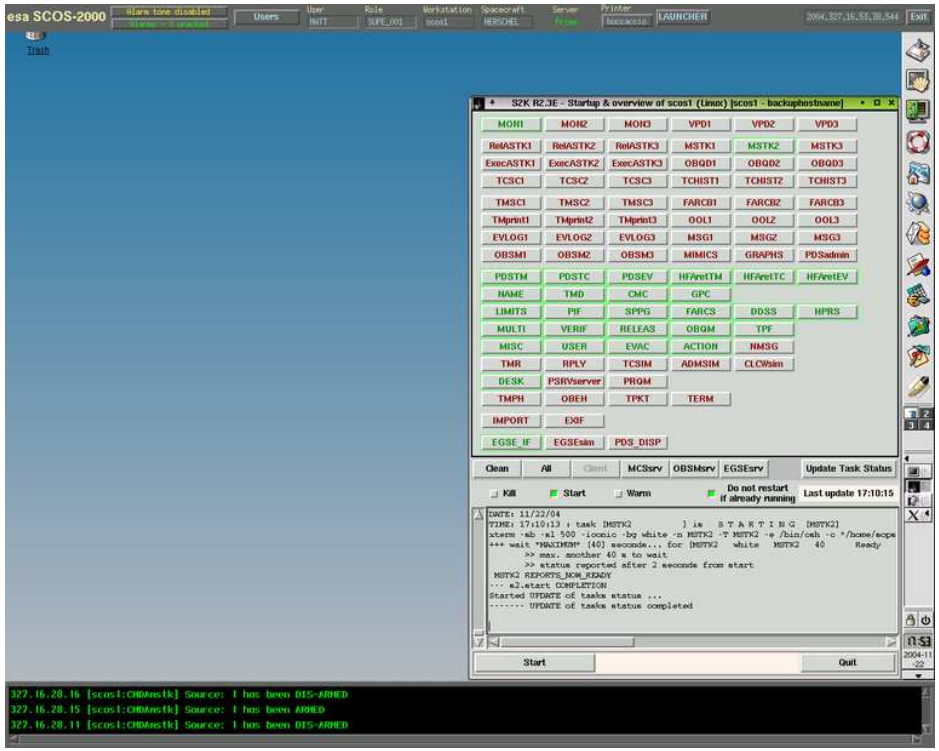

Figure 10-4 Esa SCOS-2000 bar and SCOS-2000 log messages.

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS

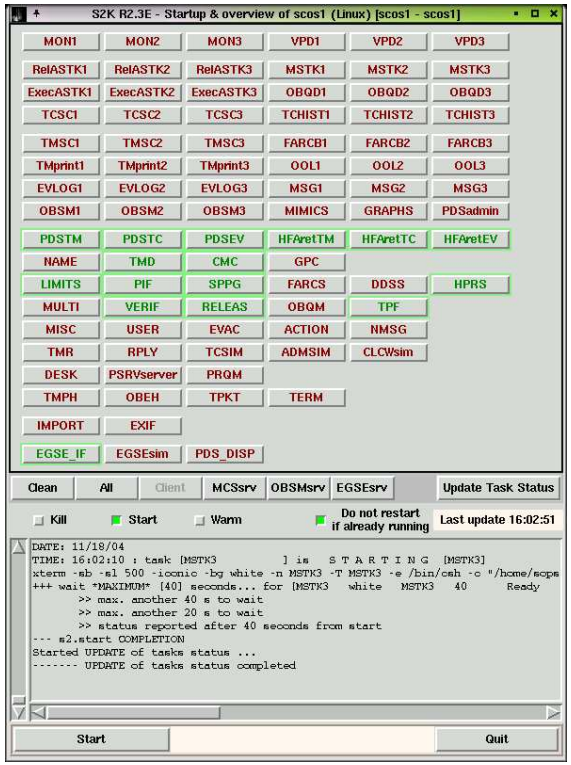

Figure 10-5 S2K R2.3E - Startup & overview of scos1 window.

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS

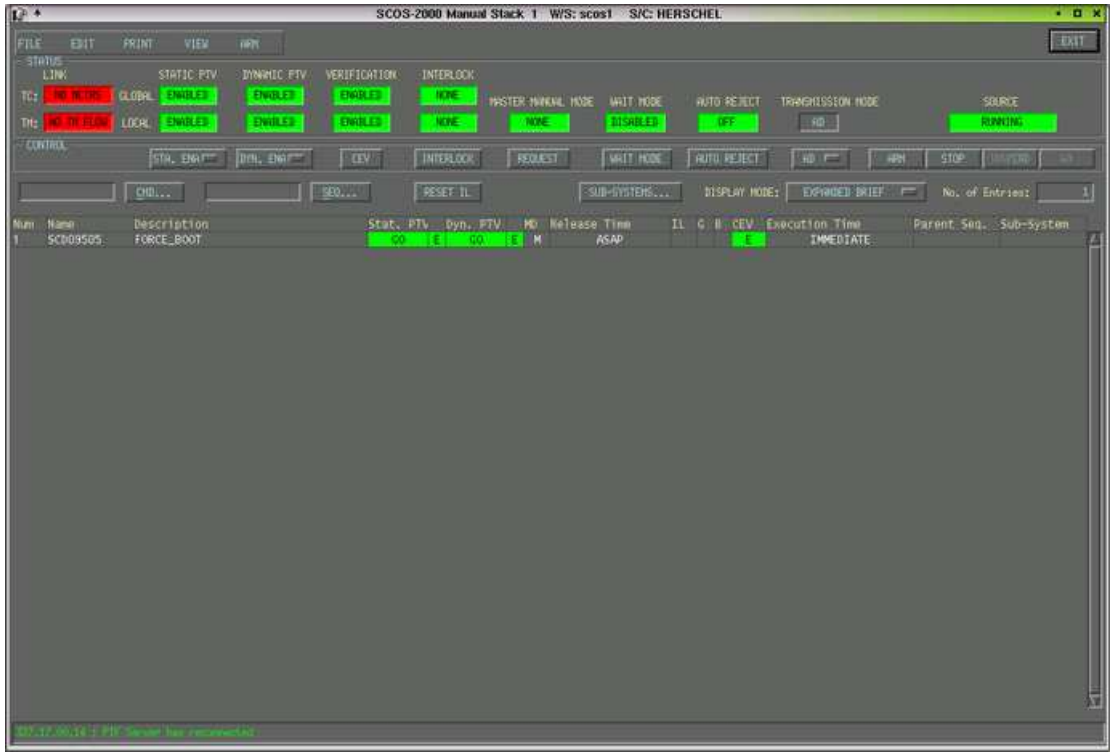

Figure 10-6 SCOS-2000 Manual Stack1 W/S: scos1 S/C HERSCHEL window.

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS

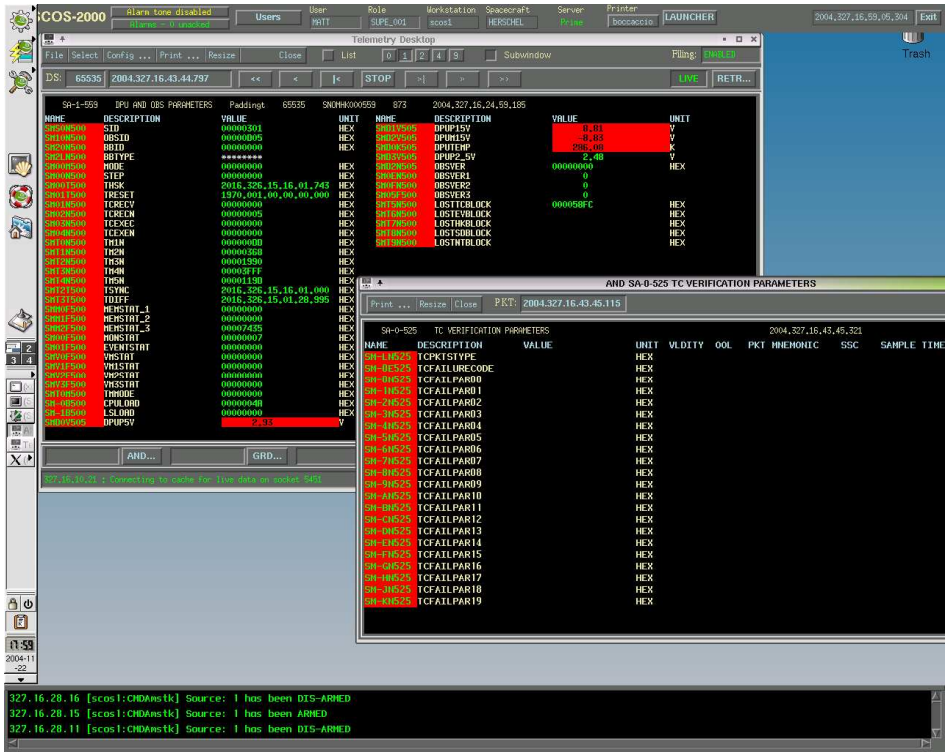

Figure 10-7 Telemetry Desktop window.

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
A 3.21	Insert the login name **sops23e** and user password **.TestControl** and click on the **OK** button. **NOTE:** If the password is not correct, for example for a typing error, an error message will appear and you will have to repeat the step 3). Proceed paying attention to typing the correct inputs.	The user desktop is displayed.	OK	
A 3.22	After successful login, click on **DRCU Simulator** shortcut on the Desktop.	The **Hermes 5.2** window appears (see Figure 10-9).	OK	
A 3.23	Select settings from the menu bar of the GUI and choose CH0		OK	
A 3.24	Click on the **LoadOldSettings** button and Load the file **Settings_for_Acc_Tests.ch0**		OK	
A 3.25	Click on the **TransferGUIchangesToDriver** button		OK	
A 3.26	Close the CH0 setting window		OK	
A 3.27	Select settings from the menu bar of the GUI and choose CH1		OK	
A 3.28	Click on the **LoadOldSettings** button and Load the file **Settings_for_Acc_Tests.ch1**		OK	
A 3.29	Click on the **TransferGUIchangesToDriver** button		OK	
A 3.30	Close the CH1 setting window		OK	
A 3.31	Select settings from the menu bar of the GUI and choose CH2		OK	
A 3.32	Click on the **LoadOldSettings** button and Load the file **Settings_for_Acc_Tests.ch2**		OK	
A 3.33	Click on the **TransferGUIchangesToDriver** button		OK	
A 3.34	Close the CH2 setting window		OK	
A 3.35	Select the loop option for channels CH0, CH1 and CH2 if not already selected		OK	

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
A 3.36	**Start the CDMS Simulator PC**		OK	
A 3.37	Make sure that the connector MIL-STD-1553B 1553B is well connected from CDMS PC to the SPIRE unit.		OK	
A 3.38	After the execution of system hardware start-up, screen of the Operating System appears.		OK	
A 3.39	Insert the login name **sops23e** and user password **.TestControl** and click on the **OK** button. **NOTE:** If the password is not correct, for example for a typing error, an error message will appear and you will have to repeat the step 3). Proceed paying attention to typing the correct inputs.	The user desktop is displayed.	OK	
A 3.40	After the execution of system hardware start-up, screen of the Operating System appears. Launch **SPIRE_Main.bat** or **SPIRE_RED.bat** files to configure the corresponding nominal or redundant RT address in the APID2RT file.		OK	
A 3.41	To start the CDMS Simulator click on **CDMS_SIM** file on desktop.		OK	
A 3.42	On the “Select Buslist” button, select the **SPIRE_Nominal** buslist to test the nominal section or **SPIRE_Redundant** buslist to test the redundant section		OK	
A 3.43	Click on Launch Router Command Interface		OK	

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
A 3.44	Click on Connect		OK	
A 3.45	Select NAME_CLIENT; write **spire** and click Send Command		OK	
A 3.46	Select ADD_CLIENT, write **500** and click Send Command		OK	
A 3.47	Click on Close Without Sending		OK	
A 3.48	On the CDMS Simulator click on icon **Select Bus** and choose the **bus A channel**		OK	
A 3.49	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
A 3.50	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
A 3.51	The CDMS is now ready		OK	
A 3.52	Launch **PacketDisplaySPIRE_Main.bat** or **PacketDisplaySPIRE_RED.bat** files to configure the corresponding nominal or redundant APIDs in the EGSEConfiguration file.		OK	
A 3.53	**Start the PacketDisplay tool** On the CDMS Simulator PC double-click the Packet Display SPIRE icon		OK	
A 3.54	When the window appears, click on the **CDMS TC** and **CDMS TM** buttons to mask packets generated by the CDMS itself and that are not needed for the present tests.	CDMS_TC and CDMS_TM become RED	OK	

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS

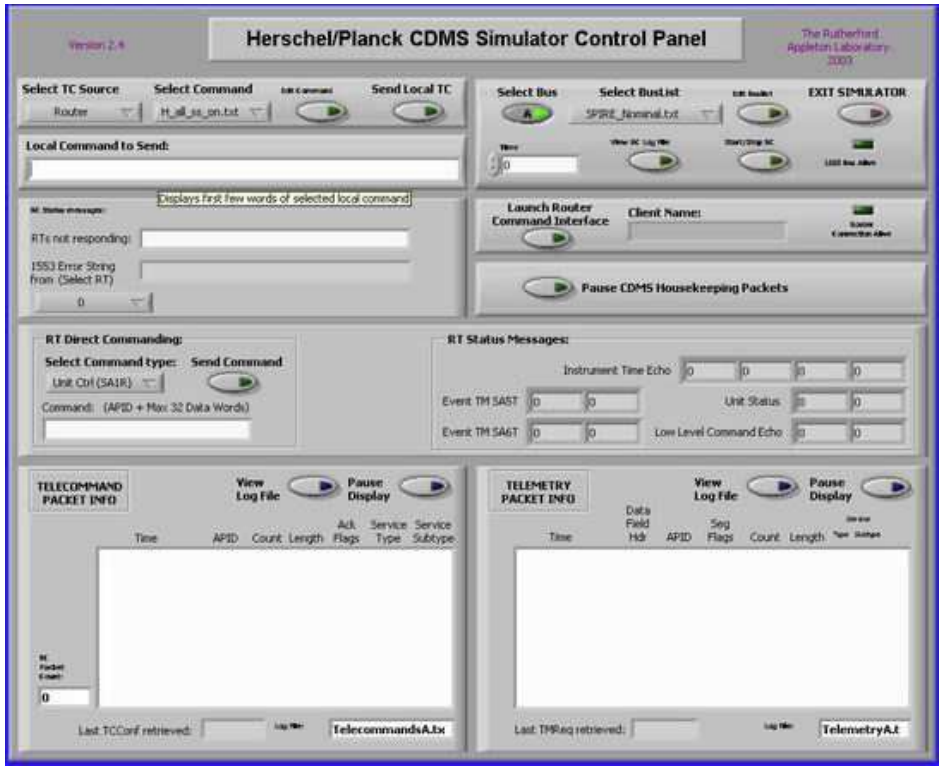

Figure 10-8 CDMS Simulator Control Panel

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS

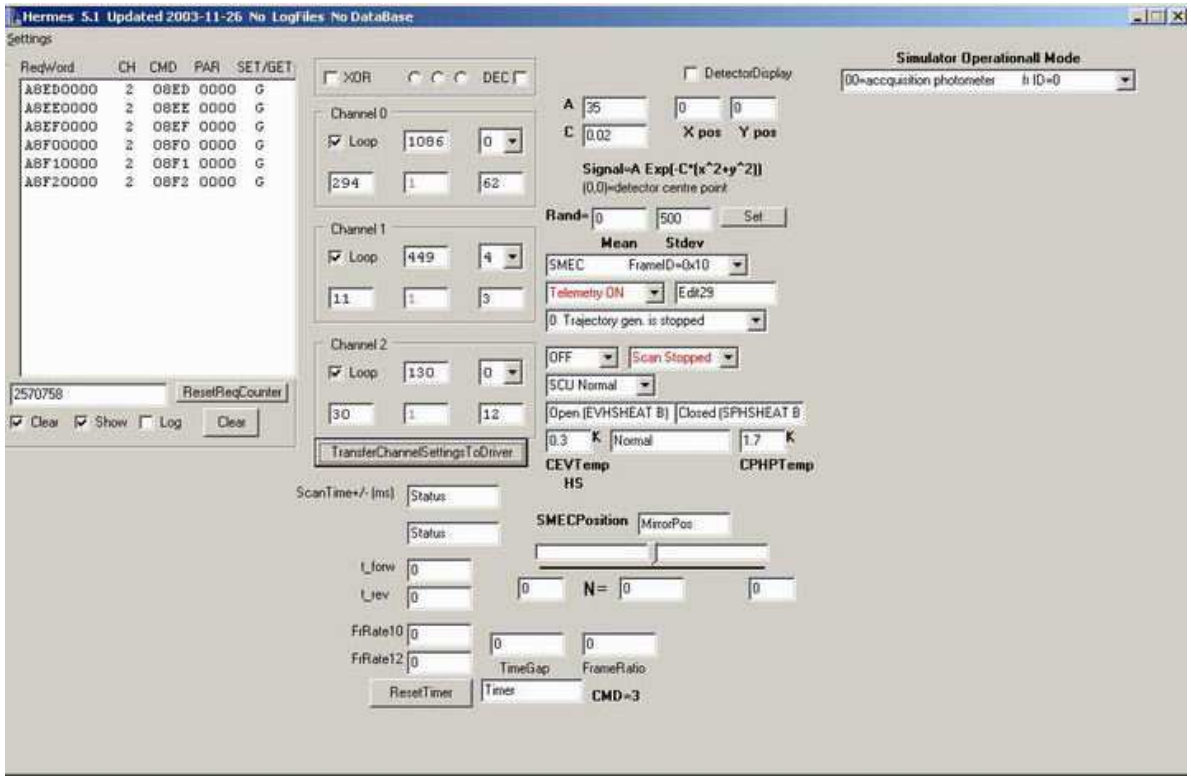

Figure 10-9 Hermes 5.2 Simulator Panel

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
A4	**SETUP FOR LONG DURATION TEST**			
A 4.1	Load on SCOS2000 Manual Stack window the stack for LongDurationTest contained in "**/home/sops23e/CMD/SPIRE/STACKS**".		OK	
A 4.2	Send TC8.4.70-3.1 (**FORCE_BOOT**) to force rebooting the DPU At this stage, about 320 HK parameter requests are sent to the DRCU simulator. Each request requires 2msec to be served.	Verify periodic (0.5/sec) reception of TM (3,25) Essential HK packets with SID 0x300.	OK	
A 4.3	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d0000 to configure DRCU to send frames in continuous mode	Verify reception of TM (1,1), (1,3) and (1,7).	Not Performed	See PVS N°1
A 4.4	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7).	Not Performed	
A 4.5	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c00000 for MCU timing.	Verify reception of TM (1,1), (1,3) and (1,7).	Not Performed	
A 4.6	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c00001 for MCU Start.	Verify reception of TM (1,1), (1,3) and (1,7).	Not Performed	
A 4.7	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0830000 for SCU timing.	Verify reception of TM (1,1), (1,3) and (1,7).	Not Performed	
A 4.8	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0840000 for SCU prepare.	Verify reception of TM (1,1), (1,3) and (1,7).	Not Performed	
A 4.9	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0820001 for SCU Start.	Verify reception of TM (1,1), (1,3) and (1,7).	Not Performed	

DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
A5	**STOP TEST**			
A 5.1	Switch-off the DPU turning off the power supply		OK	
A 5.2	To stop the CDMS Simulator click on the **EXIT SIMULATOR** button in the **Herschel/Planck CDMS Simulator Control Panel** window (see Figure 10-8).	The **Herschel/Planck CDMS Simulator v2.5** window appears (see Figure 10-10).	OK	
A 5.3	Select option **Exit** from the **File** menu in the **Herschel/Planck CDMS Simulator v2.5** window (see Figure 10-10)	The **Herschel/Planck CDMS Simulator v2.5** window disappears and the CDMS Simulator turn off.	OK	
A 5.4	To stop the SPIRE Simulator click on the **X** button in the **Hermes 5.2** window (see Figure 10-10).	The **Hermes 5.2** window disappears.	OK	
A 5.5	To stop the SCOS2000 ,from **S2K R2.3E - Startup & overview of scos1,** click on the **EGSEsrv**, **MON1** and **MSTK2** buttons.	Several buttons are toggled.	OK	
A 5.6	Select the **Kill** option, then click on the **Start** button and confirm when requested.	Wait until all the services are stopped and the corresponding windows disappear.	OK	
A 5.7	Close the **S2K R2.3E - Startup & overview of scos1.**		OK	
A 5.8	Close the **RouterS2KGateways** and **router** windows.		OK	
A 5.9	If no further test are foreseen, power off CDMS PC		OK	
A 5.10	If no further test are foreseen, power off DRCU PC		OK	
A 5.11	If no further test are foreseen, logout and turn off SCOS2000 workstation		OK	
A 5.12	If no further test are foreseen, turn OFF the PDU on the EGSE.		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS

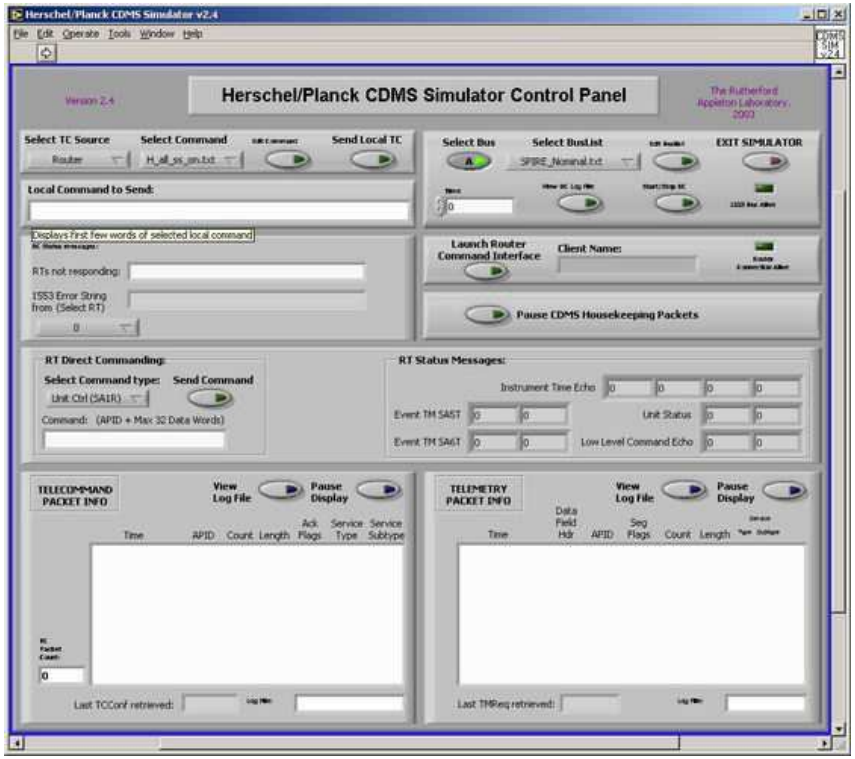

Figure 10-10 Stopping CDMS Simulator Control Panel

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
OPEN BOX TESTS				
O OPEN UNIT BOOT SOFTWARE TESTS OF MAIN AND REDUNDANT SECTION				
O1 BOOT SW PROGRAM MEMORY TEST FAIL ON MAIN SECTION The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when one or more Program Memory cells are corrupted. This test require open box unit and ADSP21020 Emulator				Test already executed (see **HERSCHEL SPIRE DPU PFM OPEN BOX TEST BEFORE CLOSURE REPORT HERS-SPIRE-RP-CGS-012 Issue 1)**
O1.1	Open the unit box and attach the ADSP21020 POD to the JTAG of the main section of the CPU board			
O1.2	Execute the procedure A3.2 to A3.4 for the start up of the router if needed			
O1.3	Execute the procedure A3.36 to A3.50 for the start up of the CDMS-Simulator Control Panel if needed.			
O1.4	In the **Execution** menu of the **ADSP21020 Emulator** choose the option **Chip Reset.**			
O1.5	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
O1.6	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Plack CDMS Simulator Control Panel** blinks		

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
O1.7	In the **Memory** menu of the **ADSP21020 Emulator** choose the option **Program.**	The Program Memory window opens		
O1.8	Set a breakpoint at **PM Address 0x0C90**			
O1.9	Press **F4** to run the program and wait until it stop at the breakpoint.	A message window appears with the following message: **Software breakpoint at PM Address 0x0C90**		
O1.10	Goto **PM Address 0x2400** and set **0xFFFFFFFF** data.			
O1.11	Unset the breakpoint at **PM Address 0x0C90** and press **F4** on the keyboard.	An event **TM(5,4)** should be received by CDMS. and visualized in the **TELECOMMAND PACKET INFO** text area. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 2** Verify that the variable part of the TM packet is equal to the one reported in **Table 6-2 Msg 1**		

DATE:	TEST CONDUCTOR:	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
O2	**BOOT SW DATA MEMORY TEST FAIL ON MAIN SECTION** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when one or more Program Memory cells are corrupted. This test require open box unit and ADSP21020 Emulator.			Test already executed (see **HERSCHEL SPIRE DPU PFM OPEN BOX TEST BEFORE CLOSURE REPORT HERS-SPIRE-RP-CGS-012 Issue 1)**
O2.1	Open the unit box and attach the ADSP21020 POD to the JTAG on the main section of the CPU board			
O2.2	Execute the procedure A3.2 to A3.4 for the start up of the router if needed			
O2.3	Execute the procedure A3.36 to A3.50 for the start up of the CDMS-Simulator Control Panel if needed.			
O2.4	In the **Execution** menu of the **ADSP21020 Emulator** choose the option **Chip Reset.**			
O2.5	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
O2.6	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Plack CDMS Simulator Control Panel** blinks		
O2.7	In the **Memory** menu of the **ADSP21020 Emulator** choose the option **Program.**	The Program Memory window opens		

DATE:	TEST CONDUCTOR:	QA:	CUSTOMER

UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
O2.8	Set a breakpoint at **PM Address 0x098C**			
O2.9	Press **F4** to run the program and wait until it stop at the breakpoint.	A message window appears with the following message: **Software breakpoint at PM Address 0x098C**		
O2.10	In the **Memory** menu of the **ADSP21020 Emulator** choose the option **Data.**	The Data Memory window opens		
O2.11	Goto the **DM Address 0x15ED** and set **0xFFFFFFFF00** data.			
O2.12	Unset the breakpoint at **PM Address 0x098C** and press **F4** on the keyboard.	An event **TM(5,4)** should be received by CDMS. and visualized in the **TELECOMMAND PACKET INFO** text area. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 3** Verify that the variable part of the TM packet is equal to the one reported in **Table 6-2 Msg 2**		

DATE:	TEST CONDUCTOR:	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
O3	**BOOT SW PROGRAM MEMORY TEST FAIL ON REDUNDANT SECTION** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when one or more Program Memory cells are corrupted. This test require open box unit and ADSP21020 Emulator			Test already executed (see **HERSCHEL SPIRE DPU PFM OPEN BOX TEST BEFORE CLOSURE REPORT HERS-SPIRE-RP-CGS-012 Issue 1)**
O3.1	Open the unit box and attach the ADSP21020 POD to the JTAG on the redundant section of the CPU board.			
O3.2	Execute the procedure A3.2 to A3.4 for the start up of the router if needed			
O3.3	Execute the procedure A3.36 to A3.50 for the start up of the CDMS-Simulator Control Panel if needed.			
O3.4	In the **Execution** menu of the **ADSP21020 Emulator** choose the option **Chip Reset.**			
O3.5	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
O3.6	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Plack CDMS Simulator Control Panel** blinks		
O3.7	In the **Memory** menu of the **ADSP21020 Emulator** choose the option **Program.**	The Program Memory window opens		

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
O3.8	Set a breakpoint at **PM Address 0x0C90**			
O3.9	Press **F4** to run the program and wait until it stop at the breakpoint.	A message window appears with the following message: **Software breakpoint at address PM Address 0x0C90**		
O3.10	Goto the **PM Address 0x2400** and set **0xFFFFFFFF** data.			
O3.11	Unset the breakpoint at **PM Address 0x0C90** and press **F4** on the keyboard.	An event **TM(5,4)** should be received by CDMS. and visualized in the **TELECOMMAND PACKET INFO** text area. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 2** Verify that the variable part of the TM packet is equal to the one reported in **Table 6-2 Msg 1**		

DATE:	TEST CONDUCTOR:	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
O4	**BOOT SW DATA MEMORY TEST FAIL ON MAIN SECTION** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when one or more Program Memory cells are corrupted. This test require open box unit and ADSP21020 Emulator.			Test already executed (see **HERSCHEL SPIRE DPU PFM OPEN BOX TEST BEFORE CLOSURE REPORT HERS-SPIRE-RP-CGS-012 Issue 1)**
O4.1	Open the unit box and attach the ADSP21020 POD to the JTAG on the redundant section of the CPU board.			
O4.2	Execute the procedure A3.2 to A3.4 for the start up of the router if needed			
O4.3	Execute the procedure A3.36 to A3.50 for the start up of the CDMS-Simulator Control Panel if needed.			
O4.4	In the **Execution** menu of the **ADSP21020 Emulator** choose the option **Chip Reset.**			
O4.5	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
O4.6	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Plack CDMS Simulator Control Panel** blinks		
O4.7	In the **Memory** menu of the **ADSP21020 Emulator** choose the option **Program.**	The Program Memory window opens		

DATE:	TEST CONDUCTOR:	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
O4.8	Set a breakpoint at **PM Address 0x098C**			
O4.9	Press **F4** to run the program and wait until it stop at the breakpoint.	A message window appears with the following message: **Software breakpoint at PM Address 0x098C**		
O4.10	In the **Memory** menu of the **ADSP21020 Emulator** choose the option **Data.**	The Data Memory window opens		
O4.11	Goto the **DM Address 0x15ED** and set **0xFFFFFFFF00** data.			
O4.12	Unset the breakpoint at **PM Address 0x098C** and press **F4** on the keyboard.	An event **TM(5,4)** should be received by CDMS. and visualized in the **TELECOMMAND PACKET INFO** text area. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 3** Verify that the variable part of the TM packet is equal to the one reported in **Table 6-2 Msg 2**		

DATE:	TEST CONDUCTOR:	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
CLOSED BOX TESTS				
B PRIMARY INPUTS ELECTRICAL ISOLATION, CONNECTORS SHELL & GROUND PINS BONDING AND SURVIVAL TEST				
B1 ISOLATION BETWEEN PRIMARY POWER LINES TEST				
B 1.1	Disconnect the Unit from the EGSE if connected.		OK	
B 1.2	Measure the resistance between **pin 2** and **pin 7** of the connector **J01**	< 100 mΩ	10.60 mΩ	
B 1.3	Measure the resistance between **pin 4** and **pin 9** of the connector **J01**	< 100 mΩ	11.01 mΩ	
B 1.4	Measure the resistance between **pin 2** and **pin 7** of the connector **J02**	< 100 mΩ	9.86 mΩ	
B 1.5	Measure the resistance between **pin 4** and **pin 9** of the connector **J02**	< 100 mΩ	10.30 mΩ	
B 1.6	Measure the resistance between **pin 2** of the connector **J01** and **pin 2** of the connector **J02**	>1 M Ω	~ 3 MΩ	
B 1.7	Measure the resistance between **pin 4** of the connector **J01** and **pin 4** of the connector **J02**	>1 M Ω	~ 3 MΩ	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
B2	**PRIMARY POWER INPUT ISOLATION TEST**			
B 2.1	Disconnect the Unit from the EGSE if connected and prepare the test setup as shown in Figure 10-11		OK	
B 2.2	**ISOLATION BETWEEN PRIMARY POWER LINES AND THE STRUCTURE OF THE HOSTING SPACECRAFT** Apply 50V through a power supply with a series resistance of at least 1 M Ω between the **pin 2** of **J01** and the chassis and then calculate by the reading of input current the resistance between the **pin 2** of **J01** and the chassis (paying attention to subtract from the total resistance measured the part due to the series resistance added to the power supply)	>1 M Ω	> 5 MΩ	The instrument cannot measure resistance higher than 5 MΩ
B 2.3	Measure the capacitance between the **pin 2** of **J01** and the chassis	< 50 nF	39.3 nF	
B 2.4	Apply 50V through a power supply with a series resistance of at least 1 M Ω between the **pin 4** of **J01** and the chassis and then calculate by the reading of input current the resistance between the **pin 4** of **J01** and the chassis chassis (paying attention to subtract from the total resistance measured the part due to the series resistance added to the power supply)	>1 M Ω	> 5 MΩ	The instrument cannot measure resistance higher than 5 MΩ
B 2.5	Measure the capacitance between the **pin 4** of **J01** and the chassis	< 50 nF	39.4 nF	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
B 2.6	Apply 50V through a power supply with a series resistance of at least 1 M Ω between the **pin 2** of **J02** and the chassis and then calculate by the reading of input current the resistance between the **pin 2** of **J02** and the chassis chassis (paying attention to subtract from the total resistance measured the part due to the series resistance added to the power supply)	>1 M Ω	> 5 MΩ	The instrument cannot measure resistance higher than 5 MΩ
B 2.7	Measure the capacitance between the **pin 2** of **J02** and the chassis	< 50 nF	39.2 nF	
B 2.8	Apply 50V through a power supply with a series resistance of at least 1 M Ω between the pin 4 of J02 and the chassis and then calculate by the reading of input current the resistance between the pin 4 of J02 and the chassis chassis (paying attention to subtract from the total resistance measured the part due to the series resistance added to the power supply)	>1 M Ω	> 5 MΩ	The instrument cannot measure resistance higher than 5 MΩ
B 2.9	Measure the capacitance between the pin 4 of J02 and the chassis.	< 50 nF	39.3 nF	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
B3	**DC RESISTANCE BETWEEN CONNECTORS SHELL & GROUND PINS AND EQUIPMENT CHASSIS**			
B 3.1	~~Measure the DC resistance between **pin 1** of **J07** and the chassis.~~	< 2.5 mΩ (per joint)	Not Performed	This measurement has been performed during open box test. See HERS-SPIRE-RP-012 Is. 1
B 3.2	Measure the DC resistance between **pin 5** of **J07** and the chassis.	< 2.5 mΩ (per joint)	14.47 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.3	Measure the DC resistance between **pin 9** of **J07** and the chassis.	< 2.5 mΩ (per joint)	14.44 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.4	Measure the DC resistance between **pin 12** of **J07** and the chassis.	< 2.5 mΩ (per joint)	14.84 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.5	~~Measure the DC resistance between **pin 14** of **J07** and the chassis.~~	< 2.5 mΩ (per joint)	Not Performed	This measurement has been performed during open box test. See HERS-SPIRE-RP-012 Is. 1
B 3.6	Measure the DC resistance between **pin 23** of **J07** and the chassis.	< 2.5 mΩ (per joint)	15.2 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.7	Measure the DC resistance between connector back-shell of **J07** and the chassis.	< 2.5 mΩ (per joint)	0.56 mΩ	
B 3.8	~~Measure the DC resistance between **pin 1** of **J08** and the chassis.~~	< 2.5 mΩ (per joint)	Not Performed	This measurement has been performed during open box test. See HERS-SPIRE-RP-012 Is. 1
B 3.9	Measure the DC resistance between **pin 5** of **J08** and the chassis.	< 2.5 mΩ (per joint)	14.17 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.10	Measure the DC resistance between **pin 9** of **J08** and the chassis.	< 2.5 mΩ (per joint)	14.14 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.11	Measure the DC resistance between **pin 12** of **J08** and the chassis.	< 2.5 mΩ (per joint)	11.51 mΩ	Expected value: < 20 mΩ (8 joints)

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
B 3.12	~~Measure the DC resistance between **pin 14** of **J08** and the chassis.~~	< 2.5 mΩ (per joint)	Not Performed	This measurement has been performed during open box test. See HERS-SPIRE-RP-012 Is. 1
B 3.13	Measure the DC resistance between **pin 23** of **J08** and the chassis.	< 2.5 mΩ (per joint)	11.58 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.14	Measure the DC resistance between connector back-shell of **J08** and the chassis.	< 2.5 mΩ (per joint)	0.57 mΩ	
B 3.15	~~Measure the DC resistance between **pin 1** of **J09** and the chassis.~~	< 2.5 mΩ (per joint)	Not Performed	This measurement has been performed during open box test. See HERS-SPIRE-RP-012 Is. 1
B 3.16	Measure the DC resistance between **pin 5** of **J09** and the chassis.	< 2.5 mΩ (per joint)	15.78 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.17	Measure the DC resistance between **pin 9** of **J09** and the chassis.	< 2.5 mΩ (per joint)	15.77 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.18	Measure the DC resistance between **pin 12** of **J09** and the chassis.	< 2.5 mΩ (per joint)	14.68 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.19	~~Measure the DC resistance between **pin 14** of **J09** and the chassis.~~	< 2.5 mΩ (per joint)	Not Performed	This measurement has been performed during open box test. See HERS-SPIRE-RP-012 Is. 1
B 3.20	Measure the DC resistance between **pin 23** of **J09** and the chassis.	< 2.5 mΩ (per joint)	14.80 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.21	Measure the DC resistance between connector back-shell of **J09** and the chassis.	< 2.5 mΩ (per joint)	0.52 mΩ	
B 3.22	~~Measure the DC resistance between **pin 1** of **J10** and the chassis.~~	< 2.5 mΩ (per joint)	Not Performed	This measurement has been performed during open box test. See HERS-SPIRE-RP-012 Is. 1
B 3.23	Measure the DC resistance between **pin 5** of **J10** and the chassis.	< 2.5 mΩ (per joint)	14.99 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.24	Measure the DC resistance between **pin 9** of **J10** and the chassis.	< 2.5 mΩ (per joint)	14.45 mΩ	Expected value: < 20 mΩ (8 joints)

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
B 3.25	Measure the DC resistance between **pin 12** of **J10** and the chassis.	< 2.5 mΩ (per joint)	15.35 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.26	~~Measure the DC resistance between **pin 14** of **J10** and the chassis.~~	< 2.5 mΩ (per joint)	Not Performed	This measurement has been performed during open box test. See HERS-SPIRE-RP-012 Is. 1
B 3.27	Measure the DC resistance between **pin 23** of **J10** and the chassis.	< 2.5 mΩ (per joint)	15.32 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.28	Measure the DC resistance between connector back-shell of **J10** and the chassis.	< 2.5 mΩ (per joint)	0.36 mΩ	
B 3.29	~~Measure the DC resistance between **pin 1** of **J11** and the chassis.~~	< 2.5 mΩ (per joint)	Not Performed	This measurement has been performed during open box test. See HERS-SPIRE-RP-012 Is. 1
B 3.30	Measure the DC resistance between **pin 5** of **J11** and the chassis.	< 2.5 mΩ (per joint)	17.32 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.31	Measure the DC resistance between **pin 9** of **J11** and the chassis.	< 2.5 mΩ (per joint)	17.36 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.32	Measure the DC resistance between **pin 12** of **J11** and the chassis.	< 2.5 mΩ (per joint)	17.49 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.33	~~Measure the DC resistance between **pin 14** of **J11** and the chassis.~~	< 2.5 mΩ (per joint)	Not Performed	This measurement has been performed during open box test. See HERS-SPIRE-RP-012 Is. 1
B 3.34	Measure the DC resistance between **pin 23** of **J11** and the chassis.	< 2.5 mΩ (per joint)	17.61 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.35	Measure the DC resistance between connector back-shell of **J11** and the chassis.	< 2.5 mΩ (per joint)	0.43 mΩ	
B 3.36	~~Measure the DC resistance between **pin 1** of **J12** and the chassis.~~	< 2.5 mΩ (per joint)	Not Performed	This measurement has been performed during open box test. See HERS-SPIRE-RP-012 Is. 1
B 3.37	Measure the DC resistance between **pin 5** of **J12** and the chassis.	< 2.5 mΩ (per joint)	18.82 mΩ	Expected value: < 20 mΩ (8 joints)

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
B 3.38	Measure the DC resistance between **pin 9** of **J12** and the chassis.	< 2.5 mΩ (per joint)	18.80 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.39	Measure the DC resistance between **pin 12** of **J12** and the chassis.	< 2.5 mΩ (per joint)	18.82 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.40	~~Measure the DC resistance between **pin 14** of **J12** and the chassis.~~	< 2.5 mΩ (per joint)	Not Performed	This measurement has been performed during open box test. See HERS-SPIRE-RP-012 Is. 1
B 3.41	Measure the DC resistance between **pin 23** of **J12** and the chassis.	< 2.5 mΩ (per joint)	18.91 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.42	Measure the DC resistance between connector back-shell of **J12** and the chassis.	< 2.5 mΩ (per joint)	0.37 mΩ	

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS

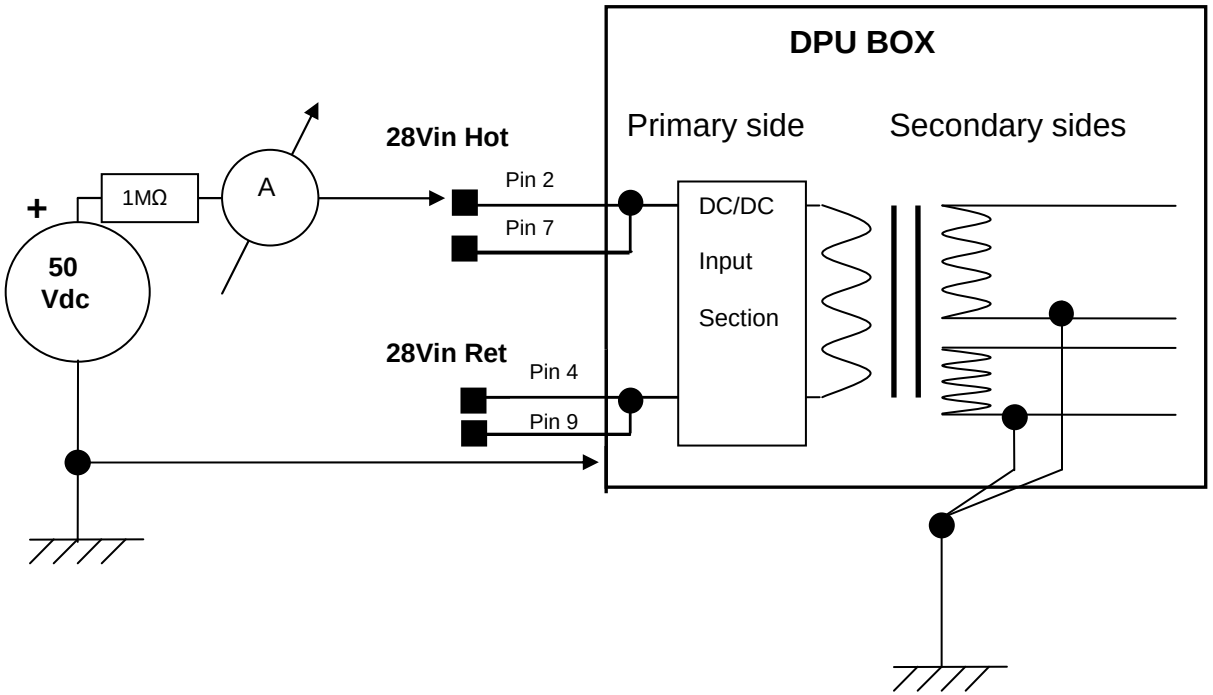

Figure 10-11: Grounding test measure setup (the I/F represented is equally duplicated in main and redundant sections)

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
B4	**SURVIVAL TEST**			
B 4.1	Execute the procedure A1 for the **main** section test		OK	
B 4.2	Execute the procedure A3 for the start up of the EGSE if needed.		OK	
B 4.3	Disconnect the Unit power cable.		OK	
B 4.4	Turn on the power supply.		OK	
B 4.5	Set the power supply output at 29V and 1.5A.		OK	
B 4.6	Measure the output of the power supply with a voltmeter Vin	29 ± 0.1 V	29.1 V	
B 4.7	Turn off the power supply.		OK	
B 4.8	Connect the power cable to the unit.		OK	
B 4.9	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **TELEMETRY PACKET INFO** text area. Click on **View Log File** and verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
B 4.10	Set the power supply output at 32V and 3A.		OK	
B 4.11	Check the power supply current on the power supply current indicator Iin	<1A	407 mA	
B 4.12	Turn off the power supply.		OK	
B 4.13	Set the power supply output at 22V and 1.5A.		OK	
B 4.14	Measure the output of the power supply with a voltmeter Vin	22 ± 0.1 V	22 V	
B 4.15	Turn off the power supply.		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
B 4.16	Connect the power cable to the unit.		OK	
B 4.17	Turn on the power supply.		OK	
B 4.18	Check the power supply current on the power supply current indicator Iin	<0.1A	45 mA	
B 4.19	Turn off the power supply.		OK	
B 4.20	Execute the procedure A2 for the **redundant** section test		OK	
B 4.21	Execute the procedure A3 for the start up of the EGSE if needed.		OK	
B 4.22	Disconnect the Unit power cable.		OK	
B 4.23	Turn on the power supply.		OK	
B 4.24	Set the power supply output at 29V and 1.5A.		OK	
B 4.25	Measure the output of the power supply with a voltmeter Vin	29 ± 0.1 V	29 V	
B 4.26	Turn off the power supply.		OK	
B 4.27	Connect the power cable to the unit.		OK	
B 4.28	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **TELEMETRY PACKET INFO** text area. Click on **View Log File** and verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
B 4.29	Set the power supply output at 32V and 3A.		OK	
B 4.30	Check the power supply current on the power supply current indicator Iin	<1A	393 mA	
B 4.31	Turn off the power supply.		OK	
B 4.32	Set the power supply output at 22V and 1.5A.		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
B 4.33	Measure the output of the power supply with a voltmeter Vin	22 ± 0.1 V	OK	
B 4.34	Turn off the power supply.		OK	
B 4.35	Connect the power cable to the unit.		OK	
B 4.36	Turn on the power supply.		OK	
B 4.37	Check the power supply current on the power supply current indicator Iin	<0.1A	44 mA	
B 4.38	Turn off the power supply.		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C	**FUNCTIONAL TEST OF MAIN SECTION WITH 28V POWER SUPPLY AND MIL-STD-1553B CHANNEL A**			
C1	**STAND-BY POWER CONSUMPTION, APID, RT AND SOFTWARE VERSION IDENTIFICATION AND WRITING OF EEPROM**			
C1.1	Execute the procedure A1 for the main section test		OK	
C1.2	Execute the procedure A3 for the start up of the EGSE		OK	
C1.3	Disconnect the Unit power cable.		OK	
C1.4	Set the power supply output at 28V and 1.5A.		OK	
C1.5	Measure the output of the power supply with a voltmeter Vin	28 ± 0.1 V	28 V	
C1.6	Turn off the power supply.		OK	
C1.7	Connect the power cable to the unit.		OK	
C1.8	Click on the icon of the script perl **TImSPIRE.pl** in folder “TC&TM Log Files” (in CDMS PC) to start the recording of the telemetry data		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C1.9	Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
C1.10	Check the power supply current on the power supply current indicator Iin	<1A	~ 455 mA	
C1.11	Check the average power consumption of DPU during a period of 5 minutes: Pin = Vin x Iin	<15.3W	~ 12.74 W	
C1.12	At SCOS2000 prompt /home/sops23, select the directory **cd OBS/SPIRE/Tcset_PFMversion** and writes the following command: **SDOLnew –interval 250 DmPageTc0*.dm**		OK	
C1.13	Verify that the TM(5,1) packets are received for each telecommand		OK	
C1.14	At the end of the uploading from CDMS simulator select “**Local Command**” and “S_Load_Boot” command		OK	
C1.15	Verify that TM(5,1) is received		OK	
C1.16	Verify that OBS runs and TM(3,25) packet are received	Check TMs in the CDMS: the APID must be as indicated in the Par. 6.3.2	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C1.17	Verify on Telemetry Desktop window **DPU and OBS parameters** that the OBS version installed DP_SW_VERS_ID is the correct one	Check the PFM software version indicated in the Par. 6.3.2	1.2.p OK	
C1.18	Select “Router” on CDMS Simulator		OK	
C1.19	~~Send TC8.4.CA-7.1 (**WRITE2EEPROM**) to write into the EEPROM a copy of the OBS currently running on the PM~~ ~~· Start Address = 0x4000~~ ~~· End Address= 0x2E000~~		Not Performed	See PVS N°2
C1.20	~~On SCOS2000 select “ARM” and “GO”~~		Not Performed	See PVS N°2
C1.21	~~The following TM packets are received TM(1,1), TM(1,3) and after about 30 seconds TM(1,7)~~		Not Performed	See PVS N°2
C1.22	~~Turn off the Power Supply~~		Not Performed	See PVS N°3

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C2	**BOOT-SW LOAD AND BOOT TEST** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to load and boot OBS.			
C2.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C2.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C2.3	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	See PVS N°4
C2.4	Execute the procedure to upload the OBS PFM version via the EGSE Router: use the OBSLoader script on the SCOS2000 platform, commanding a TC sending rate of 4 TCs per second, which is the rate supported by the SPIRE nominal buslist: on a	During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in the **PacketDisplay** tool.	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	terminal window of the computer hosting SCOS 2000, type the following commands: > **cd** > **cd /DPU_SPIRE_TC** **>../local-bin/ObswLoader -apid 1280 –dpu –interval 250 DmPageTc0*.dm**	Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 1.** Verify that the fixed part of the last TM is equal to the one reported in **Table 6-3 Msg 2.** Verify that the packet header of TC (6,2) is compliant to AD19		
C2.5	Wait until all the TC are uploaded (prompt > appears again in the window). About 6 minutes are needed to complete the operation	On the TM log window of the CDMS or on **PacketDisplay** tool, verify that no TM(5,4) are received until the last TC is sent.	OK	
C2.6	When the up-loading of TCs in the **TELECOMMAND PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** is finished, select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C2.7	Select **S_Load_boot.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**	The local command selected appears in the **Local Command to send** text field Verify that the ´packet header´ and ´Packet data´ fields of TC (8,4) is compliant to AD19	OK	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C2.8	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 3**. Then the **OBS** start to send telemetry.	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C3	**BOOT-SW FORCE BOOT DEFAULT OPTION** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to choose an EEPROM partition and boot OBS.			
C3.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C3.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C3.3	On scos 2000 select command "**DPU_Jump_Boot**". At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
C3.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C3.5	Select **S_Force_Boot.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**	Verify that the ´packet header´ and ´Packet data´ fields of TC (8,4) is compliant to AD19	OK	
C3.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 4**. Then the **OBS** start to send telemetry.	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C4	**BOOT-SW FORCE BOOT PRIMARY PARTITION** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to boot OBS from Primary EEPROM partition.			
C4.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C4.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C4.3	On scos 2000 select command "**DPU_Jump_Boot**". At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
C4.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C4.5	Select **S_Force_Boot_Pri.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**	Verify that the ´packet header´ and ´Packet data´ fields of TC (8,4) is compliant to AD19	OK	
C4.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 4**. Then the **OBS** start to send telemetry. Check TMs in the CDMS: the APID must be as indicated in the Par. 6.3.2	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C5	**BOOT-SW FORCE BOOT SECONDARY PARTITION** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to boot OBS from Secondary EEPROM partition.			
C5.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C5.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C5.3	On scos 2000 select command "**DPU_Jump_Boot**". At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
C5.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C5.5	Select **S_Force_Boot_Sec.txt** command from the **Select**	Verify that the ´packet header´ and ´Packet	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Command menu in the **Herschel/Planck CDMS Simulator Control Panel.**	data´ fields of TC (8,4) is compliant to AD19		
C5.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 4**. Then the **OBS** start to send telemetry. Check TMs in the CDMS: the APID must be as indicated in the Par. 6.3.2	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C6	**BOOT-SW TELECOMMAND FCS ERROR** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand with wrong FCS has been received .			
C6.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C6.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C6.3	On scos 2000 select command "**DPU_Jump_Boot**". At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
C6.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C6.5	Select **S_FCS_Error_Test.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C6.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 5** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 1** Verify that all fields of Packet Header inside TM (5,4) are compliant to AD19 Verify that all ¨Packet data´ fields inside TM (5,4) are compliant to AD19	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C7	**BOOT-SW APID COMMAND ERROR** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand with wrong APID has been received.			
C7.1	Stop and switch off CDMS executing steps A5.2 and A5.3 ~~and turn off the power supply.~~		OK	See PVS N°5
C7.2	Go to the directory **<CDMS Install Directory>\Other Files** and replace the file **APID2RT.txt** with: **APID2RT_for_SPIRE_Test.txt**		OK	
C7.3	Start CDMS executing steps from A3.41 to A3.48.		OK	
C7.4	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C7.5	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the the **Herschel/Planck CDMS Simulator Control Panel.** blinks	OK	
C7.6	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the~~	Not Performed	See PVS N°6

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	~~detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~TM packet is equal to the one reported in **Table 6-1 Msg 1**~~		
C7.7	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C7.8	Select **S_Force_Boot_APID_error.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C7.9	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 6** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 2**	OK	
C7.10	Stop and switch off CDMS executing steps A5.2 and A5.3.		OK	
C7.11	Go to the directory **<CDMS Install Directory>\Other Files** and replace the file **APID2RT.txt** with: **APID2RT_Orig.txt**		OK	
C7.12	Start CDMS executing steps from A3.41 to A3.48 ~~and turn off the power supply.~~		OK	See PVS N°7

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C8	**BOOT-SW TELECOMMAND WRONG FUNCTION ID** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand with wrong Function ID has been received.			
C8.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C8.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C8.3	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**~~	Not Performed	See PVS N°6
C8.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C8.5	Select **S_Function_ID_Error_Test.txt** command from the		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select Command menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
C8.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 7** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 3**	OK	
C8.7	~~Turn off the power supply.~~		Not Performed	See PVS N°8

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C9	**BOOT-SW TELECOMMAND WRONG ACTIVITY ID** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand with wrong Activity ID has been received.			
C9.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C9.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C9.3	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**~~	Not Performed	See PVS N°6
C9.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C9.5	Select **S_Activity_ID_Error_Test.txt** command from the **Select**		OK	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Command menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
C9.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **TELEMETRY PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 8** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 4**	OK	
C9.7	~~Turn off the power supply~~		Not Performed	See PVS N°8

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C10	**BOOT-SW TELECOMMAND PACKET TYPE ERROR** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand with wrong Packet Type has been received.			
C10.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C10.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C10.3	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**~~	Not Performed	See PVS N°6
C10.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C10.5	Select **S_Packet_Type_Error_Test.txt** command from the		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select Command menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
C10.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **TELEMETRY PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 9** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 5**	OK	
C10.7	~~Turn off the power supply~~		Not Performed	See PVS N°8

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C11 BOOT-SW TELECOMMAND PACKET SUBTYPE ERROR The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand with wrong Packet Subtype has been received.				
C11.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C11.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C11.3	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**~~	Not Performed	See PVS N°6
C11.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C11.5	Select **S_Packet_Subtype_Error_Test.txt** command from the		OK	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select Command menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
C11.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **TELEMETRY PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 10** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 6**	OK	
C11.7	~~Turn off the power supply~~		Not Performed	See PVS N°8

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C12	**BOOT-SW TELECOMMAND MEMORY PAGE LOST** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand when a page is lost during the OBS upload.			
C12.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C12.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C12.3	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**~~	Not Performed	See PVS N°6
C12.4	Type the following commands: > **cd** > **cd /DPU_SPIRE_TC** > **mv DmPageTC00001.dm DmPageTC00001.err**		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	> **mv DmPageTC00021.dm DmPageTC00021.err**			
C12.5	Execute the procedure to upload the OBS version 1.2.p via the EGSE Router: use the OBSLoader script on the SCOS2000 platform, commanding a TC sending rate of 4 TCs per second, which is the rate supported by the SPIRE nominal buslist: on a terminal window of the computer hosting SCOS 2000, type the following commands: > **cd** > **cd /DPU_SPIRE_TC** **>../local-bin/ObswLoader -apid 1280 -dpu -interval 250 DmPageTC0*.dm**	During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 1.**	OK	
C12.6	Wait for the start of uploading of telecommands	Two events **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 11** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 7**	OK	
C12.7	After the reception of two TM(5,4), at console prompt **of SCOS2000** press **CTRL-C** to stop the Telecommands upload.		OK	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C12.8	Type the following commands: > **cd** > **cd /DPU_SPIRE_TC** > **mv DmPageTC00001.err DmPageTC00001.dm** > **mv DmPageTC00021.err DmPageTC00021.dm**		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C13	**BOOT-SW TELECOMMAND DATA MEMORY FCS ERROR** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand Data Memory FCS error occurs during the OBS upload.			
C13.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C13.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C13.3	Deleted			
C13.4	At console prompt of SCOS2000 type: **/home/sops23e/local-bin** and press <enter> then type : **SDOLnew –interval 250/home/sops23e/BootSW_TCs_Test/SPIRE/FCS_Error_Test/DMPageTc_DM_FCS_Error_Test.dm**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 12** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 8**	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C14	**BOOT-SW TELECOMMAND DATA MEMORY WRONG FORMAT** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand Data Memory has a Wrong Format during the OBS upload.			
C14.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C14.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C14.3	Deleted			
C14.4	At console prompt of SCOS2000 type: **/home/sops23e/local-bin** and press <enter> then type : **SDOLnew –interval 250/home/sops23e/BootSW_TCs_Test/SPIRE/Wrong_Format_Test/DMPageTc_DM_Wrong_Format_Test.dm**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 13** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 9**	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C15	**BOOT-SW PROGRAM FCS ERROR DURING THE DM TO PM IMMEDIATE BOOT** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when an FCS error occurs during the Data Memory to Program Memory immediate boot.			
C15.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C15.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C15.3	Deleted			
C15.4	At console prompt of SCOS2000 type: **/home/sops23e/local-bin** and press <enter> then type : **SDOLnew –interval 250 /home/sops23e/BootSW_TCs_Test/SPIRE/FCS_Error_Whole_Program_Test/*.dm** and press <enter>	During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 1.**	OK	
C15.5	When the up-loading of TCs in the **TELECOMMAND PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** is finished, select **Local Command** option from		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select TC Source menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
C15.6	Select **S_Load_boot.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C15.7	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 5** and the variable part of the TM packet is equal to the one reported in **Table 6-2 Msg 3**	OK	

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C16	**BOOT-SW LOAD AND WAIT TEST** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to load a limited number of memory page from EEPROM to PM.			
C16.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C16.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
C16.3	Deleted			
C16.4	At console prompt of SCOS2000 type: **sops23e/local-bin** and press <enter> then type : **SDOLnew –interval 250 /home/sops23e/BootSW_TCs_ Test/SPIRE/Load_and_Wait_Test_1/*.dm** and press <enter>	During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 1.**	OK	
C16.5	When the up-loading of TCs in the **TELECOMMAND PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** is finished, select **Local Command** option from		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select TC Source menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
C16.6	Select **S_Load_Wait.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**	Verify that the ´packet header´ and ´Packet data´ fields of TC (8,4) is compliant to AD19	OK	
C16.7	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 14**	OK	
C16.8	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C16.9	At console prompt of SCOS2000 type: **sops23e/local-bin** and press <enter> then type: **SDOLnew – interval 250 /home/sops23e/BootSW_TCs_ Test/SPIRE/Load_and_Wait_Test_2/*.dm** and press <enter>	During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 1**	OK	
C16.10	When the up-loading of TCs in the **TELECOMMAND PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** is finished, select **Local Command** option from		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select TC Source menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
C16.11	Select **S_Load_Wait.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C16.12	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 14**	OK	
C16.13	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C16.14	At console prompt of SCOS2000 type: **sops23e/local-bin** and press <enter> then type : **SDOLnew – interval 250 /home/sops23e/BootSW_TCs_ Test/SPIRE/Load_and_Wait_Test_3/*.dm** and press <enter>	During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packets is equal to the one reported in **Table 6-3 Msg 1.** Verify that the fixed part of the last TM packet is equal to the one reported in	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
		Table 6-3 Msg 2		
C16.15	When the up-loading of TCs in the **TELECOMMAND PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** is finished, select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
C16.16	Select **S_Load__Wait_Boot.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**	Verify that the ´packet header´ and ´Packet data´ fields of TC (8,4) is compliant to AD19	OK	
C16.17	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS. and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 3**. Then the **OBS** start to send telemetry.	OK	

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C17	**BOOT DETECTION OF CORRUPTED EEPROM PAGE** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when one or more EEPROM page are corrupted.			
C17.1	~~Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**~~		Not Perfomed	See PVS N°9
C17.2	~~Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**~~	~~The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.~~	Not Perfomed	
C17.3	~~On scos 2000 select command "**DPU_Jump_Boot**". At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**~~	Not Perfomed	
C17.4	~~At console prompt of SCOS2000 type: **/home/sops23e/local-bin** and press <enter> then type : **SDOLnew –interval 250 /home/sops23e/BootSW_TCs_Test/SPIRE/Load_Program_Corruption/*.dm** and press <enter>~~	~~During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3**~~	Not Perfomed	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
		~~**Msg 1**~~		
C17.5	~~When the up-loading of TCs in the **TELECOMMAND PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** is finished, select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**~~		Not Perfomed	
C17.6	~~Select **S_Load_boot.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**~~		Not Perfomed	
C17.7	~~Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**~~	~~An event **TM(5,1)** should be received by CDMS. and visualized in the **PacketDisplay** tool.~~ ~~Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 3**~~	Not Perfomed	
C17.8	~~Wait some seconds.~~	~~An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 4**~~ ~~Verify that the fields in the variable part of the TM packet contains the number of corrupted EEPROM page (4) and the~~	Not Perfomed	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
		~~addresses of the corrupted pages~~		
C17.9	~~Repeat steps from C1.12 to C1.21 to restore the OBS version 1.2.p in the EEPROM.~~		Not Perfomed	
C17.10	Turn off the power supply.		OK	
C17.11	Stop the script perl **TlmSPIRE.pl** and launch the file **CRCCheck.bat** in folder “TC&TM Log Files\CRCCheck” (in CDMS PC) to perform the verification of the TM Packet CRCs received during the Boot SW tests.	Verify that no CRC errors are detected in all the TM Packet received during Boot SW tests	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C18 TP1 SWITCH_ON The purpose is to demonstrate the ability of the OBS to correctly initialize and start-up under all foreseen conditions according to the procedure outlined in AD1.				
C18.1	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
C18.2	Load on SCOS2000 Manual Stack window the stack for TP1 contained in "/home/sops23e/CMD/SPIRE/STACKS".		OK	
C18.3	From SCOS2000 send TC8.4.70-3.1 (**FORCE_BOOT**) to start the OBS.	Both essential (APID 0x500) and nominal (APID 0x502) HK TM packets TM (3,25) should be received by SCOS2000	OK	
C18.4	~~Turn off the power supply~~		Not Performed	See PVS N°8

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C18.5	~~Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.~~	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	See PVS N°4
C18.6	On a terminal window of SCOS2000: > **cd ~/OBS_Telecommands/spire/1.2.p/** > **ObswLoader –dpu –apid 1280 –interval 250 *.dm**	Verify that no TM(5,4) are received.	OK	
C18.7	From SCOS2000 send TC8.4.70-2.1 (**LOAD_TC_AND_BOOT**) to copy the OBS image from DM to PM and start the OBS.	Both essential (APID 0x500) and nominal (APID 0x502) HK TM packets TM (3,25) should be received.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C19 TP2 DPU_COMMAND_EXEC AND DPU_MEM The purpose is to demonstrate the link S/C-DPU by verifying the: a) correct implementation of the TM/TC packet transfer protocol as specified in AD2 b) Reception, validation and interpretation of TCs c) Command identification and execution d) Verification reporting Moreover another purpose is to demonstrate the ability to load, check and dump memory areas resident on the DPU. This will be done by absolute (via Service 6) and relative (via dedicated functions with Service 8) addresses in memory. The ability to write the image of the OBS from the PM into the EEPROM and to start again the OBS will also be tested here.				
C19.1	Load on SCOS2000 Manual Stack window the stack for TP2 contained in "**/home/sops23e/CMD/SPIRE/STACKS**".		OK	
C19.2	Send TC17.1.1 (**TEST_CONNECTION**)	Verify reception of: TM (1,1), (1,3), (17,2) and (1,7)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C19.3	Send TC14.3.1 (**REPORT_ENABLE_TM**) to dump the list of type-subtype- Sid combinations for all telemetry packets for which generation is enabled.	Verify reception of: TM (1,1), (1,3), (14,4) and (1,7) Use **PacketDisplay** to verify that the list of SIDs in TM (14,4) matches the list of enabled TM packets (all of them are enabled by defaults at start-up, the list is in RD1, see also table in Appendix 3).	OK	
C19.4	Send TC9.7.1 (**ENABLE_TIME_VERIFICATION**) to perform time verification.	Verify reception of: TM (1,1), (9,9), (1,3) and (1,7) Packet (9,9) will be verified in the Telemetry Log on the CDMSSimulator.	OK	
C19.5	Stop CDMS. Open CDMS file **APID2RT.txt** and associate SPIRE with APID 0x300; this is needed to force the CDMS to send TCs with wrong APID to SPIRE.		OK	
C19.6	Start CDMS. Wait 5 seconds	Ignore all TM (5,1) coming out at this stage due to internal buffer overflow caused by CDMS shutdown (not relevant for the present test).	OK	
C19.7	Send TC17.1.2 (**TEST_CONNECTION**) from CDMS Simulator (switch Select TC Source to local) to test OBS reaction against wrong APID in TC	Verify reception of TM (1,2) with failure code 0 (11th word in packet)	OK	It can be possible that the CDMS assigns to this command the same counter of the last one therefore the OBS does not react to the command.In this case perform again the step.

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C19.8	Stop CDMS. Open CDMS file **APID2RT.txt** and change SPIRE's APID back to nominal (0x500)		OK	
C19.9	Start CDMS. Wait 5 seconds.	Ignore all TM (5,1) coming out at this stage due to internal buffer overflow caused by CDMS shutdown (not relevant for the present test).	OK	
C19.10	Send TC17.1.3 (**TEST_CONNECTION**) from CDMS Simulator to test OBS reaction against wrong TC packet length.	Verify reception of TM (1,2) with failure code 1	OK	
C19.11	Send TC17.1.4 from CDMS Simulator to test OBS reaction against wrong TC packet checksum.	Verify reception of TM (1,2) with failure code 2	OK	
C19.12	Send TC17.1.5 from CDMS Simulator to test OBS reaction against wrong TC packet type.	Verify reception of TM (1,2) with failure code 3	OK	
C19.13	Send TC17.1.6 from CDMS Simulator to test OBS reaction against wrong TC packet subtype.	Verify reception of TM (1,2) with failure code 4	OK	
C19.14	Send TC17.1.7 from CDMS Simulator to test OBS reaction against different TC "**ack**" bits	Verify that only TM (17,2) is received	OK	
C19.15	Send TC17.1.8 from CDMS Simulator to test OBS reaction against different TC "**ack**" bits	Verify that only TM (1,1) and TM (17,2) are received	OK	
C19.16	Send TC17.1.9 from CDMS Simulator to test OBS reaction against different TC "**ack**" bits	Verify that only TM (1,3) and TM (17,2) are received	OK	
C19.17	Send TC17.1.10 from CDMS Simulator to test OBS reaction against different TC "**ack**" bits	Verify that only TM (17,2) and TM (1,7) are received	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C19.18	Send TC6.5.1 (**DUMP_MEMORY**) from SCOS2000 (switch Select TC Source to Router on the CDMS Simulator) to dump a PM memory area from location 0x12000 to 12005 (15 NSAU). See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3), (6,6) and (1,7). Check with **PacketDisplay** that the received words of TM (6,6) are different from the pattern contained in TC6.2.1	OK	
C19.19	Send TC6.2.1 (**LOAD_MEMORY**) to load a patch in the same memory area as above (put 15 in repeater box). See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C19.20	Send TC6.5.1 (**DUMP_MEMORY**) to dump again from the same memory area. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3), (6,6) and (1,7). Use **PacketDisplay** to compare received data words of TM (6,6) to the pattern uplinked in TC6.2.1.	OK	
C19.21	Send TC6.9.1 (**CHECK_MEMORY**) to compute the CRC checksum over the same memory area. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3), (6,10) and (1,7). Verify with **PacketDisplay** that the 9th to 12th words of TM (6,10) are 0001, 2000, 000f and b421	OK	
C19.22	Send TC6.2.2 from CDMS Simulator (switch Select TC Source to local) to test the OBS reaction against a wrong Memory ID.	Verify reception of TM (1,1) and TM (1,8) with error code 0x601 (Illegal Memory ID) at the 11th word.	OK	
C19.23	Send TC6.2.3 to test the OBS reaction against a wrong start address.	Verify reception of TM (1,1) and TM (1,8) with error code 0x602 (Illegal Start Address) at the 11th word.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C19.24	Send TC6.2.4 to test the OBS reaction against the attempt to write out of memory.	Verify reception of TM (1,1) and TM (1,8) with error code 0x603 (Illegal NSAU) at the 11th word.	OK	
C19.25	Send TC6.2.5 to test the OBS reaction against a wrong number of data words in the length field (in the Application Data)	Verify reception of TM (1,1) and TM (1,8) with error code 0x604 (Bad NSAU) at the 11th word.	OK	
C19.26	Send TC6.2.6 to test the OBS reaction against a wrong CRC checksum for the uplinked memory patch (not the CRC of the whole TC). Switch back Select TC Source to Router.	Verify reception of TM (1,1) and TM (1,8) with error code 0x605 (Bad CRC) at the 11th word.	OK	
C19.27	Send TC8.4.1-2.1 (**REPORT_TABLE**) from SCOS2000 (switch Select TC Source to Router on the CDMS Simulator) to report the contents of an undefined table See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code 0x0811 (Undefined Table) at the 11th word.	OK	
C19.28	Send TC8.4.1-1.1 (**SET_TABLE**) to create a new table See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C19.29	Send TC8.4.1-2.1 (**REPORT_TABLE**) to report the contents of the newly created table. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3), (21,4) and (1,7). Check with **PacketDisplay** that in the TM(21,4) the received pattern (from 17th word to the third last) is all 0s.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C19.30	Send TC8.4.1-3.1 (**UPDATE_TABLE**) to update the contents of the newly created table, using the **LoadTable** TOPE script. See Annex 10.1.2 for parameters of TC.In the local test procedure list box, select the procedure S_Updatetable3.1.tcl; click Run and confirm. Select file with the same name as the command ID and press ok and then send.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C19.31	Send TC8.4.1-2.1 (**REPORT_TABLE**) to report the contents of the newly updated table. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3), (21,4) and (1,7). Check with **PacketDisplay** that the received pattern of TM (21,4) is identical to that uplinked in TC8.4.1-3.1.	OK	
C19.32	Send TC8.4.1-1.2 from CDMS Simulator (switch Select TC Source to local) to test the OBS against a wrong Function_ID in the TC packet.	Verify reception of TM (1,1) and (1,8) with error code 0x0801 (Illegal Function ID) at the 11th word.	OK	
C19.33	Send TC8.4.1-1.3 from CDMS Simulator to test the OBS against a wrong Activity_ID in the TC packet.	Verify reception of TM (1,1) and (1,8) with error code 0x0802 (Illegal Activity ID) at the 11th word.	OK	
C19.34	Send TC8.4.1-1.4 (**SET_TABLE**) from SCOS2000 (switch Select TC Source in CDMS to Router) to test the OBS against an out of limits table ID. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code 0x0805 (Illegal Table ID) at the 11th word.	OK	
C19.35	Send TC8.4.1-1.5 (**SET_TABLE**) See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C19.36	Send TC8.4.1-1.6 (**SET_TABLE**) to update a too-long table with respect to the available space on-board. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code 0x0809 (Table Space Full) at the 11th word.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C19.37	Send TC8.4.1-3.2 (**UPDATE_TABLE**)to update an undefined table using TOPE I/F selecting file name equal to the command ID. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code 0x0811 (Undefined Table) at the 11th word.	OK	
C19.38	Send TC8.4.1-1.1 (**SET_TABLE**) to reset the table to the original Length See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C19.39	Send TC8.4.1-3.3 (**UPDATE_TABLE**) to update a table starting from an out-of-table index using TOPE I/F selecting file name equal to the command ID. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1) (1,8) with error code 0x0806 (Illegal Table Index) at the 11th word.	OK	
C19.40	Send TC8.4.1-3.4 from CDMS Simulator (switch Select TC Source to local) to update a table with a TC where the length on the application data and the number of data words do not coincide.	Verify reception of TM (1,1) and (1,8) with error code 0x0808 (Bad Data) at the 11th word.	OK	
C19.41	Send TC8.4.1-3.5 from CDMS Simulator to update a table with more words than the table size.	Verify reception of TM (1,1) and (1,8) with error code 0x080D (Bad NData) at the 11th word.	OK	
C19.42	Send TC8.4.1-1.7 (**SET_TABLE**) from SCOS2000 (switch Select TC Source in CDMS to router) to create a new table See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C19.43	Send TC8.4.1-3.6 (**UPDATE_TABLE**) to load the new table using TOPE I/F selecting file name equal to the command ID. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C19.44	Send TC8.4.1-1.8 (**SET_TABLE**) to create a new table See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C19.45	Send TC8.4.1-3.7 (**not standard UPDATE_TABLE**) to load the new table using TOPE I/F selecting file name equal to the command ID. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C19.46	Send TC8.4.1-1.9 (**SET_TABLE**) to create a new table See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C19.47	Send TC8.4.1-3.8 (**UPDATE_TABLE**) to load the new table. See Annex 10.1.2 for parameters of TC using TOPE I/F selecting file name equal to the command ID.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C19.48	Send TC8.4.1-2.2 (**REPORT_TABLE**) to dump the MOAT. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TMs (21,4). Inspect the second TM(21,4) packet and note that the start addresses (4th word) for the three last created tables at the lines 350, 360 and 370, are sequential with offset 0x30 .	OK	
C19.49	Send TC8.4.1-1.10 (**SET_TABLE**) to delete Table 0x72 See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C19.50	Send TC8.4.1-2.2 (**REPORT_TABLE**) to dump the MOAT See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TMs (21,4). Inspect (in the 2th packet of TM (21,4)) the dumped table and check that there is no table definition entry with ID 0x72 (offset 360, Start Address: 3th and 4th words)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C19.51	Send TC8.4.1-4.1 (**COLLECT_GARBAGE**) to reallocate tables	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C19.52	Send TC8.4.1-2.2 (**REPORT_TABLE**) to dump the MOAT See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,4). Inspect the second TM(21,4) packet and check that the start address for table 0x73 (offset 370, 3th and 4th words) is different from previous MOAT dump and at offset 0x30 from start address of table 0x71 (offset 350, 3th and 4th words)	OK	
C19.53	~~Send TC8.4.CA-7.1 (**WRITE2EEPROM**) to write into the EEPROM primary partition a copy of the OBS currently running on the PM~~ ~~See Annex 10.1.2 for parameters of TC.~~	~~Verify reception of TM (1,1), (1,3) and, after about 20 seconds, (1,7)~~	Not Performed	See PVS N°10
C19.54	~~Turn off the power supply~~		Not Performed	See PVS N°8
C19.55	~~Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.~~	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	See PVS N°4
C19.56	Send TC8.4.70-3.1 (**FORCE_BOOT**) to force rebooting the DPU		OK	
C19.57	Send TC17.1.1 (**TEST_CONNECTION**) to perform a connection test and verify the OBS is regularly running.	Verify reception of TM (1,1), (1,3), (17,2) and (1,7)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C19.58	~~Stop DRCU Simulator~~		Not Performed	See PVS N°11
C19.59	~~Stop CDMS Simulator~~		Not Performed	See PVS N°11
C19.60	~~Turn off the power supply~~		Not Performed	See PVS N°8

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C20 TP3 HK_COLLECT The purpose is to test the DPU-S/S chain by demonstrating the collection and transmission of HK packets. The ability to support the TM transmission retry at packet level will also be tested here.				
C20.1	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	See PVS N°4
C20.2	Load on SCOS2000 Manual Stack window the stack for TP3 contained in "**/home/sops23e/CMD/SPIRE/STACKS**".		OK	
C20.3	Send TC8.4.70-3.1 (**FORCE_BOOT**) to start OBS		OK	
C20.4	Send TC17.1.1 (**TEST_CONNECTION**) to perform a connection test and verify the OBS is regularly running.	Verify reception of TM (1,1), (1,3), (17,2) and (1,7)	OK	
C20.5	Stop DRCU Simulator		OK	
C20.6	Stop CDMS Simulator		OK	
C20.7	On the CDMS simulator change bus profile to the buslist SPIRE_Nominal_notimesync that does not contain the "Time Sync" directive.		OK	
C20.8	Start CDMS Simulator and note down the value of TSYNC in the SCOS2000 Telemetry Desktop.	Verify periodic (0.5/sec) reception of TM (3,25) Essential HK packets with SID	2018.110.13.53.10.000 OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
		0x300. Verify periodic (1/sec) reception of TM (3,25) Nominal HK packets with SID 0x301. Check that the MSB of the time field in the HK packets is 1. Verify reception of three TM (5,1) events with error codes 0x0520, 0x0521 and 0x0522 that notify a no_response condition from the DRCU (it is switched off). Also check that the MONSTAT parameter on the SCOS2000 Telemetry Desktop is 0 (all subsystems off).		
C20.9	Start DRCU Simulator	Verify reception of at least three TM (5,1) events with error codes 0x8520, 0x8521 and 0x8522 notifying exit from the previous no_response condition from the DRCU (it is switched on). Also check that the MONSTAT parameter in SCOS2000 is 7 (all subsystems on).	OK	
C20.10	Send TCTest1, from CDMS Simulator (switch Select TC Source to local), 10 times, spaced by at least 3 seconds, to test support to retry at packet level mechanism.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that no TM packets are lost by checking that the received packet counter in **PacketDisplay** shows no jumps.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C20.11	Find parameter TSYNC on the SCOS2000 Telemetry Desktop. This is the time when the last valid "**Sync**" has been received on the 1553 bus	Verify that the TSYNC time does not change and stays at the same value of step C20.8	OK	
C20.12	Switch-off CDMS. Switch it on again following step A3.40 , select bus profile SPIRE_nominal, Start BC	Verify that the TSYNC time increases of 1 second every second	OK	
C20.13	Find parameter TDIFF on the SCOS2000 Telemetry Desktop, and record its value This is the time difference between the DPU internal time and the CDMS time		2018.110.13.52.25.988 OK	
C20.14	Increase system time on the CDMS computer of 1 hour		OK	
C20.15	Cycle as fast as possible the Stop/Start BC button on the CDMS simulator. In this way the new PC system time is reloaded into the CDMS simulator	Verify that the TDIFF value in the SCOS2000 Telemetry Desktop window has changed of an amount equal to the time change carried out on the CDMS computer. Using **PacketDisplay** verify also the change in the time stamp of the HK packets received after the new time was loaded by the CDMS.	2018.110.14.52.21.994 OK	
C20.16	Find the parameter **TRESET** on the SCOS2000 Telemetry Desktop, and record its value This is the time when the last sync signal to the S/S has been sent		1970.001.00.00.00.000 OK	
C20.17	Send TC8.4.CA-1.1 (**RESET_DRCU_COUNTERS**) to reset DRCU timers	Verify that TRESET time is updated	2018.110.15.05.02.485 OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C20.18	Send TC8.4.CC-1.8 (**DEFINE_NEW_HK_REPORT**) to define an HK packet before the related table ID has been defined. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code 0x0825 (Undefined HK Table)	OK	
C20.19	Send TC8.4.1-1.10 (**SET_TABLE**) See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C20.20	Send TC8.4.1-1.11 (**SET_TABLE**) See Annex 10.1.3 for parameters of TC..	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C20.21	Send TC8.4.1-3.10 (**UPDATE_TABLE**). See Annex 10.1.3 for parameters of TC using TOPE I/F selecting file name equal to the command ID.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C20.22	Send TC8.4.1-3.11. (**UPDATE_TABLE**). See Annex 10.1.3 for parameters of TC using TOPE I/F selecting file name equal to the command ID.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C20.23	Send TC8.4.CC-1.1 (**DEFINE_NEW_HK_REPORT**) to start collection of additional HK packets. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify periodic (1/sec) reception of additional TM (3,25) diagnostic packets with SID 0x302	OK	
C20.24	Send TC8.4.CC-1.2 (**DEFINE_NEW_HK_REPORT**) to start collection of additional HK packets. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify periodic (1/sec) reception of additional TM (3,25) diagnostic packets with SID 0x303	OK	
C20.25	Send TC8.4.CC-1.3 (**DEFINE_NEW_HK_REPORT**) to try and define an invalid HK packet ID. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0821 (Illegal HK Packet ID)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C20.26	Send TC8.4.CC-1.4 (**DEFINE_NEW_HK_REPORT**) to force HK packet collection with a too short interval. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0834 (Illegal HK Sampling Interval)	OK	
C20.27	Send TC8.4.CC-1.5 (**DEFINE_NEW_HK_REPORT**) to change an HK packet SID to an out-of-limits value. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0822 (Illegal HK SID)	OK	
C20.28	Send TC8.4.CC-1.7 (**DEFINE_NEW_HK_REPORT**) to change the SID to a valid value but while the HK collection is running. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0827 (err HK Sampling Running)	OK	
C20.29	Send TC8.4.CC-1.6 (**DEFINE_NEW_HK_REPORT**) to change the HK definition table while the HK collection is active. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0827 (err HK Sampling Running)	OK	
C20.30	Send TC8.4.CC-3.1 (**REPORT_HK_REPORT**) to report the definition of the HK packet with ID 0x300. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3), (1,7) and (21,4) with APID = 0x508 and SID = 0x209. TM (21,4) will contain, in accordance to the format specified in RD1, HKID=0x300, HKSID=0x300, HK_INTERVAL=0x7d0, TABLE_ID=0	OK	
C20.31	Send TC8.4.CC-3.2 (**REPORT_HK_REPORT**) to report the definition of the HK packet with ID 0x301 See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3), (1,7) and (21,4) with APID = 0x508 and SID = 0x209. TM (21,4) will contain, in accordance to the format specified in RD1, HKID=0x301, HKSID=0x301, HK_INTERVAL=0x3e8, TABLE_ID=1	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C20.32	Send TC8.4.CC-3.3 (**REPORT_HK_REPORT**) to report the definition of the HK packet with ID 0x302 See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3), (1,7) and (21,4) with APID = 0x508 and SID = 0x209. TM (21,4) will contain, in accordance to the format specified in RD1, HKID=0x302, HKSID=0x302, HK_INTERVAL=0x3e8, TABLE_ID=2	OK	
C20.33	Send TC8.4.CC-3.4 (**REPORT_HK_REPORT**) to report the definition of the HK packet with ID 0x303 See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3), (1,7) and (21,4) with APID = 0x508 and SID = 0x209. TM (21,4) will contain, in accordance to the format specified in RD1, HKID=0x303, HKSID=0x303, HK_INTERVAL=0x3e8, TABLE_ID=3	OK	
C20.34	Send TC8.4.CC-2.3 (**CLEAR_HK_REPORT**) to stop Essential HK collection See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that reception of TM (3,25) with SID 0x300 has stopped	OK	
C20.35	Send TC8.4.1-1.13 (**SET_TABLE**) to remove table 0 On the SCOS2000 Telemetry Desktop, click AND and select SCU Parameters. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C20.36	On the SCOS2000 Telemetry Desktop, click **AND** and select **SCU Parameters**. Send TC8.4.1-4.10 (**COLLECT_GARBAGE**) to re-allocate tables on board. With this command the HK definition tables for all currently running HK collection tasks will be moved. The test verifies that this does not affect the HK tasks visualized on the SCU parameter in the telemetry desktop.	Verify reception of TM (1,1), (1,3) and (1,7). Verify on the SCOS2000 Telemetry Desktop (on the SCU parameter) that the HK parameters are not changing while issuing the command.	OK	
C20.37	Send TC8.4.1-1.11 (**SET_TABLE**) to try and reset a table currently being used for HK collection See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0813 (Busy Table)	OK	
C20.38	Send TC8.4.CC-2.1 (**CLEAR_HK_REPORT**) to clear the definition of the HK packet with ID 0x302 See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that reception of TM (3,25) with SID 0x302 has stopped	OK	
C20.39	Send TC8.4.CC-1.5 (**DEFINE_NEW_HK_REPORT**) to change an HK packet SID to a wrong value. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0822 (Illegal HK SID)	OK	
C20.40	Send TC8.4.CC-3.3 (**REPORT_HK_REPORT**) to report the definition of an HK packet that has been cleared. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0829 (Undefined HK ID)	OK	
C20.41	Send TC8.4.CC-2.2 (**CLEAR_HK_REPORT**) to clear the definition of the HK packet with ID 0x303 See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that reception of TM (3,25) with SID 0x303 has stopped	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C20.42	Send TC8.4.CC-2.4 (**CLEAR_HK_REPORT**) to stop collection of nominal HK packets. All HK tasks are now stopped. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that reception of TM (3,25) with SID 0x301 has stopped	OK	
C20.43	Send TC8.4.1-1.11 (**SET_TABLE**) to try and reset a table that is no longer used as an HK packet definition. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C20.44	Send TC8.4.CC-3.4 (**REPORT_HK_REPORT**) to report the definition of an HK packet that has been cleared. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0829 (Undefined HK ID)	OK	
C20.45	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x88FF0000 to send an unknown command to the S/S	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (5,1) with error code = 0x0509 (S/S Command Unknown)	OK	
C20.46	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8C020000 to send a known command to the S/S	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (5,1) with error code = 0x8509 (exit from previous error condition)	OK	
C20.47	~~Stop DRCU Simulator~~		Not Performed	See PVS N°11
C20.48	~~Stop CDMS Simulator~~		Not Performed	See PVS N°11
C20.49	~~Turn off the power supply~~		Not Performed	See PVS N°8

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C21 TP4 VIRTUAL MACHINES The purpose is to demonstrate that all Virtual Machines described in RD3 and available in the OBS as specified in AD3, can execute in a timely fashion command lists. It will also be shown that all VMs can run in parallel without interfering with one another; this is a potential risk since all VMs use the same interface to send commands and receive parameters from the DRCU.				
C21.1	~~Start CDMS Simulator~~		Not Performed	CDMS Simulator is already on
C21.2	~~Start DRCU simulator~~		Not Performed	DRCU Simulator is already on
C21.3	~~Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.~~	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	See PVS N°4
C21.4	Load on SCOS2000 Manual Stack window the stack for TP4 contained in "**/home/sops23e/CMD/SPIRE/STACKS**".		OK	
C21.5	Send TC8.4.70-3.1 (**FORCE_BOOT**) to start OBS *At this stage, about 320 HK parameter requests are sent to the DRCU simulator. Each request requires 2msec to be served.*	Parameter **LSLOAD** on the SCOS Telemetry Desktop should be oscillating about between 570000 and 600000 (expressed in decimal form)	570000÷590000 OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C21.6	Send TC8.4.1-1.20 (**SET_TABLE**) to create table for VM code See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C21.7	Send TC8.4.1-1.21 (**SET_TABLE**) to create table for VM code See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C21.8	Send TC8.4.1-1.22 (**SET_TABLE**) to create table for VM code See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C21.9	Send TC8.4.1-1.23 (**SET_TABLE**) to create table for VM code See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C21.10	Send TC8.4.1-3.20 (**UPDATE_TABLE**) to load VM code See Annex 10.1.4 for parameters of TC; using TOPE I/F selecting file name **VM_GetHKBlock1.txt**.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C21.11	Send TC8.4.1-3.21 (**UPDATE_TABLE**) to load VM code See Annex 10.1.4 for parameters of TC; using TOPE I/F selecting file name **VM_GetHKBlock2.txt**.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C21.12	Send TC8.4.1-3.22 (**UPDATE_TABLE**) to load VM code See Annex 10.1.4 for parameters of TC; using TOPE I/F selecting file name **VM_GetHKBlock3.txt**.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C21.13	Send TC8.4.1-3.23 (**UPDATE_TABLE**) to load VM code See Annex 10.1.4 for parameters of TC; using TOPE I/F selecting file name **VM_GetHKBlock4.txt**.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C21.14	Send TC8.5.2.1 (**REPORT_FUNCTION**) to report the status of the VM See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM is inactive, and (1,7). TM(8,6) shall contain 0x0203 and 0x0860 in 9th and 10th words	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C21.15	Send TC8.5.3.1 (**REPORT_FUNCTION**) to report the status of the VM1 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM1 is inactive, and (1,7). TM(8,6) shall contain 0x0303 and 0x0860 in 9th and 10th words	OK	
C21.16	Send TC8.5.4.1 (**REPORT_FUNCTION**) to report the status of the VM2 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM2 is inactive, and (1,7). TM(8,6) shall contain 0x0403 and 0x0860 in 9th and 10th words	OK	
C21.17	Send TC8.5.5.1 (**REPORT_FUNCTION**) to report the status of the VM3 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM3 is inactive, and (1,7). TM(8,6) shall contain 0x0503 and 0x0860 in 9th and 10th words	OK	
C21.18	Send TC8.4.2-2.1 (**RUN_VM**) Now there are 50 additional HK parameter requests going to the LS port; each requires 4 msec in total to be served. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that no TM (5,1) events with error code = 0x050C are received Verify that **LSLOAD** parameter on SCOS TM monitor is increasing.	OK 618000÷812000	
C21.19	Send TC8.4.1-4.20 (**COLLECT_GARBAGE**) to re-allocate tables on board	Verify reception of TM (1,1) and (1,8) with error code = 0x080C (VM Running)	OK	
C21.20	Send TC8.4.3-2.1 (**RUN_VM1**) Now there are 50 additional HK parameter requests going to the LS port; each requires 4 msec in total to be served. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that no TM (5,1) events with error code = 0x050C are received Verify that **LSLOAD** parameter on SCOS TM monitor is increasing	OK 688000÷866000	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C21.21	Send TC8.4.4-2.1 (**RUN_VM2**) Now there are 50 additional HK parameter requests going to the LS port; each requires 4 msec in total to be served. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that no TM (5,1) events with error code = 0x050C are received. Verify that **LSLOAD** parameter on SCOS TM monitor is increasing	OK 780000÷910000	
C21.22	Send TC8.4.5-2.1 (**RUN_VM3**) Now there are 50 additional HK parameter requests going to the LS port; each requires 4 msec in total to be served. At this point we have passed the number of total requests (about 500) that can go through the LS port each second: we might be losing some HK packets, but this is no problem for the current tests. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that **LSLOAD** parameter on SCOS TM monitor is increasing Verify that no TM (5,1) events with error code = 0x050C are received. NOTE: if LSLOAD > 1000000, the TM (5,1) event has error code = 0x050F (notifying the overflow condition on the LS port); if after an overflow condition, LSLOAD return minor of 1000000, then a reception TM (5,1) event with error code = 0x850F is expected.	OK 800000÷1000000	
C21.23	Send TC8.5.2.1 (**REPORT_FUNCTION**) to report the status of the VM See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM is active and associated table ID is correct, and (1,7). TM(8,6) will contain 0x0202, 0x0860, 0x0028 and 0x0000 at the 9th to 12th word	OK	

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C21.24	Send TC8.5.3.1 (**REPORT_FUNCTION**) to report the status of the VM1 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM1 is active and associated table ID is correct, and (1,7). TM(8,6) will contain 0x0302, 0x0860, 0x0020 and 0x0000 at the 9th to 12th word	OK	
C21.25	Send TC8.5.4.1 (**REPORT_FUNCTION**) to report the status of the VM2 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM2 is active and associated table ID is correct, and (1,7). TM(8,6) will contain 0x0402, 0x0860, 0x0021 and 0x0000 at the 9th to 12th word	OK	
C21.26	Send TC8.5.5.1 (**REPORT_FUNCTION**) to report the status of the VM3 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM3 is active and associated table ID is correct, and (1,7). TM(8,6) will contain 0x0502, 0x0860, 0x0022 and 0x0000 at the 9th to 12th word	OK	
C21.27	Send TC8.4.1-1.22 (**SET_TABLE**) to reset the table being used by the fourth VM See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0813 (Busy Table)	OK	
C21.28	Send TC8.4.2-3.1 (**HALT_VM**) to stop the VM	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (5,1) with error code = 0x50F are no longer received.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C21.29	Send TC8.4.CC-2.1 (**CLEAR_HK_REPORT**) to stop collection of Essential HK packets See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	TM(3,25) with SID 300 are no longer received
C21.30	Send TC8.4.1-1.24 (**SET_TABLE**) to cancel table 0 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C21.31	TC8.4.1-4.20 (**COLLECT_GARBAGE**) to re-allocate tables on board	Verify reception of TM (1,1), (1,3) and (1,7). Verify that **LSLOAD** parameter on SCOS2000 that flow of S/S commands is unperturbed (about between 700000 and 800000) and that no TM (5,1) are received	OK 720000÷800000	
C21.32	Send TC8.4.3-3.1 (**HALT_VM1**) to stop the VM1	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C21.33	Send TC8.4.4-3.1 (**HALT_VM2**) to stop the VM2	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C21.34	Send TC8.4.5-3.1 (**HALT_VM3**) to stop the VM3	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the traffic is back to normal by checking that the **LSLOAD** parameter on SCOS2000 is back to nominal (HK) values.	OK ~ 570000	
C21.35	Send TC8.4.1-1.22 (**SET_TABLE**) to reset the table that was used by the fourth VM See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C21.36	Open the file **TelemetryA.txt** resident on the CDMS Simulator. Perform a search for the values ~~0xC1A0, 0xC1A1, 0xC1A2 and 0xC1A3~~	Verify that these values are only found in correspondence of the correct HK parameter and nowhere else. This verifies that there was no cross-talk between the various VMs and HK collection task.	OK	See PVS N°12
C21.37	Send TC8.4.1-1.25 (**SET_TABLE**) to create table ID 0x30 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C21.38	Send TC8.4.1-1.26 (**SET_TABLE**) to create table ID 0x31 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C21.39	Send TC8.4.1-3.24 (**UPDATE_TABLE**) using TOPE I/F and load file with name **TC_VMTest_0.txt**. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C21.40	Send TC8.4.1-3.25 (**UPDATE_TABLE**) using TOPE I/F and load file with name **TC_VMTest_1.txt**. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C21.41	Send TC8.4.1-3.26 (**UPDATE_TABLE**) using TOPE I/F and load file with name **TC_VMTest_2.txt**. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C21.42	Send TC8.4.1-3.27 (**UPDATE_TABLE**) using TOPE I/F and load file with name **TC_VMTest_3.txt**. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C21.43	Send TC8.4.1-3.28 (**UPDATE_TABLE**) using TOPE I/F and load file with name **TC_VMTest_4.txt**. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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C21.44	Send TC8.4.1-3.29 (**UPDATE_TABLE**) using TOPE I/F and load file with name **TC_VMTest_5.txt**. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C21.45	Send TC8.4.1-3.30 (**UPDATE_TABLE**) using TOPE I/F and load file with name **TC_VMTest_6.txt**. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C21.46	Send TC8.4.1-3.31 (**UPDATE_TABLE**) using TOPE I/F and load file with name **TC_VMTest_7.txt**. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C21.47	Send TC8.4.2-2.2 (**RUN_VM**) to start Hardware VM on Table ID 0x30	Verify reception of TM (1,1), (1,3) and (1,7). Verify that 18 TM (5,1) events are received with the correct values in the parameter field (16th and 17th word) as specified in Appendix 10.2 Verify reception of 2 TM (21,4) with APID = 0x0508 and SID = 0x020B. The first contains the same parameters previously received with the TM (5,1) event packets, starting from 19th word, preceeded by the number of following words(i.e. 0x13). The second should contain 0x0000 and 0xFFFF as the last two words before the CRC	OK	

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C21.48	Send TC8.4.2-1.1 from CDMS Simulator (switch Select TC Source to local), to execute a command list uplinked together with the command.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that no TM (5,1) events with error code = 0x050C are received. Verify that **LSLOAD** parameter on SCOS TM monitor is increasing.	OK 580000÷745000	Two TM(1,3) have been received
C21.49	Send TC8.5.2.1 (**REPORT_FUNCTION**) from SCOS (switch Select TC Source to Router), to report the status of the VM See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) (words from 9th to 12th are 0x0201, 0x860, 0x0078 and 0x0000), and (1,7)	OK	
C21.50	Send TC8.4.2-3.1 (**HALT_VM**) to stop the VM	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the traffic is back to normal by checking that the **LSLOAD** parameter on SCOS2000 is back to nominal (HK) values.	OK ~ 570000	
C21.51	Send TC8.5.2.1 (**REPORT_FUNCTION**) to report the status of the VM See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) (with 9th word = 0x0203) confirming VM is inactive, and (1,7)	OK	
C21.52	Stop DRCU Simulator		OK	
C21.53	Stop CDMS Simulator		OK	
C21.54	Turn off the power supply		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22 TP5 SPIRE_ICD The purpose is to demonstrate the reception (from S/Ss), control, packing and transmission (to S/C) of science frames. It will be shown that acquisition of science frames can be initiated by standard TCs. The execution of particular commands will allow testing of other OBS features like the Telemetry Packet Control, the Time Management, the Report Function Status and the “arm-go” feature for the commands to engage/release the launch safety latch of the SPIRE spectrometer mechanisms.				
C22.1	Start CDMS Simulator		OK	
C22.2	Start DRCU simulator		OK	
C22.3	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
C22.4	From SCOS2000 send TC8.4.70-3.1 (**FORCE_BOOT**) to start the OBS.	Both essential (APID 0x500) and nominal (APID 0x502) HK TM packets TM (3,25) should be received by SCOS2000	OK	
C22.5	Load on SCOS2000 Manual Stack window the stack for TP5_GetFullPhot. This stack of commands executes steps steps C22.5 to C22.7.	Verify the reception of TM (1,1), (1,3) and (1,7) for all commands sent	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Series of TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) to configure the DRCU science data frames, using the following list of parameters: • · 0x843C0000 selects Frame_ID 0 from DCU • · 0x8418000C sets DCU frame timing • · 0x84190070 sets DCU frame timing • · 0x843D00FF sets DCU to send 255 frames			
C22.6	TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify start of reception for TM (21,1) science packets	OK	
C22.7	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify the reception of others TM (21,1) until the total of TM (21,1) packets is 255 (each containing 1 Frame). TM packets will have APID=0x504 and SID=0x200.	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.8	Load on SCOS2000 Manual Stack window the stack for TP5_GetFullSpec. This stack of commands executes steps C21.7 to C21.10 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0004, to configure DRCU to send Spectrometer full-array frames	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.9	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d0ff, to configure DRCU to send 255 frames	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.10	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify start of reception for TM (21,1) science packets	OK	
C22.11	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1) packets containing 255 frames were received, with APID = 0x506 and SID = 0x201. This corresponds to a total of 43 TM(21,1) packets.	OK	
C22.12	Load on SCOS2000 Manual Stack window the stack for TP5_GetSMECNom. This stack of commands executes steps C21.11 to C21.14 TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c00000, to configure sampling rate for SMEC frames	Verify reception of TM (1,1), (1,3) and (1,7.)	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.13	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10001 to start DRCU data transfer from the MCU. The MCU cannot be commanded to send a fixed number of packets but it sends them continuously **NOTE:** on the DRCU Simulator check that the box "SAMPLE INTERVAL between blocks" of CH1 is 3 msec. Otherwise manually correct it.	Verify reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,1) packets with APID = 0x508 and SID = 0x410.	OK	
C22.14	Wait 5 seconds and send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10000 to stop DRCU data transfer	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1) packets stops.	OK	
C22.15	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,1) is received.	OK	
C22.16	Load on SCOS2000 Manual Stack window the stack for TP5_GetBSMNom. This stack of commands executes steps C21.15 to C21.18 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c20000, to configure sampling rate for BSM frames	Verify reception of TM (1,1), (1,3), and (1,7)	OK	
C22.17	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10001 to start DRCU data transfer from the MCU. The MCU cannot be commanded to send a fixed number of packets but it sends them continuously	Verify reception of TM (1,1), (1,3), and (1,7). Verify continuous reception of TM (21,1) packets with APID = 0x508 and SID = 0x612.	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.18	Wait 5 seconds and send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10000 to stop DRCU data transfer	Verify reception of TM (1,1), (1,3), and (1,7). Verify that TM (21,1) packets stops.	OK	
C22.19	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3), and (1,7). Verify that the last TM (21,1) are received.	OK	
C22.20	Load on SCOS2000 Manual Stack window the stack for TP5_GetSCUNom. This stack of commands executes steps C21.19 to C21.23 (send commands one by one) Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0830000 to configure DRCU to send SCU nominal frames.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C22.21	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa084001f to configure DRCU to send 31 frames. If this does not work, put manually the number 31 in the DRCU simulator Combo Box channel 2 (bottomcenter box) and press Transfer- ChannelSettingstoDriver.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C22.22	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0820001 to start DRCU data transfer form the SCU	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.23	Repeat previous step 9 more times	Verify reception, each time, of TM (1,1); (1,3) and (1,7). Verify reception of TM (21,1) with APID = 0x508 and SID = 0xa20.	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.24	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,1) are received. A total of 20 packets should be received, corresponding to 310 frames (16fr/pkt).	OK	
C22.25	Load on SCOS2000 Manual Stack window the stack for TP5_GetPSW. This stack of commands executes steps C21.24 to C21.27 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0001 to configure DRCU to send PSW frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.26	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.27	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,2) packets with APID = 0x504 and SID = 0x102	OK	
C22.28	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,2) are received. A total of 85 packets should be received. Corresponding to 255 frames (3fr/pkt)	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.29	Load on SCOS2000 Manual Stack window the stack for TP5_GetPMW. This stack of commands executes steps C21.28 to C21.31 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0002 to configure DRCU to send PMW frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.30	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.31	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,2) packets with APID = 0x504 and SID = 0x103	OK	
C22.32	Send TC8.4.CA-2.1 1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,2) are received. A total of 64 packets should be received. Corresponding to 255 frames (4fr/pkt)	OK	
C22.33	Load on SCOS2000 Manual Stack window the stack for TP5_GetPLW. This stack of commands executes steps C21.32 to C21.35 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0003 to configure DRCU to send PLW frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.34	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.35	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,2) packets with APID = 0x504 and SID = 0x104	OK	
C22.36	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,2) are received. A total of 29 packets should be received. Corresponding to 255 frames (9 fr/pkt).	OK	
C22.37	Load on SCOS2000 Manual Stack window the stack for TP5_GetSLW. This stack of commands executes steps C21.36 to C21.39 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0005 to configure DRCU to send SLW frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.38	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.39	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.40	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,2) packets with APID = 0x506 and SID = 0x106	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.41	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,2) are received. A total of 32 packets should be received. Corresponding to 510 frames (16 fr/pkt)	OK	
C22.42	Load on SCOS2000 Manual Stack window the stack for TP5_GetSSW. This stack of commands executes steps C21.40 to C21.43 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0006 to configure DRCU to send SSW frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.43	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.44	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,2) packets with APID = 0x506 and SID = 0x105	OK	
C22.45	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,2) are received. A total of 29 packets should be received. Corresponding to 255 frames (9 fr/pkt)	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.46	Load on SCOS2000 Manual Stack window the stack for TP5_GetPhotTest. This stack of commands executes steps C21.44 to C21.49. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0008 to configure DRCU to send full Photometer Test Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.47	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000C.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.48	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.49	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.50	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x504 and SID = 0x309	OK	
C22.51	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 255 packets should be received. Corresponding to 255 frames (1 fr/pkt)	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.52	Load on SCOS2000 Manual Stack window the stack for TP5_GetPSWTest. This stack of commands executes steps C21.50 to C21.55. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0009 to configure DRCU to send PSW Test Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.53	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000C.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.54	Send TC8.4.CA-5.1(**SEND_DRCU_COMMAND**) with parameter 0x84190070.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.55	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.56	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x504 and SID = 0x30a	OK	
C22.57	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 85 packets should be received. Corresponding to 255 frames (3 fr/pkt)	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.58	Load on SCOS2000 Manual Stack window the stack for TP5_GetPMWTest. This stack of commands executes steps C21.56 to C21.61. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c000a to configure DRCU to send PMW Test Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.59	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000C.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.60	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.61	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.62	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x504 and SID = 0x30b	OK	
C22.63	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 64 packets should be received. Corresponding to 255 frames (4 fr/pkt)	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.64	Load on SCOS2000 Manual Stack window the stack for TP5_GetPLWTest. This stack of commands executes steps C21.62 to C21.67 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c000b to configure DRCU to send PLW Test Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.65	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000C.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.66	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.67	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.68	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x504 and SID = 0x30c	OK	
C22.69	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 29 packets should be received. Corresponding to 255 frames (9 fr/pkt)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.70	Load on SCOS2000 Manual Stack window the stack for TP5_GetSpecTest. This stack of commands executes steps C21.68 to C21.71. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c000c to configure DRCU to send Full Spectrometer Test Pattern.	Verify reception of TM (1,1),(1,3) and (1,7).	OK	
C22.71	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.72	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.73	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x506 and SID = 0x30d	Not Performed	It could be possible that there is not the need to send this command
C22.74	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 43 packets should be received. Corresponding to 255 frames (6 fr/pkt)	OK	
C22.75	Load on SCOS2000 Manual Stack window the stack for TP5_GetSLWTest. This stack of commands executes steps C21.72 to C21.77. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c000d to configure DRCU to send SLW Test Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.76	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000C.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.77	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.78	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.79	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.80	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x506 and SID = 0x30f	OK	It could be possible that there is not the need to send this command
C22.81	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 32 packets should be received. Corresponding to 510 frames (16 fr/pkt).	OK	
C22.82	Load on SCOS2000 Manual Stack window the stack for TP5_GetSSWTest. This stack of commands executes steps C21.78 to C21.81 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c000e to configure DRCU to send SSW Test Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.83	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.84	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x506 and SID = 0x30e	OK	
C22.85	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 29 packets should be received. Corresponding to 255 frames (9 fr/pkt)	OK	
C22.86	Load on SCOS2000 Manual Stack window the stack for TP5_GetMCUEng. This stack of commands executes steps C21.82 to C21.85. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c40000, to configure sampling rate for MCU Engineering frames	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.87	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10001 to start DRCU data transfer from the MCU. *The MCU cannot be commanded to send a fixed number of packets but it sends them continuosly*	Verify reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,3) packets with APID = 0x508 and SID = 0x814.	OK	
C22.88	Wait 5 seconds and send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10000 to stop DRCU data transfer	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,3) packets stops.	OK	
C22.89	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received.	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.90	Load on SCOS2000 Manual Stack window the stack for TP5_GetMCUEngTest. This stack of commands executes steps C21.86 to C21.89. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c50000, to configure sampling rate for MCU Test frames	Verify reception of TM (1,1), (1,3) and (1,7).	OK	Check manually the "loop" checkbox for channel 1 on the DRCU simulator
C22.91	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10001 to start DRCU data transfer from the MCU. The MCU cannot be commanded to send a fixed number of packets but it sends them continuously	Verify reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,3) packets with APID = 0x508 and SID = 0x915.	OK	
C22.92	Wait 5 seconds and send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10000 to stop DRCU data transfer	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,3) packets stops.	OK	
C22.93	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received.	OK	
C22.94	Load on SCOS2000 Manual Stack window the stack for TP5_GetSCUTest. This stack of commands executes steps C21.90 to C21.94 (send commands one at a time) Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0838000 to configure DRCU to send SCU Test frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.95	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa084001f to configure DRCU to send 31 frames. If this does not work, put manually the number 31 in the DRCU simulator Combo Box channel 2 (bottomcenter box) and press Transfer- ChannelSettingstoDriver.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.96	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xA0820001 to start DRCU data transfer from the SCU.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.97	Repeat previous step 9 more times	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of ~~four TM (1,1), plus reception of~~ TM (21,3) with APID = 0x508 and SID = 0x1121.	OK	See PVS N°13
C22.98	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 20 packets should be received. Corresponding to 310 frames (16 fr/pkt)	OK	
C22.99	Load on SCOS2000 Manual Stack window the stack for TP5_GetPhotOff. This stack of commands executes steps C21.95 to C21.100. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0010 to configure DRCU to send Full Photometer Offset Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.100	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000c	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.101	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.102	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.103	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,4) packets with APID = 0x504 and SID = 0x207	OK	
C22.104	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,4) are received. A total of 255 packets should be received. Corresponding to 255 frames (1 fr/pkt)	OK	
C22.105	Load on SCOS2000 Manual Stack window the stack for TP5_GetSpecOff. This stack of commands executes steps C21.101 to C21.106. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0014 to configure DRCU to send Full Spectrometer Offset Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.106	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000c	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.107	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.108	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.109	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,4) packets with APID = 0x506 and SID = 0x208	OK	
C22.110	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,4) are received. A total of 43 packets should be received. Corresponding to 255 frames (6 fr/pkt)	OK	
C22.111	Load on SCOS2000 Manual Stack window the stack for TP5_MiddleSteps		OK	
C22.112	Send TC8.4.CA-10.5 (**ENABLE_SELECTION**) to enable selection from a non-existing science frame. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x815 (Illegal Frame ID)	OK	
C22.113	Send TC8.4.CA-10.4 (**ENABLE_SELECTION**) to enable selection from frame ID 4 (photometer PLW) using an undefined table. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x817 (Undefined Selection Table)	OK	
C22.114	Send TC8.4.1-1.32 (**SET_TABLE**) to create a Table to be used to select a subset of a science frame. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.115	Send TC8.4.CA-10.3 (**ENABLE_SELECTION**) to enable selection from frame ID 4 using the newly created table. The selection tables should have the same length of the frames to which they are associated (which is not the present case, so that an error is expected). See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x818 (Invalid length of Selection Table)	OK	
C22.116	Send TC8.4.1-1.31 (**SET_TABLE**) to create a Table to be used to select a subset of a science frame. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.117	Send TC8.4.1-3.31 (**UPDATE_TABLE**) to load the selection Table to be used for science frame selection. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.118	Send TC8.4.CA-10.2 (**ENABLE_SELECTION**) to enable selection. Selection tables should be made of 0s (do not select) or 1 (select), while the present selection table contains a 2 so that an error is expected. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x819 (Invalid content of Selection Table)	OK	
C22.119	Send TC8.4.1-1.30 (**SET_TABLE**) to create a Table to be used to select a subset of a science frame. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.120	Send TC8.4.1-3.30 (**UPDATE_TABLE**) to load the selection Table to be used for science frame selection. Use TOPE IF to send the command selecting filename equal to command ID. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.121	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0003 to configure DRCU to send PLW Photometer Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.122	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d0000 to configure DRCU to send frames in continuous mode	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.123	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,2) packets with APID = 0x504 and SID = 0x104	OK	
C22.124	If the DRCU simulator allows it, change the Frame ID to an undefined value in the appropriate box of the DRCU GUI for channel 0	Verify reception of TM (5,1) with error code =0x2544 (Illegal Frame ID from DCU) Verify that TM (21,2) packets with APID = 0x504 and SID = 0x104 are no longer Received	Not Performed	The DRCU Simulator does not allow it
C22.125	Put the Frame ID back to normal value	Verify reception of TM (5,1) with error code =0xA544 to signal exit from previous error condition. Verify that TM (21,2) packets with APID = 0x504 and SID = 0x104 are again received	Not Performed	The DRCU Simulator does not allow it
C22.126	If the DRCU simulator allows it, change the Frame length to a wrong value in the bottom-left box of the DRCU GUI combo box for channel 0. Press TransferChannelSettingsto-Driver button	Verify reception of TM (5,1) with error code =0x2544 (Illegal Frame length) Verify that TM (21,2) packets with APID = 0x504 and SID = 0x104 are no longer Received	OK	The value has been set to 60

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.127	Put the Frame length back to normal value (54)	Verify reception of TM (5,1) with error code =0xA544 to signal exit from previous error condition Verify that TM (21,2) packets with APID = 0x504 and SID = 0x104 are again received	OK	
C22.128	If the DRCU simulator allows it, change the checksum method in the appropriate box of the DRCU GUI (XOR box)	Verify reception of TM (5,1) with error code =0x2554 (Illegal checksum) Verify that TM (21,2) packets with APID = 0x504 and SID = 0x104 are no longer Received	OK	
C22.129	Put the checksum method back to normal value	Verify reception of TM (5,1) with error code =0XA554 to signal exit from previous error condition Verify that TM (21,2) packets with APID = 0x504 and SID = 0x104 are again received	OK	
C22.130	Send TC8.4.CA-10.1 (**ENABLE-SELECTION**) to enable selection from frame ID 4 (Photometer PLW) See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Use **PacketDisplay** to verify that the TM (21,2) now contain the SID = 0xC1A0 Use **PacketDisplay** to verify that the TM (21,2) packets now contain frames 11 words shorter. (nominal length is 54 words)	OK	
C22.131	Send TC8.4.CA-11.2 (**DISABLE_SELECTION**) to disable selection from a non-existent science frame. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x815 (Illegal Frame ID)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.132	Send TC8.5.CA.1 (**REPORT_FUNCTION**) to report science frame selection status. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) and (1,7) Use **PacketDisplay** to verify reception of TM (8,6) containing a series of FRAMEID - SID – TABLEID combinations for all science frames for which selection can be active. There should be a group with Frame Id = 4, SID = 0xC1A0 and Table Id = 0x30. All others should contain their nominal SID with Table ID = 0xFFFF (meaning that there is no selection active from that Frame ID, see table in Appendix 3)	OK	
C22.133	Send TC8.4.CA-11.1 (**DISABLE_SELECTION**) to disable the presently active selection on frame ID 4 See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Use **PacketDisplay** to verify that TM (21,2) packets now contain again the nominal SID = 0x104 Use **PacketDisplay** to verify that the TM (21,2) packets now contain nominal Photometer PLW frames.	OK	
C22.134	Send TC8.5.CA.1 (**REPORT_FUNCTION**) to report science frame selection status. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) and (1,7) Verify reception of TM (8,6). Use **PacketDisplay** to verify that they contain nominal SIDs for all Frame IDs and all Table IDs should be 0xFFFF.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.135	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0000 to stop DRCU frame transmission from DCU If the command does not work (the DRCU occasionally does not execute the command), uncheck the “loop” checkbox for channel 0 on the DRCU simulator.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,2,0x104) are no longer received	OK	
C22.136	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,2) packets are received	OK	
C22.137	Load on SCOS2000 Manual Stack window the stack for TP5_Configure_ DRCU_Nominal. This stack of commands executes steps C21.132 to C21.138 Send TC8.4.CA-6.1 (**REST_FIFOs**). Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0000 to configure DRCU to send Full Photometer Pattern.	Verify reception of TM (1,1), (1,3) and (1,7) for both telecommand.	OK	
C22.138	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000C	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.139	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.140	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d0000 to configure DRCU to send frames in continuous mode	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.141	Take note of HK parameters LOSTEVBLOCK, LOSTHKBLOCK, LOSTSDBLOCK, on the SCOS Telemetry Desktop.		All 00000000	
C22.142	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c0000C to set sampling rate for SMEC frames from MCU. Explicitely select "**loop**" checkbox in channel 1 on the DRCU simulator GUI and Fucntion 0 in the combo box; press "Transfer to Driver" button. Explicitely select "SMEC Frames 0x10" from Channel 1 pull-down menu	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.143	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0830000 to configure DRCU to send nominal SCU frames	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.144	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0840000 to configure DRCU to send SCU frames in continuous mode.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.145	Load on SCOS2000 Manual Stack window the stack for TP5_Start_DRCU_Transfer. This stack of commands executes steps C21.139 to C21.141 To arm the entire sequence present in the stack and press "go". Wait the sending of TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify after the sending of TC8.4.CA-5.1 the reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,1) packets with APID = 0x504 and SID =0x200	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.146	Wait the sending of TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10001 to start DRCU data transfer from the MCU.	Verify after the sending of TC8.4.CA-5.1 the reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,1) packets with APID = 0x508 and SID =0x410	OK	
C22.147	Wait the sending of TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0820001 to start DRCU data transfer from the SCU.	Verify after the sending of TC8.4.CA-5.1 the reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,1) packets with APID = 0x508 and SID =0xA20	OK	
C22.148	Wait 10 minutes. *In these conditions the DPU is receiving data from the three subsystems simultaneously, while also generating both Nominal and Essential HouseKeeping packets. The 1553 bus traffic between the DPU and the CDMS is:* *· 16 pkts/s from DCU* *· about 6 pkts/s from MCU* *· about 5 pkts/s from SCU* *· 1.5 HouseKeeping pkts/s* *So there is a total of about 29 TM packets per second, which is more than the nominal rate (both in terms of kbps and in terms of packets) foreseen for the SPIRE instrument.*	No TM (5,1) with error code = 0x50D, unless immediately followed by another (5,1) with code =0x850D (exit from anomaly condition). Verify that HK parameters LOSTEVBLOCK, LOSTHKBLOCK, LOSTSDBLOCK, on the SCOS Telemetry Desktop are equal to the ones noted in the step C 21.139 and do not change. Verify the telemetry log file and check that there is no jump in TM packet counter.	OK All 00000000	
C22.149	Increase science frame flow rate by decreasing of a factor two the timing value in the appropriate box of the DRCU GUI for channel 0	Verify reception of TM (5,1) with error code = 0x1503 (Science Memory pool is more than 80% occupied) Verify reception of TM (5,1) with error code	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
		= 0x1514(VIRTUOSO FIFO queue for Science TM packets is more than 80% occupied) Verify in the nominal HK packets that the counter for unsuccessfully allocated memory blocks for science packets increases.		
C22.150	Change the frame timing to twice the normal value to allow fast buffer recovery.	Verify that reception of TM (5,1) with error code = 0x9503 (exit from 0x1503 error condition) Verify that reception of TM (5,1) with error code = 0x9514 (exit from 0x1514 error condition) Verify in the nominal HK packets that the counter for unsuccessfully allocated memory blocks for science packets stops increasing.	OK	
C22.151	Load on SCOS2000 Manual Stack window the stack for TP5_LastSteps		OK	
C22.152	Send TC14.3.1 (**REPORT_ENABLED_TM**) to report the list of TM packets for which generation is enabled.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM(14,4) packets. Use **PacketDisplay** to check that transmission of all packets (see table in Appendix 3) is enabled.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.153	Send TC14.2.1 (**DISABLE_TM_GENERATION**) to disable telemetry generation for TM (21,1) from DCU and SCU See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1) with ~~APID~~SID= 0x200 and 0xA20 are no longer received	OK	See PVS N°14
C22.154	Send TC14.2.2 (**DISABLE_TM_GENERATION**) See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (3,25) essential HK Packets (SID = 0x300) are no longer received	OK	
C22.155	Send TC14.3.1 (**REPORT_ENABLED_TM**)	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (14,4) packet. Use **PacketDisplay** to verify that TM (21,1,0x200 and 0xA20) and TM (3,25,0x300) are not present in the report	OK	
C22.156	Send TC14.1.1 (**ENABLE_TM_GENERATION**) See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C22.157	Wait for x seconds	Verify that TM (21,1,0x200 and 0xA20) and TM (3,25,0x300) are again received	OK	
C22.158	Send TC14.3.1 (**REPORT_ENABLED_TM**)	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of a TM (14,4) packet. Use **PacketDisplay** to verify that transmission of all packets is enabled.	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.159	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0000 to stop DRCU frame transmission from DCU If the command does not work (the DRCU occasionally does not execute the command), uncheck the “loop” checkbox for channel 0 on the DRCU simulator.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1,0x200) are no longer received	OK	
C22.160	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10000 to stop DRCU frame transmission from MCU If the command does not work (the DRCU occasionally does not execute the command), uncheck the “loop” checkbox for channel 1 on the DRCU simulator.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1,0x410 ~~and 0x612~~) are no longer received	OK	See PVS N°15
C22.161	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0820000 to stop DRCU frame transmission from SCU If the command does not work (the DRCU occasionally does not execute the command), uncheck the “loop” checkbox for channel 2 on the DRCU simulator.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1,0xa20) are no longer received	OK	
C22.162	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM packets are received	OK	
C22.163	Send TC8.4.C1-1.1 (**SET_OBSID**) to change Observer ID See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify on SCOS2000 that OBSID value has been updated in nominal HK packet	OK OBSID: A5A55A5A	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.164	Send TC8.4.C1-2.1 (**SET_BBID**) to change Building Block ID See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify on SCOS2000 that BBID value has been updated in nominal HK packet	OK BBID: 12122121	
C22.165	Send TC8.4.C1-3.1 (**SET_OBS_MODE**) to change Observation MODE See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (5,1) with error code =0x0501 that notifies the current values of MODE and STEP according to format of RD1. Verify on SCOS2000 Telemetry Desktop that MODE value has been updated in nominal HK packet.	OK MODE: C1C1	
C22.166	Send TC8.4.C1-4.1 (**SET_OBS_STEP**) to change Observation STEP See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (5,1) with error code =0x0501 that notifies the current values of MODE and STEP according to format of RD1. Verify on SCOS2000 Telemetry Desktop that STEP value has been updated in nominal HK packet	OK STEP: 1	
C22.167	Send TC8.4.C1-4.4 (**RESET_DRC_COUNTERS**) to reset DRCU internal timer	Verify reception of TM (1,1), (1,3) and (1,7). Verify on SCOS2000 Telemetry Desktop that parameter TRESET has been update	OK TRESET: 2018.111.09.48.23.018	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.168	Send TC8.4.10-1.1 (**ENGAGE_LATCH**) to engage the SMEC latch without enabling the command.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x831 (Function Stopped) and TM (5,2) with error code = 0x832 (EXCP FX UNARMED ID)	OK	
C22.169	Send TC8.4.10-ff.1 (**RELEASE_LATCH**) to release the SMEC latch without enabling the command.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x831 (Function Stopped) and TM (5,2) with error code = 0x832 (EXCP FX UNARMED ID)	OK	
C22.170	Send TC8.1.10.1 (**ENABLE_SMEC_LATCH**) to enable the SMEC latch engage/release commands.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.171	Send TC8.4.10-1.1 (**ENGAGE_LATCH**) to engage the SMEC latch. On the SCOS telemetry desktop click button AND at bottom left, and choose SMEC PARAMETERS	Verify reception of TM (1,1), (1,3) and (1,7). Verify on SCOS2000 Telemetry Desktop that the SMECLATCHSTAT parameter has changed to 2	OK	
C22.172	Send TC8.4.10-ff.1 (**RELEASE_LATCH**) to release the SMEC latch	Verify reception of TM (1,1) and TM (1,8) with error code = 0x831 (Function Stopped) and TM (5,2) with error code = 0x832 (EXCP FX UNARMED ID)	OK	
C22.173	Send TC8.1.10.1 (**ENABLE_SMEC_LATCH**) to enable the SMEC latch engage/release commands.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
C22.174	Send TC8.4.10-ff.1 (**RELEASE_LATCH**) to release the SMEC latch	Verify reception of TM (1,1), (1,3) and (1,7). Verify on SCOS2000 Telemetry Desktop that the SMECLATCHSTAT parameter has changed to 1	OK	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.175	Send TC8.4.CA-9.1 (**RESET_DPU**) to reset the OBS forcing a jump to the initial memory location of the code	Verify that the numbering of the HK packets restarts from 0.	OK	
C22.176	Execute the procedure A5		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
D	**LONG DURATION TEST OF MAIN SECTION WITH 28V, 26V AND 29V POWER SUPPLY AND MIL-STD-1553B CHANNEL A OR B**			
D1	**OPERATIVE MODE POWER CONSUMPTION, ALIGNMENT AND GAP TEST OF TELEMETRY DATA**			
D1.1	Execute the procedure A1 for the nominal section test if needed.		OK	
D1.2	Execute the procedure A3 for the start up of the EGSE if needed.		OK	
D1.3	Disconnect the power supply cable		OK	
D1.4	Turn on the power supply.		OK	
D1.5	Set the power supply output to 28V and 1.5A		OK	
D1.6	Measure the power supply output with a voltmeter Vin	28 ± 0.1 V	28 V	
D1.7	Turn off the power supply.		OK	
D1.8	Reconnect the power supply cable		OK	
D1.9	Stop and switch off CDMS executing steps from A5.2 to A5.3.		OK	
D1.10	Start CDMS executing steps from A3.40 to A3.51.		OK	
D1.11	Start PacketDisplay executing steps from A3.52 to A3.54.		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
D1.12	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
D1.13	Execute the procedure A4		OK	
D1.14	Check the power supply current on the power supply current indicator Iin	<1A	< 520 mA	The peak value detected in 5 minutes has been considered
D1.15	Check the average power consumption of DPU during a period of 5 minutes: Pin = Vin x Iin	<15.3W	< 14.56 W	Calculation based on the above specified value
D1.16	Wait at least 16h.	Verify that there is not the reception of TM (5,1) with error code 0x1 500 + 0x1519 and between 0x2540 + Ox257A, unless immediately followed by another (5,1) with code =Ox850D (exit from anomaly condition).	OK	16 hours of test have been performed
D1.17	Turn off the power supply.		OK	
D1.18	Disconnect the power supply cable		OK	
D1.19	Turn on the power supply.		OK	
D1.20	Set the power supply output to 26 V and 1.5A		OK	
D1.21	Measure the power supply output with a voltmeter Vin	26 ± 0.1 V	26 V	
D1.22	Turn off the power supply.		OK	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
D1.23	Stop and switch off CDMS executing steps from A5.2 to A5.3.		OK	
D1.24	On the EGSE side remove the connector of MIL-BUS channel A cable		OK	
D1.25	Start CDMS executing steps from A3.40 to A3.51		OK	
D1.26	On the CDMS Simulator click on icon **Select Bus** and choose the bus B channel		OK	
D1.27	Reconnect the power supply cable		OK	
D1.28	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
D1.29	Execute the procedure A4		OK	
D1.30	Check the power supply current on the power supply current indicator Iin	<1A	< 560 mA	The peak value detected in 5 minutes has been considered
D1.31	Check the average power consumption of DPU during a period of 5 minutes: Pin = Vin x Iin	<15.3W	< 14.6 W	Calculation based on the above specified value

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
D1.32	Wait at least 16h.	Verify that there is not the reception of TM (5,1) with error code 0x1 500 + 0x1519 and between 0x2540 + Ox257A, unless immediately followed by another (5,1) with code =Ox850D (exit from anomaly condition).	OK	8 hours of test have been performed; 48 hours of non-consecutive test has been assured during all the PFM test campaign
D1.33	Turn off the power supply.		OK	
D1.34	Disconnect the power supply cable		OK	
D1.35	Turn on the power supply.		OK	
D1.36	Set the power supply output to 29 V and 1.5A		OK	
D1.37	Measure the power supply output with a voltmeter Vin	29 ± 0.1 V	29 V	
D1.38	Turn off the power supply.		OK	
D1.39	Reconnect the power supply cable		OK	
D1.40	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
D1.41	Execute the procedure A4		OK	
D1.42	Check the power supply current on the power supply current indicator Iin	<1A	< 505 mA	The peak value detected in 5 minutes has been considered

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
D1.43	Check the average power consumption of DPU during a period of 5 minutes: Pin = Vin x Iin	<15.3W	< 14.65 W	Calculation based on the above specified value
D1.44	Wait at least 16h.	Verify that there is not the reception of TM (5,1) with error code 0x1 500 + 0x1519 and between 0x2540 + Ox257A, unless immediately followed by another (5,1) with code =Ox850D (exit from anomaly condition).	OK	14 hours of test have been performed; 48 hours of non-consecutive test has been assured during all the PFM test campaign
D1.45	Verify the absence of gap error or alignment error	No TM (5,1) with error code indicated in RD#8 are received.	OK	
D1.46	On the EGSE side reconnect the connector of MIL-BUS channel A cable		OK	
D1.47	Execute the procedure A5		OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E	**FUNCTIONAL TEST OF REDUNDANT SECTION WITH 28V POWER SUPPLY AND MIL-STD-1553B CHANNEL A**			
E1	**STAND-BY POWER CONSUMPTION, APID, RT AND SOFTWARE VERSION IDENTIFICATION AND WRITING OF EEPROM**			
E1.1	Execute the procedure A2 for the redundant section test		OK	
E1.2	Execute the procedure A3 for the start up of the EGSE.		OK	
E1.3	Disconnect the Unit power cable.		OK	
E1.4	Set the power supply output at 28V and 1.5A.		OK	
E1.5	Measure the output of the power supply with a voltmeter Vin	28 ± 0.1 V	28 V	
E1.6	Turn off the power supply.		OK	
E1.7	Connect the power cable to the unit.		OK	
E1.8	Click on the icon of the script perl **TlmSPIRE.pl** in folder “TC&TM Log Files” (in CDMS PC) to start the recording of the telemetry data		OK	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E1.9	Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
E1.10	Check the power supply current on the power supply current indicator Iin	<1A	~ 465 mA	
E1.11	Check the average power consumption of DPU during a period of 5 minutes: Pin = Vin x Iin	<15.3W	~ 13.02 W	
E1.12	At SCOS2000 prompt /home/sops23, select the directory **cd OBS/SPIRE/Tcset_PFMversion** and writes the following command: **SDOLnew –interval 250 DmPageTc0*.dm**		OK	
E1.13	Verify that the TM(5,1) packets are received for each telecommand		OK	
E1.14	At the end of the uploading from CDMS simulator select “**Local Command**” and “S_Load_Boot” command		OK	
E1.15	Verify that TM(5,1) is received		OK	
E1.16	Verify that OBS runs and TM(3,25) packet are received	Check TMs in the CDMS: the APID must be as indicated in the Par. 6.3.2	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E1.17	Verify on Telemetry Desktop window **DPU and OBS parameters** that the OBS version installed DP_SW_VERS_ID is the correct one	Check the PFM software version indicated in the Par. 6.3.2	1.2.p OK	
E1.18	Select “Router” on CDMS Simulator		OK	
E1.19	~~Send TC8.4.CA-7.1 (**WRITE2EEPROM**) to write into the EEPROM a copy of the OBS currently running on the PM~~ ~~• · Start Address = 0x4000~~ ~~• · End Address= 0x2E000~~		Not Performed	See PVS N°2
E1.20	~~On SCOS2000 select “ARM” and “GO”~~		Not Performed	See PVS N°2
E1.21	~~The following TM packets are received TM(1,1), TM(1,3) and after about 30 seconds TM(1,7)~~		Not Performed	See PVS N°2
E1.22	~~Turn off the Power Supply~~		Not Performed	See PVS N°3

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E2	**BOOT-SW LOAD AND BOOT TEST** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to load and boot OBS.			
E2.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E2.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E2.3	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	See PVS N°4
E2.4	Execute the procedure to upload the OBS PFM version via the EGSE Router: use the OBSLoader script on the SCOS2000 platform, commanding a TC sending rate of 4 TCs per second, which is the rate supported by the SPIRE nominal buslist: on a	During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in the **PacketDisplay** tool.	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	terminal window of the computer hosting SCOS 2000, type the following commands: > **cd** > **cd /DPU_SPIRE_TC** **>../local-bin/ObswLoader -apid 1280 -dpu -interval 250 DmPageTc0*.dm**	Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 1.** Verify that the fixed part of the last TM is equal to the one reported in **Table 6-3 Msg 2.** Verify that the packet header of TC (6,2) is compliant to AD19		
E2.5	Wait until all the TC are uploaded (prompt > appears again in the window). About 6 minutes are needed to complete the operation	On the TM log window of the CDMS or on **PacketDisplay** tool, verify that no TM(5,4) are received until the last TC is sent.	OK	
E2.6	When the up-loading of TCs in the **TELECOMMAND PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** is finished, select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E2.7	Select **S_Load_boot.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**	The local command selected appears in the **Local Command to send** text field Verify that the ´packet header´ and ´Packet data´ fields of TC (8,4) is compliant to AD19	OK	

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E2.8	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 3**. Then the **OBS** start to send telemetry.	OK	

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E3	**BOOT-SW FORCE BOOT DEFAULT OPTION** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to choose an EEPROM partition and boot OBS.			
E3.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E3.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E3.3	On scos 2000 select command "**DPU_Jump_Boot**". At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
E3.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E3.5	Select **S_Force_Boot.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**	Verify that the ´packet header´ and ´Packet data´ fields of TC (8,4) is compliant to AD19	OK	
E3.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 4**. Then the **OBS** start to send telemetry.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E4	**BOOT-SW FORCE BOOT PRIMARY PARTITION** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to boot OBS from Primary EEPROM partition.			
E4.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E4.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E4.3	On scos 2000 select command "**DPU_Jump_Boot**". At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
E4.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E4.5	Select **S_Force_Boot_Pri.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**	Verify that the ´packet header´ and ´Packet data´ fields of TC (8,4) is compliant to AD19	OK	
E4.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 4**. Then the **OBS** start to send telemetry. Check TMs in the CDMS: the APID must be as indicated in the Par. 6.3.2	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E5	**BOOT-SW FORCE BOOT SECONDARY PARTITION** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to boot OBS from Secondary EEPROM partition.			
E5.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E5.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E5.3	On scos 2000 select command "**DPU_Jump_Boot**". At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
E5.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E5.5	Select **S_Force_Boot_Sec.txt** command from the **Select**	Verify that the ´packet header´ and ´Packet	OK	

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Command menu in the **Herschel/Planck CDMS Simulator Control Panel.**	data´ fields of TC (8,4) is compliant to AD19		
E5.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 4**. Then the **OBS** start to send telemetry. Check TMs in the CDMS: the APID must be as indicated in the Par. 6.3.2	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E6	**BOOT-SW TELECOMMAND FCS ERROR** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand with wrong FCS has been received.			
E6.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E6.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E6.3	On scos 2000 select command "**DPU_Jump_Boot**". At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
E6.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E6.5	Select **S_FCS_Error_Test.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E6.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 5** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 1** Verify that all fields of Packet Header inside TM (5,4) are compliant to AD19 Verify that all ¨Packet data´ fields inside TM (5,4) are compliant to AD19	OK	

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E7	**BOOT-SW APID COMMAND ERROR** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand with wrong APID has been received.			
E7.1	Stop and switch off CDMS executing steps A5.2 and A5.3.		OK	
E7.2	Go to the directory **<CDMS Install Directory>\Other Files** and replace the file **APID2RT.txt** with: **APID2RT_for_SPIRE_Test.txt**		OK	
E7.3	Start CDMS executing steps from A3.41 to A3.48.		OK	
E7.4	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E7.5	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the the **Herschel/Planck CDMS Simulator Control Panel.** blinks	OK	
E7.6	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the TM packet is equal to the one reported in~~	Not Performed	See PVS N°6

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	~~SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~**Table 6-1 Msg 1**~~		
E7.7	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E7.8	Select **S_Force_Boot_APID_error.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E7.9	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 6** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 2**	OK	
E7.10	Stop and switch off CDMS executing steps A5.2 and A5.3.		OK	
E7.11	Go to the directory **<CDMS Install Directory>\Other Files** and replace the file **APID2RT.txt** with: **APID2RT_Orig.txt**		OK	
E7.12	Start CDMS executing steps from A3.41 to A3.48 ~~and turn off the power supply.~~		OK	See PVS N°7

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E8	**BOOT-SW TELECOMMAND WRONG FUNCTION ID** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand with wrong Function ID has been received.			
E8.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E8.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E8.3	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**~~	Not Performed	See PVS N°6
E8.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E8.5	Select **S_Function_ID_Error_Test.txt** command from the		OK	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select Command menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
E8.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 7** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 3**	OK	
E8.7	Turn off the power supply.		Not Performed	See PVS N°8

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E9	**BOOT-SW TELECOMMAND WRONG ACTIVITY ID** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand with wrong Activity ID has been received.			
E9.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E9.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E9.3	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**~~	Not Performed	See PVS N°6
E9.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E9.5	Select **S_Activity_ID_Error_Test.txt** command from the **Select**		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Command menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
E9.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **TELEMETRY PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 8** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 4**	OK	
E9.7	~~Turn off the power supply~~		Not Performed	See PVS N°8

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E10	**BOOT-SW TELECOMMAND PACKET TYPE ERROR** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand with wrong Packet Type has been received.			
E10.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E10.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E10.3	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**~~	Not Performed	See PVS N°6
E10.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E10.5	Select **S_Packet_Type_Error_Test.txt** command from the		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select Command menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
E10.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **TELEMETRY PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 9** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 5**	OK	
E10.7	~~Turn off the power supply~~		Not Performed	See PVS N°8

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E11	**BOOT-SW TELECOMMAND PACKET SUBTYPE ERROR** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand with wrong Packet Subtype has been received.			
E11.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E11.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E11.3	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**~~	Not Performed	See PVS N°6
E11.4	Select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E11.5	Select **S_Packet_Subtype_Error_Test.txt** command from the		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select Command menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
E11.6	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **TELEMETRY PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 10** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 6**	OK	
E11.7	~~Turn off the power supply~~		Not Performed	See PVS N°8

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E12	**BOOT-SW TELECOMMAND MEMORY PAGE LOST** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand when a page is lost during the OBS upload.			
E12.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E12.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E12.3	~~Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**~~	Not Performed	See PVS N°6
E12.4	Type the following commands: > **cd** > **cd /DPU_SPIRE_TC** > **mv DmPageTC00001.dm DmPageTC00001.err**		OK	See PVS N°16

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	> **mv DmPageTC000201.dm DmPageTC000201.err**			
E12.5	Execute the procedure to upload the OBS version 1.2.p via the EGSE Router: use the OBSLoader script on the SCOS2000 platform, commanding a TC sending rate of 4 TCs per second, which is the rate supported by the SPIRE nominal buslist: on a terminal window of the computer hosting SCOS 2000, type the following commands: > **cd** > **cd /DPU_SPIRE_TC** **>../local-bin/ObswLoader -apid 1280 -dpu -interval 250 DmPageTC0*.dm**	During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 1.**	OK	
E12.6	Wait for the start of uploading of telecommands	Two events **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 11** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 7**	OK	
E12.7	After the reception of two TM(5,4), at console prompt **of SCOS2000** press **CTRL-C** to stop the Telecommands upload.		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E12.8	Type the following commands: > **cd** > **cd /DPU_SPIRE_TC** > **mv DmPageTC00001.err DmPageTC00001.dm** > **mv DmPageTC00021.err DmPageTC00021.dm**		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E13	**BOOT-SW TELECOMMAND DATA MEMORY FCS ERROR** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand Data Memory FCS error occurs during the OBS upload.			
E13.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E13.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E13.3	Deleted			
E13.4	At console prompt of SCOS2000 type: **/home/sops23e/local-bin** and press <enter> then type : **SDOLnew –interval 250/home/sops23e/BootSW_TCs_Test/SPIRE/FCS_Error_Test/DMPageTc_DM_FCS_Error_Test.dm**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 12** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 8**	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E14	**BOOT-SW TELECOMMAND DATA MEMORY WRONG FORMAT** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when a Telecommand Data Memory has a Wrong Format during the OBS upload.			
E14.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E14.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E14.3	Deleted			
E14.4	At console prompt of SCOS2000 type: **/home/sops23e/local-bin** and press <enter> then type : **SDOLnew –interval 250/home/sops23e/BootSW_TCs_Test/SPIRE/Wrong_Format_Test/DMPageTc_DM_Wrong_Format_Test.dm**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 13** and the variable part of the TM packet is equal to the one reported in **Table 6-4 Msg 9**	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E15	**BOOT-SW PROGRAM FCS ERROR DURING THE DM TO PM IMMEDIATE BOOT** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when an FCS error occurs during the Data Memory to Program Memory immediate boot.			
E15.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E15.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E15.3	Deleted			
E15.4	At console prompt of SCOS2000 type: **/home/sops23e/local-bin** and press <enter> then type : **SDOLnew –interval 250 /home/sops23e/BootSW_TCs_Test/SPIRE/FCS_Error_Whole_Program_Test/*.dm** and press <enter>	During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 1.**	OK	
E15.5	When the up-loading of TCs in the **TELECOMMAND PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** is finished, select **Local Command** option from		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select TC Source menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
E15.6	Select **S_Load_boot.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E15.7	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 5** and the variable part of the TM packet is equal to the one reported in **Table 6-2 Msg 3**	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E16	**BOOT-SW LOAD AND WAIT TEST** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to load a limited number of memory page from EEPROM to PM.			
E16.1	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E16.2	Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**	The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.	OK	
E16.3	Deleted			
E16.4	At console prompt of SCOS2000 type: **sops23e/local-bin** and press <enter> then type : **SDOLnew –interval 250 /home/sops23e/BootSW_TCs_ Test/SPIRE/Load_and_Wait_Test_1/*.dm** and press <enter>	During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 1.**	OK	
E16.5	When the up-loading of TCs in the **TELECOMMAND PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** is finished, select **Local Command** option from		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select TC Source menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
E16.6	Select **S_Load_Wait.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**	Verify that the ´packet header´ and ´Packet data´ fields of TC (8,4) is compliant to AD19	OK	
E16.7	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 14**	OK	
E16.8	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E16.9	At console prompt of SCOS2000 type: **sops23e/local-bin** and press <enter> then type: **SDOLnew – interval 250 /home/sops23e/BootSW_TCs_ Test/SPIRE/Load_and_Wait_Test_2/*.dm** and press <enter>	During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 1**	OK	
E16.10	When the up-loading of TCs in the **TELECOMMAND PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** is finished, select **Local Command** option from		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select TC Source menu in the **Herschel/Planck CDMS Simulator Control Panel.**			
E16.11	Select **S_Load_Wait.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E16.12	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 14**	OK	
E16.13	Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E16.14	At console prompt of SCOS2000 type: **sops23e/local-bin** and press <enter> then type : **SDOLnew – interval 250 /home/sops23e/BootSW_TCs_ Test/SPIRE/Load_and_Wait_Test_3/*.dm** and press <enter>	During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packets is equal to the one reported in **Table 6-3 Msg 1.** Verify that the fixed part of the last TM packet is equal to the one reported in	OK	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
		Table 6-3 Msg 2		
E16.15	When the up-loading of TCs in the **TELECOMMAND PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** is finished, select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**		OK	
E16.16	Select **S_Load__Wait_Boot.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**	Verify that the ´packet header´ and ´Packet data´ fields of TC (8,4) is compliant to AD19	OK	
E16.17	Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**	An event **TM(5,1)** should be received by CDMS. and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 3**. Then the **OBS** start to send telemetry.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E17	**BOOT DETECTION OF CORRUPTED EEPROM PAGE** The purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to send a Telemetry Message when one or more EEPROM page are corrupted.			
E17.1	~~Select **Router** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**~~		Not Perfomed	See PVS N°9
E17.2	~~Start CDMS Simulator by pressing the **Start/Stop BC** button on the **Herschel/Planck CDMS Simulator Control Panel.**~~	~~The **1553 Bus Alive** Led on the **Herschel/Planck CDMS Simulator Control Panel** blinks.~~	Not Perfomed	
E17.3	~~On scos 2000 select command "**DPU_Jump_Boot**". At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.~~	~~An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**~~	Not Perfomed	
E17.4	~~At console prompt of SCOS2000 type: **/home/sops23e/local-bin** and press <enter> then type : **SDOLnew –interval 250 /home/sops23e/BootSW_TCs_Test/SPIRE/Load_Program_Corruption/*.dm** and press <enter>~~	~~During the upload an event **TM(5,1)** should be received by CDMS for each telecommand uploaded and visualized in the **PacketDisplay** tool. Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3**~~	Not Perfomed	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
		~~**Msg 1**~~		
E17.5	~~When the up-loading of TCs in the **TELECOMMAND PACKET INFO** text area of the **Herschel/Planck CDMS Simulator Control Panel** is finished, select **Local Command** option from **Select TC Source** menu in the **Herschel/Planck CDMS Simulator Control Panel.**~~		Not Perfomed	
E17.6	~~Select **S_Load_boot.txt** command from the **Select Command** menu in the **Herschel/Planck CDMS Simulator Control Panel.**~~		Not Perfomed	
E17.7	~~Click on the **Send Local TC** button in the **Herschel/Planck CDMS Simulator Control Panel.**~~	~~An event **TM(5,1)** should be received by CDMS. and visualized in the **TELECOMMAND PACKET INFO** text area.~~ ~~Verify that the fixed part of the TM packet is equal to the one reported in **Table 6-3 Msg 3**.~~	Not Perfomed	
E17.8	~~Wait some seconds.~~	~~An event **TM(5,4)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.~~ ~~Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 4**~~ ~~Verify that the fields in the variable part of the TM packet contains the number of~~	Not Perfomed	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
		~~corrupted EEPROM page (4) and the addresses of the corrupted pages~~		
E17.9	~~Repeat steps from C1.12 to C1.21 to restore the OBS version 1.2.p in the EEPROM.~~		Not Perfomed	
E17.10	Turn off the power supply.		OK	
E17.11	Stop the script perl **TlmSPIRE.pl** and launch the file **CRCCheck.bat** in folder “TC&TM Log Files\CRCCheck” (in CDMS PC) to perform the verification of the TM Packet CRCs received during the Boot SW tests.	Verify that no CRC errors are detected in all the TM Packet received during Boot SW tests	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E18 TP1 SWITCH_ON The purpose is to demonstrate the ability of the OBS to correctly initialize and start-up under all foreseen conditions according to the procedure outlined in AD1.				
E18.1	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
E18.2	Load on SCOS2000 Manual Stack window the stack for TP1 contained in "/home/sops23e/CMD/SPIRE/STACKS".		OK	
E18.3	From SCOS2000 send TC8.4.70-3.1 (FORCE_BOOT) to start the OBS.	Both essential (APID 0x501) and nominal (APID 0x503) HK TM packets TM (3,25) should be received by SCOS2000	OK	
E18.4	Turn off the power supply		Not Performed	See PVS N°8

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E18.5	~~Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.~~	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	See PVS N°4
E18.6	On a terminal window of SCOS2000: > **cd ~/OBS_Telecommands/spire/1.2.p/** > **ObswLoader –dpu –apid 1280 –interval 250 *.dm**	Verify that no TM(5,4) are received.	OK	
E18.7	From SCOS2000 send TC8.4.70-2.1 (**LOAD_TC_AND_BOOT**) to copy the OBS image from DM to PM and start the OBS.	Both essential (APID 0x501) and nominal (APID 0x503) HK TM packets TM (3,25) should be received.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E19 TP2 DPU_COMMAND_EXEC AND DPU_MEM The purpose is to demonstrate the link S/C-DPU by verifying the: a) correct implementation of the TM/TC packet transfer protocol as specified in AD2 b) Reception, validation and interpretation of TCs c) Command identification and execution d) Verification reporting Moreover another purpose is to demonstrate the ability to load, check and dump memory areas resident on the DPU. This will be done by absolute (via Service 6) and relative (via dedicated functions with Service 8) addresses in memory. The ability to write the image of the OBS from the PM into the EEPROM and to start again the OBS will also be tested here.				
E19.1	Load on SCOS2000 Manual Stack window the stack for TP2 contained in "**/home/sops23e/CMD/SPIRE/STACKS**".		OK	
E19.2	Send TC17.1.1 (**TEST_CONNECTION**)	Verify reception of: TM (1,1), (1,3), (17,2) and (1,7)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E19.3	Send TC14.3.1 (**REPORT_ENABLE_TM**) to dump the list of type-subtype- Sid combinations for all telemetry packets for which generation is enabled.	Verify reception of: TM (1,1), (1,3), (14,4) and (1,7) Use **PacketDisplay** to verify that the list of SIDs in TM (14,4) matches the list of enabled TM packets (all of them are enabled by defaults at start-up, the list is in RD1, see also table in Appendix 3).	OK	
E19.4	Send TC9.7.1 (**ENABLE_TIME_VERIFICATION**) to perform time verification.	Verify reception of: TM (1,1), (9,9), (1,3) and (1,7) Packet (9,9) will be verified in the Telemetry Log on the CDMSSimulator.	OK	
E19.5	Stop CDMS. Open CDMS file **APID2RT.txt** and associate SPIRE with APID 0x300; this is needed to force the CDMS to send TCs with wrong APID to SPIRE.		OK	
E19.6	Start CDMS. Wait 5 seconds	Ignore all TM (5,1) coming out at this stage due to internal buffer overflow caused by CDMS shutdown (not relevant for the present test).	OK	
E19.7	Send TC17.1.2 (**TEST_CONNECTION**) from CDMS Simulator (switch Select TC Source to local) to test OBS reaction against wrong APID in TC	Verify reception of TM (1,2) with failure code 0 (11th word in packet)	OK	It can be possible that the CDMS assigns to this command the same counter of the last one therefore the OBS does not react to the command.In this case perform again the step.

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E19.8	Stop CDMS. Open CDMS file **APID2RT.txt** and change SPIRE's APID back to nominal (0x500)		OK	
E19.9	Start CDMS. Wait 5 seconds.	Ignore all TM (5,1) coming out at this stage due to internal buffer overflow caused by CDMS shutdown (not relevant for the present test).	OK	
E19.10	Send TC17.1.3 (**TEST_CONNECTION**) from CDMS Simulator to test OBS reaction against wrong TC packet length.	Verify reception of TM (1,2) with failure code 1	OK	This command has been sent two times
E19.11	Send TC17.1.4 from CDMS Simulator to test OBS reaction against wrong TC packet checksum.	Verify reception of TM (1,2) with failure code 2	OK	
E19.12	Send TC17.1.5 from CDMS Simulator to test OBS reaction against wrong TC packet type.	Verify reception of TM (1,2) with failure code 3	OK	
E19.13	Send TC17.1.6 from CDMS Simulator to test OBS reaction against wrong TC packet subtype.	Verify reception of TM (1,2) with failure code 4	OK	
E19.14	Send TC17.1.7 from CDMS Simulator to test OBS reaction against different TC "**ack**" bits	Verify that only TM (17,2) is received	OK	
E19.15	Send TC17.1.8 from CDMS Simulator to test OBS reaction against different TC "**ack**" bits	Verify that only TM (1,1) and TM (17,2) are received	OK	
E19.16	Send TC17.1.9 from CDMS Simulator to test OBS reaction against different TC "**ack**" bits	Verify that only TM (1,3) and TM (17,2) are received	OK	
E19.17	Send TC17.1.10 from CDMS Simulator to test OBS reaction against different TC "**ack**" bits	Verify that only TM (17,2) and TM (1,7) are received	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E19.18	Send TC6.5.1 (**DUMP_MEMORY**) from SCOS2000 (switch Select TC Source to Router on the CDMS Simulator) to dump a PM memory area from location 0x12000 to 12005 (15 NSAU). See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3), (6,6) and (1,7). Check with **PacketDisplay** that the received words of TM (6,6) are different from the pattern contained in TC6.2.1	OK	
E19.19	Send TC6.2.1 (**LOAD_MEMORY**) to load a patch in the same memory area as above (put 15 in repeater box). See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E19.20	Send TC6.5.1 (**DUMP_MEMORY**) to dump again from the same memory area. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3), (6,6) and (1,7). Use **PacketDisplay** to compare received data words of TM (6,6) to the pattern uplinked in TC6.2.1.	OK	
E19.21	Send TC6.9.1 (**CHECK_MEMORY**) to compute the CRC checksum over the same memory area. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3), (6,10) and (1,7). Verify with **PacketDisplay** that the 9th to 12th words of TM (6,10) are 0001, 2000, 000f and b421	OK	
E19.22	Send TC6.2.2 from CDMS Simulator (switch Select TC Source to local) to test the OBS reaction against a wrong Memory ID.	Verify reception of TM (1,1) and TM (1,8) with error code 0x601 (Illegal Memory ID) at the 11th word.	OK	
E19.23	Send TC6.2.3 to test the OBS reaction against a wrong start address.	Verify reception of TM (1,1) and TM (1,8) with error code 0x602 (Illegal Start Address) at the 11th word.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E19.24	Send TC6.2.4 to test the OBS reaction against the attempt to write out of memory.	Verify reception of TM (1,1) and TM (1,8) with error code 0x603 (Illegal NSAU) at the 11th word.	OK	
E19.25	Send TC6.2.5 to test the OBS reaction against a wrong number of data words in the length field (in the Application Data)	Verify reception of TM (1,1) and TM (1,8) with error code 0x604 (Bad NSAU) at the 11th word.	OK	
E19.26	Send TC6.2.6 to test the OBS reaction against a wrong CRC checksum for the uplinked memory patch (not the CRC of the whole TC). Switch back Select TC Source to Router.	Verify reception of TM (1,1) and TM (1,8) with error code 0x605 (Bad CRC) at the 11th word.	OK	
E19.27	Send TC8.4.1-2.1 (**REPORT_TABLE**) from SCOS2000 (switch Select TC Source to Router on the CDMS Simulator) to report the contents of an undefined table See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code 0x0811 (Undefined Table) at the 11th word.	OK	
E19.28	Send TC8.4.1-1.1 (**SET_TABLE**) to create a new table See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E19.29	Send TC8.4.1-2.1 (**REPORT_TABLE**) to report the contents of the newly created table. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3), (21,4) and (1,7). Check with **PacketDisplay** that in the TM(21,4) the received pattern (from 17th word to the third last) is all 0s.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E19.30	Send TC8.4.1-3.1 (**UPDATE_TABLE**) to update the contents of the newly created table, using the **LoadTable** TOPE script. See Annex 10.1.2 for parameters of TC.In the local test procedure list box, select the procedure S_Updatetable3.1.tcl; click Run and confirm. Select file with the same name as the command ID and press ok and then send.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E19.31	Send TC8.4.1-2.1 (**REPORT_TABLE**) to report the contents of the newly updated table. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3), (21,4) and (1,7). Check with **PacketDisplay** that the received pattern of TM (21,4) is identical to that uplinked in TC8.4.1-3.1.	OK	
E19.32	Send TC8.4.1-1.2 from CDMS Simulator (switch Select TC Source to local) to test the OBS against a wrong Function_ID in the TC packet.	Verify reception of TM (1,1) and (1,8) with error code 0x0801 (Illegal Function ID) at the 11th word.	OK	
E19.33	Send TC8.4.1-1.3 from CDMS Simulator to test the OBS against a wrong Activity_ID in the TC packet.	Verify reception of TM (1,1) and (1,8) with error code 0x0802 (Illegal Activity ID) at the 11th word.	OK	
E19.34	Send TC8.4.1-1.4 (**SET_TABLE**) from SCOS2000 (switch Select TC Source in CDMS to Router) to test the OBS against an out of limits table ID. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code 0x0805 (Illegal Table ID) at the 11th word.	OK	
E19.35	Send TC8.4.1-1.5 (**SET_TABLE**) See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E19.36	Send TC8.4.1-1.6 (**SET_TABLE**) to update a too-long table with respect to the available space on-board. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code 0x0809 (Table Space Full) at the 11th word.	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E19.37	Send TC8.4.1-3.2 (**UPDATE_TABLE**)to update an undefined table using TOPE I/F selecting file name equal to the command ID. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code 0x0811 (Undefined Table) at the 11th word.	OK	
E19.38	Send TC8.4.1-1.1 (**SET_TABLE**) to reset the table to the original Length See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E19.39	Send TC8.4.1-3.3 (**UPDATE_TABLE**) to update a table starting from an out-of-table index using TOPE I/F selecting file name equal to the command ID. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1) (1,8) with error code 0x0806 (Illegal Table Index) at the 11th word.	OK	
E19.40	Send TC8.4.1-3.4 from CDMS Simulator (switch Select TC Source to local) to update a table with a TC where the length on the application data and the number of data words do not coincide.	Verify reception of TM (1,1) and (1,8) with error code 0x0808 (Bad Data) at the 11th word.	OK	
E19.41	Send TC8.4.1-3.5 from CDMS Simulator to update a table with more words than the table size.	Verify reception of TM (1,1) and (1,8) with error code 0x080D (Bad NData) at the 11th word.	OK	
E19.42	Send TC8.4.1-1.7 (**SET_TABLE**) from SCOS2000 (switch Select TC Source in CDMS to router) to create a new table See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E19.43	Send TC8.4.1-3.6 (**UPDATE_TABLE**) to load the new table using TOPE I/F selecting file name equal to the command ID. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E19.44	Send TC8.4.1-1.8 (**SET_TABLE**) to create a new table See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E19.45	Send TC8.4.1-3.7 (**not standard UPDATE_TABLE**) to load the new table using TOPE I/F selecting file name equal to the command ID. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E19.46	Send TC8.4.1-1.9 (**SET_TABLE**) to create a new table See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E19.47	Send TC8.4.1-3.8 (**UPDATE_TABLE**) to load the new table. See Annex 10.1.2 for parameters of TC using TOPE I/F selecting file name equal to the command ID.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E19.48	Send TC8.4.1-2.2 (**REPORT_TABLE**) to dump the MOAT. See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TMs (21,4). Inspect the second TM(21,4) packet and note that the start addresses (4th word) for the three last created tables at the lines 350, 360 and 370, are sequential with offset 0x30 .	OK	
E19.49	Send TC8.4.1-1.10 (**SET_TABLE**) to delete Table 0x72 See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E19.50	Send TC8.4.1-2.2 (**REPORT_TABLE**) to dump the MOAT See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TMs (21,4). Inspect (in the 2th packet of TM (21,4)) the dumped table and check that there is no table definition entry with ID 0x72 (offset 360, Start Address: 3th and 4th words)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E19.51	Send TC8.4.1-4.1 (**COLLECT_GARBAGE**) to reallocate tables	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E19.52	Send TC8.4.1-2.2 (**REPORT_TABLE**) to dump the MOAT See Annex 10.1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,4). Inspect the second TM(21,4) packet and check that the start address for table 0x73 (offset 370, 3th and 4th words) is different from previous MOAT dump and at offset 0x30 from start address of table 0x71 (offset 350, 3th and 4th words)	OK	
E19.53	~~Send TC8.4.CA-7.1 (**WRITE2EEPROM**) to write into the EEPROM primari partition a copy of the OBS currently running on the PM See Annex 10.1.2 for parameters of TC.~~	~~Verify reception of TM (1,1), (1,3) and, after about 20 seconds, (1,7)~~	Not Performed	See PVS N°10
E19.54	~~Turn off the power supply~~		Not Performed	See PVS N°8
E19.55	~~Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.~~	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	See PVS N°4
E19.56	Send TC8.4.70-3.1 (**FORCE_BOOT**) to force rebooting the DPU		OK	
E19.57	Send TC17.1.1 (**TEST_CONNECTION**) to perform a connection test and verify the OBS is regularly running.	Verify reception of TM (1,1), (1,3), (17,2) and (1,7)	OK	

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UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E19.58	Stop DRCU Simulator		Not Performed	See PVS N°11
E19.59	Stop CDMS Simulator		Not Performed	See PVS N°11
E19.60	Turn off the power supply		Not Performed	See PVS N°8

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E20 TP3 HK_COLLECT The purpose is to test the DPU-S/S chain by demonstrating the collection and transmission of HK packets. The ability to support the TM transmission retry at packet level will also be tested here.				
E20.1	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	See PVS N°4
E20.2	Load on SCOS2000 Manual Stack window the stack for TP3 contained in "**/home/sops23e/CMD/SPIRE/STACKS**".		OK	
E20.3	Send TC8.4.70-3.1 (**FORCE_BOOT**) to start OBS		OK	
E20.4	Send TC17.1.1 (**TEST_CONNECTION**) to perform a connection test and verify the OBS is regularly running.	Verify reception of TM (1,1), (1,3), (17,2) and (1,7)	OK	
E20.5	Stop DRCU Simulator		OK	
E20.6	Stop CDMS Simulator		OK	
E20.7	On the CDMS simulator change bus profile to the buslist SPIRE_Redundant_notimesync that does not contain the "Time Sync" directive.		OK	
E20.8	Start CDMS Simulator and note down the value of TSYNC in the SCOS2000 Telemetry Desktop.	Verify periodic (0.5/sec) reception of TM (3,25) Essential HK packets with SID	2018.111.15.16.46.000 OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
		0x300. Verify periodic (1/sec) reception of TM (3,25) Nominal HK packets with SID 0x301. Check that the MSB of the time field in the HK packets is 1. Verify reception of three TM (5,1) events with error codes 0x0520, 0x0521 and 0x0522 that notify a no_response condition from the DRCU (it is switched off). Also check that the MONSTAT parameter on the SCOS2000 Telemetry Desktop is 0 (all subsystems off).		
E20.9	Start DRCU Simulator	Verify reception of at least three TM (5,1) events with error codes 0x8520, 0x8521 and 0x8522 notifying exit from the previous no_response condition from the DRCU (it is switched on). Also check that the MONSTAT parameter in SCOS2000 is 7 (all subsystems on).	OK	
E20.10	Send TCTest.1, from CDMS Simulator (switch Select TC Source to local), 10 times, spaced by at least 3 seconds, to test support to retry at packet level mechanism.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that no TM packets are lost by checking that the received packet counter in **PacketDisplay** shows no jumps.	OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E20.11	Find parameter TSYNC on the SCOS2000 Telemetry Desktop. This is the time when the last valid "**Sync**" has been received on the 1553 bus	Verify that the TSYNC time does not change and stays at the same value of step E20.8	OK	
E20.12	Switch-off CDMS. Switch it on again following step A3.40 , select bus profile SPIRE_redundant, Start BC	Verify that the TSYNC time increases of 1 second every second	OK	
E20.13	Find parameter TDIFF on the SCOS2000 Telemetry Desktop, and record its value This is the time difference between the DPU internal time and the CDMS time		2018.111.15.15.04.995 OK	
E20.14	Increase system time on the CDMS computer of 1 hour		OK	
E20.15	Cycle as fast as possible the Stop/Start BC button on the CDMS simulator. In this way the new PC system time is reloaded into the CDMS simulator	Verify that the TDIFF value in the SCOS2000 Telemetry Desktop window has changed of an amount equal to the time change carried out on the CDMS computer. Using **PacketDisplay** verify also the change in the time stamp of the HK packets received after the new time was loaded by the CDMS.	2018.111.16.15.01.993 OK	
E20.16	Find the parameter **TRESET** on the SCOS2000 Telemetry Desktop, and record its value This is the time when the last sync signal to the S/S has been sent		1970.001.00.00.00.000 OK	
E20.17	Send TC8.4.CA-1.1 (**RESET_DRCU_COUNTERS**) to reset DRCU timers	Verify that TRESET time is updated	2018.111.16.27.24.016 OK	

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UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E20.18	Send TC8.4.CC-1.8 (**DEFINE_NEW_HK_REPORT**) to define an HK packet before the related table ID has been defined. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code 0x0825 (Undefined HK Table)	OK	
E20.19	Send TC8.4.1-1.10 (**SET_TABLE**) See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E20.20	Send TC8.4.1-1.11 (**SET_TABLE**) See Annex 10.1.3 for parameters of TC..	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E20.21	Send TC8.4.1-3.10 (**UPDATE_TABLE**). See Annex 10.1.3 for parameters of TC using TOPE I/F selecting file name equal to the command ID.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E20.22	Send TC8.4.1-3.11. (**UPDATE_TABLE**). See Annex 10.1.3 for parameters of TC using TOPE I/F selecting file name equal to the command ID.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E20.23	Send TC8.4.CC-1.1 (**DEFINE_NEW_HK_REPORT**) to start collection of additional HK packets. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify periodic (1/sec) reception of additional TM (3,25) diagnostic packets with SID 0x302	OK	
E20.24	Send TC8.4.CC-1.2 (**DEFINE_NEW_HK_REPORT**) to start collection of additional HK packets. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify periodic (1/sec) reception of additional TM (3,25) diagnostic packets with SID 0x303	OK	
E20.25	Send TC8.4.CC-1.3 (**DEFINE_NEW_HK_REPORT**) to try and define an invalid HK packet ID. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0821 (Illegal HK Packet ID)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E20.26	Send TC8.4.CC-1.4 (**DEFINE_NEW_HK_REPORT**) to force HK packet collection with a too short interval. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0834 (Illegal HK Sampling Interval)	OK	
E20.27	Send TC8.4.CC-1.5 (**DEFINE_NEW_HK_REPORT**) to change an HK packet SID to an out-of-limits value. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0822 (Illegal HK SID)	OK	
E20.28	Send TC8.4.CC-1.7 (**DEFINE_NEW_HK_REPORT**) to change the SID to a valid value but while the HK collection is running. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0827 (err HK Sampling Running)	OK	
E20.29	Send TC8.4.CC-1.6 (**DEFINE_NEW_HK_REPORT**) to change the HK definition table while the HK collection is active. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0827 (err HK Sampling Running)	OK	
E20.30	Send TC8.4.CC-3.1 (**REPORT_HK_REPORT**) to report the definition of the HK packet with ID 0x300. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3), (1,7) and (21,4) with APID = 0x509 and SID = 0x209. TM (21,4) will contain, in accordance to the format specified in RD1, HKID=0x300, HKSID=0x300, HK_INTERVAL=0x7d0, TABLE_ID=0	OK	
E20.31	Send TC8.4.CC-3.2 (**REPORT_HK_REPORT**) to report the definition of the HK packet with ID 0x301 See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3), (1,7) and (21,4) with APID = 0x509 and SID = 0x209. TM (21,4) will contain, in accordance to the format specified in RD1, HKID=0x301, HKSID=0x301, HK_INTERVAL=0x3e8, TABLE_ID=1	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E20.32	Send TC8.4.CC-3.3 (**REPORT_HK_REPORT**) to report the definition of the HK packet with ID 0x302 See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3), (1,7) and (21,4) with APID = 0x509 and SID = 0x209. TM (21,4) will contain, in accordance to the format specified in RD1, HKID=0x302, HKSID=0x302, HK_INTERVAL=0x3e8, TABLE_ID=2	OK	
E20.33	Send TC8.4.CC-3.4 (**REPORT_HK_REPORT**) to report the definition of the HK packet with ID 0x303 See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3), (1,7) and (21,4) with APID = 0x509 and SID = 0x209. TM (21,4) will contain, in accordance to the format specified in RD1, HKID=0x303, HKSID=0x303, HK_INTERVAL=0x3e8, TABLE_ID=3	OK	
E20.34	Send TC8.4.CC-2.3 (**CLEAR_HK_REPORT**) to stop Essential HK collection See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that reception of TM (3,25) with SID 0x300 has stopped	OK	
E20.35	Send TC8.4.1-1.13 (**SET_TABLE**) to remove table 0 On the SCOS2000 Telemetry Desktop, click AND and select SCU Parameters. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E20.36	On the SCOS2000 Telemetry Desktop, click **AND** and select **SCU Parameters**. Send TC8.4.1-4.10 (**COLLECT_GARBAGE**) to re-allocate tables on board. With this command the HK definition tables for all currently running HK collection tasks will be moved. The test verifies that this does not affect the HK tasks visualized on the SCU parameter in the telemetry desktop.	Verify reception of TM (1,1), (1,3) and (1,7). Verify on the SCOS2000 Telemetry Desktop (on the SCU parameter) that the HK parameters are not changing while issuing the command.	OK	
E20.37	Send TC8.4.1-1.11 (**SET_TABLE**) to try and reset a table currently being used for HK collection See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0813 (Busy Table)	OK	
E20.38	Send TC8.4.CC-2.1 (**CLEAR_HK_REPORT**) to clear the definition of the HK packet with ID 0x302 See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that reception of TM (3,25) with SID 0x302 has stopped	OK	
E20.39	Send TC8.4.CC-1.5 (**DEFINE_NEW_HK_REPORT**) to change an HK packet SID to a wrong value. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0822 (Illegal HK SID)	OK	
E20.40	Send TC8.4.CC-3.3 (**REPORT_HK_REPORT**) to report the definition of an HK packet that has been cleared. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0829 (Undefined HK ID)	OK	
E20.41	Send TC8.4.CC-2.2 (**CLEAR_HK_REPORT**) to clear the definition of the HK packet with ID 0x303 See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that reception of TM (3,25) with SID 0x303 has stopped	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E20.42	Send TC8.4.CC-2.4 (**CLEAR_HK_REPORT**) to stop collection of nominal HK packets. All HK tasks are now stopped. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that reception of TM (3,25) with SID 0x301 has stopped	OK	
E20.43	Send TC8.4.1-1.11 (**SET_TABLE**) to try and reset a table that is no longer used as an HK packet definition. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E20.44	Send TC8.4.CC-3.4 (**REPORT_HK_REPORT**) to report the definition of an HK packet that has been cleared. See Annex 10.1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0829 (Undefined HK ID)	OK	
E20.45	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x88FF0000 to send an unknown command to the S/S	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (5,1) with error code = 0x0509 (S/S Command Unknown)	OK	
E20.46	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8C020000 to send a known command to the S/S	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (5,1) with error code = 0x8509 (exit from previous error condition)	OK	
E20.47	Stop DRCU Simulator		OK	
E20.48	Stop CDMS Simulator		OK	
E20.49	Turn off the power supply		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E21 TP4 VIRTUAL MACHINES The purpose is to demonstrate that all Virtual Machines described in RD3 and available in the OBS as specified in AD3, can execute in a timely fashion command lists. It will also be shown that all VMs can run in parallel without interfering with one another; this is a potential risk since all VMs use the same interface to send commands and receive parameters from the DRCU.				
E21.1	Start CDMS Simulator		OK	
E21.2	Start DRCU simulator		OK	
E21.3	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
E21.4	Load on SCOS2000 Manual Stack window the stack for TP4 contained in "**/home/sops23e/CMD/SPIRE/STACKS**".		OK	
E21.5	Send TC8.4.70-3.1 (**FORCE_BOOT**) to start OBS *At this stage, about 320 HK parameter requests are sent to the DRCU simulator. Each request requires 2msec to be served.*	Parameter **LSLOAD** on the SCOS Telemetry Desktop should be oscillating about between 570000 and 600000 (expressed in decimal form)	570000÷596000 OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E21.6	Send TC8.4.1-1.20 (**SET_TABLE**) to create table for VM code See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E21.7	Send TC8.4.1-1.21 (**SET_TABLE**) to create table for VM code See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E21.8	Send TC8.4.1-1.22 (**SET_TABLE**) to create table for VM code See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E21.9	Send TC8.4.1-1.23 (**SET_TABLE**) to create table for VM code See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E21.10	Send TC8.4.1-3.20 (**UPDATE_TABLE**) to load VM code See Annex 10.1.4 for parameters of TC using TOPE I/F selecting file name equal to the command ID.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E21.11	Send TC8.4.1-3.21 (**UPDATE_TABLE**) to load VM code See Annex 10.1.4 for parameters of TC using TOPE I/F selecting file name equal to the command ID.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E21.12	Send TC8.4.1-3.22 (**UPDATE_TABLE**) to load VM code See Annex 10.1.4 for parameters of TC using TOPE I/F selecting file name equal to the command ID.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E21.13	Send TC8.4.1-3.23 (**UPDATE_TABLE**) to load VM code See Annex 10.1.4 for parameters of TC using TOPE I/F selecting file name equal to the command ID.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E21.14	Send TC8.5.2.1 (**REPORT_FUNCTION**) to report the status of the VM See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM is inactive, and (1,7). TM(8,6) shall contain 0x0203 and 0x0860 in 9th and 10th words	OK	

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E21.15	Send TC8.5.3.1 (**REPORT_FUNCTION**) to report the status of the VM1 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM1 is inactive, and (1,7). TM(8,6) shall contain 0x0303 and 0x0860 in 9th and 10th words	OK	
E21.16	Send TC8.5.4.1 (**REPORT_FUNCTION**) to report the status of the VM2 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM2 is inactive, and (1,7). TM(8,6) shall contain 0x0403 and 0x0860 in 9th and 10th words	OK	
E21.17	Send TC8.5.5.1 (**REPORT_FUNCTION**) to report the status of the VM3 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM3 is inactive, and (1,7). TM(8,6) shall contain 0x0503 and 0x0860 in 9th and 10th words	OK	
E21.18	Send TC8.4.2-2.1 (**RUN_VM**) Now there are 50 additional HK parameter requests going to the LS port; each requires 4 msec in total to be served. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that no TM (5,1) events with error code = 0x050C are received Verify that **LSLOAD** parameter on SCOS TM monitor is increasing.	OK 640000÷820000	Two TM(1,3) have been received
E21.19	Send TC8.4.1-4.20 (**COLLECT_GARBAGE**) to re-allocate tables on board	Verify reception of TM (1,1) and (1,8) with error code = 0x080C (VM Running)	OK	
E21.20	Send TC8.4.3-2.1 (**RUN_VM1**) Now there are 50 additional HK parameter requests going to the LS port; each requires 4 msec in total to be served. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that no TM (5,1) events with error code = 0x050C are received Verify that **LSLOAD** parameter on SCOS TM monitor is increasing	OK 660000÷890000	Two TM(1,3) have been received

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E21.21	Send TC8.4.4-2.1 (**RUN_VM2**) Now there are 50 additional HK parameter requests going to the LS port; each requires 4 msec in total to be served. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that no TM (5,1) events with error code = 0x050C are received. Verify that **LSLOAD** parameter on SCOS TM monitor is increasing	OK 675000÷990000	Two TM(1,3) have been received
E21.22	Send TC8.4.5-2.1 (**RUN_VM3**) Now there are 50 additional HK parameter requests going to the LS port; each requires 4 msec in total to be served. At this point we have passed the number of total requests (about 500) that can go through the LS port each second: we might be losing some HK packets, but this is no problem for the current tests. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that **LSLOAD** parameter on SCOS TM monitor is increasing Verify that no TM (5,1) events with error code = 0x050C are received. NOTE: if LSLOAD > 1000000, the TM (5,1) event has error code = 0x050F (notifying the overflow condition on the LS port); if after an overflow condition, LSLOAD return minor of 1000000, then a reception TM (5,1) event with error code = 0x850F is expected.	OK 800000÷1000000	Two TM(1,3) have been received
E21.23	Send TC8.5.2.1 (**REPORT_FUNCTION**) to report the status of the VM See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM is active and associated table ID is correct, and (1,7). TM(8,6) will contain 0x0202, 0x0860, 0x0028 and 0x0000 at the 9th to 12th word	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E21.24	Send TC8.5.3.1 (**REPORT_FUNCTION**) to report the status of the VM1 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM1 is active and associated table ID is correct, and (1,7). TM(8,6) will contain 0x0302, 0x0860, 0x0020 and 0x0000 at the 9th to 12th word	OK	
E21.25	Send TC8.5.4.1 (**REPORT_FUNCTION**) to report the status of the VM2 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM2 is active and associated table ID is correct, and (1,7). TM(8,6) will contain 0x0402, 0x0860, 0x0021 and 0x0000 at the 9th to 12th word	OK	
E21.26	Send TC8.5.5.1 (**REPORT_FUNCTION**) to report the status of the VM3 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) confirming VM3 is active and associated table ID is correct, and (1,7). TM(8,6) will contain 0x0502, 0x0860, 0x0022 and 0x0000 at the 9th to 12th word	OK	
E21.27	Send TC8.4.1-1.22 (**SET_TABLE**) to reset the table being used by the fourth VM See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0813 (Busy Table)	OK	
E21.28	Send TC8.4.2-3.1 (**HALT_VM**) to stop the VM	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (5,1) with error code = 0x50F are no longer received.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E21.29	Send TC8.4.CC-2.1 (**CLEAR_HK_REPORT**) to stop collection of Essential HK packets See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	TM(3,25) with SID 300 are no longer received
E21.30	Send TC8.4.1-1.24 (**SET_TABLE**) to cancel table 0 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E21.31	TC8.4.1-4.20 (**COLLECT_GARBAGE**) to re-allocate tables on board	Verify reception of TM (1,1), (1,3) and (1,7). Verify that **LSLOAD** parameter on SCOS2000 that flow of S/S commands is unperturbed (about between 700000 and 800000) and that no TM (5,1) are received	OK 700000÷796000	
E21.32	Send TC8.4.3-3.1 (**HALT_VM1**) to stop the VM1	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E21.33	Send TC8.4.4-3.1 (**HALT_VM2**) to stop the VM2	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E21.34	Send TC8.4.5-3.1 (**HALT_VM3**) to stop the VM3	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the traffic is back to normal by checking that the **LSLOAD** parameter on SCOS2000 is back to nominal (HK) values.	OK ~ 570000	
E21.35	Send TC8.4.1-1.22 (**SET_TABLE**) to reset the table that was used by the fourth VM See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E21.36	Open the file **TelemetryA.txt** resident on the CDMS Simulator. Perform a search for the values 0xC1A0, 0xC1A1, 0xC1A2 and 0xC1A3	Verify that these values are only found in correspondence of the correct HK parameter and nowhere else. This verifies that there was no cross-talk between the various VMs and HK collection task.	OK	See PVS N°12
E21.37	Send TC8.4.1-1.25 (**SET_TABLE**) to create table ID 0x30 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E21.38	Send TC8.4.1-1.26 (**SET_TABLE**) to create table ID 0x31 See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E21.39	Send TC8.4.1-3.24 (**UPDATE_TABLE**) using TOPE I/F and load file with sme name as Command ID. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E21.40	Send TC8.4.1-3.25 (**UPDATE_TABLE**) using TOPE I/F and load file with sme name as Command ID. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E21.41	Send TC8.4.1-3.26 (**UPDATE_TABLE**) using TOPE I/F and load file with sme name as Command ID. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E21.42	Send TC8.4.1-3.27 (**UPDATE_TABLE**) using TOPE I/F and load file with sme name as Command ID. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E21.43	Send TC8.4.1-3.28 (**UPDATE_TABLE**) using TOPE I/F and load file with sme name as Command ID. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E21.44	Send TC8.4.1-3.29 (**UPDATE_TABLE**) using TOPE I/F and load file with sme name as Command ID. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E21.45	Send TC8.4.1-3.30 (**UPDATE_TABLE**) using TOPE I/F and load file with sme name as Command ID. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E21.46	Send TC8.4.1-3.31 (**UPDATE_TABLE**) using TOPE I/F and load file with sme name as Command ID. See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E21.47	Send TC8.4.2-2.2 (**RUN_VM**) to start Hardware VM on Table ID 0x30	Verify reception of TM (1,1), (1,3) and (1,7). Verify that 18 TM (5,1) events are received with the correct values in the parameter field (16th and 17th word) as specified in Appendix 10.2 Verify reception of 2 TM (21,4) with APID = 0x0509 and SID = 0x020B. The first contains the same parameters previously received with the TM (5,1) event packets, starting from 19th word, preceeded by the number of following words(i.e. 0x13). The second should contain 0x0000 and 0xFFFF as the last two words before the CRC	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E21.48	Send TC8.4.2-1.1 from CDMS Simulator (switch Select TC Source to local), to execute a command list uplinked together with the command.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that no TM (5,1) events with error code = 0x050C are received. Verify that **LSLOAD** parameter on SCOS TM monitor is increasing.	OK 620000÷745000	Two TM(1,3) have been received
E21.49	Send TC8.5.2.1 (**REPORT_FUNCTION**) from SCOS (switch Select TC Source to Router), to report the status of the VM See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) (words from 9th to 12th are 0x0201, 0x860, 0x0078 and 0x0000), and (1,7)	OK	
E21.50	Send TC8.4.2-3.1 (**HALT_VM**) to stop the VM	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the traffic is back to normal by checking that the **LSLOAD** parameter on SCOS2000 is back to nominal (HK) values.	OK ~ 570000	
E21.51	Send TC8.5.2.1 (**REPORT_FUNCTION**) to report the status of the VM See Annex 10.1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) (with 9th word = 0x0203) confirming VM is inactive, and (1,7)	OK	
E21.52	~~Stop DRCU Simulator~~		Not Performed	See PVS N°11
E21.53	~~Stop CDMS Simulator~~		Not Performed	See PVS N°11
E21.54	~~Turn off the power supply~~		Not Performed	See PVS N°8

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22 TP5 SPIRE_ICD The purpose is to demonstrate the reception (from S/Ss), control, packing and transmission (to S/C) of science frames. It will be shown that acquisition of science frames can be initiated by standard TCs. The execution of particular commands will allow testing of other OBS features like the Telemetry Packet Control, the Time Management, the Report Function Status and the "arm-go" feature for the commands to engage/release the launch safety latch of the SPIRE spectrometer mechanisms.				
E22.1	~~Start CDMS Simulator~~		Not Performed	CDMS Simulator is already on
E22.2	~~Start DRCU simulator~~		Not Performed	DRCU Simulator is already on
E22.3	~~Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.~~	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	See PVS N°4
E22.4	From SCOS2000 send TC8.4.70-3.1 (**FORCE_BOOT**) to start the OBS.	Both essential (APID 0x501) and nominal (APID 0x503) HK TM packets TM (3,25) should be received by SCOS2000	OK	
E22.5	Load on SCOS2000 Manual Stack window the stack for TP5_GetFullPhot. This stack of commands executes steps steps E22.5 to E22.7.	Verify the reception of TM (1,1), (1,3) and (1,7) for all commands sent	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Series of TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) to configure the DRCU science data frames, using the following list of parameters: • · 0x843C0000 selects Frame_ID 0 from DCU • · 0x8418000C sets DCU frame timing • · 0x84190070 sets DCU frame timing • · 0x843D00FF sets DCU to send 255 frames			
E22.6	TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify start of reception for TM (21,1) science packets	OK	
E22.7	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify the reception of others TM (21,1) until the total of TM (21,1) packets is 255 (each containing 1 Frame). TM packets will have APID=0x505 and SID=0x200.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.8	Load on SCOS2000 Manual Stack window the stack for TP5_GetFullSpec. This stack of commands executes steps C21.7 to C21.10 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0004, to configure DRCU to send Spectrometer full-array frames	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.9	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d0ff, to configure DRCU to send 255 frames	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.10	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify start of reception for TM (21,1) science packets	OK	
E22.11	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1) packets containing 255 frames were received, with APID = 0x507 and SID = 0x201. This corresponds to a total of 43 TM(21,1) packets.	OK	
E22.12	Load on SCOS2000 Manual Stack window the stack for TP5_GetSMECNom. This stack of commands executes steps C21.11 to C21.14 TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c00000, to configure sampling rate for SMEC frames	Verify reception of TM (1,1), (1,3) and (1,7.)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.13	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10001 to start DRCU data transfer from the MCU. The MCU cannot be commanded to send a fixed number of packets but it sends them continuously **NOTE:** on the DRCU Simulator check that the box "SAMPLE INTERVAL between blocks" of CH1 is 3 msec. Otherwise manually correct it.	Verify reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,1) packets with APID = 0x509 and SID = 0x410.	OK	
E22.14	Wait 5 seconds and send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10000 to stop DRCU data transfer	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1) packets stops.	OK	
E22.15	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,1) is received.	OK	
E22.16	Load on SCOS2000 Manual Stack window the stack for TP5_GetBSMNom. This stack of commands executes steps C21.15 to C21.18 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c20000, to configure sampling rate for BSM frames	Verify reception of TM (1,1), (1,3), and (1,7)	OK	
E22.17	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10001 to start DRCU data transfer from the MCU. The MCU cannot be commanded to send a fixed number of packets but it sends them continuously	Verify reception of TM (1,1), (1,3), and (1,7). Verify continuous reception of TM (21,1) packets with APID = 0x509 and SID = 0x612.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.18	Wait 5 seconds and send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10000 to stop DRCU data transfer	Verify reception of TM (1,1), (1,3), and (1,7). Verify that TM (21,1) packets stops.	OK	
E22.19	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3), and (1,7). Verify that the last TM (21,1) are received.	OK	
E22.20	Load on SCOS2000 Manual Stack window the stack for TP5_GetSCUNom. This stack of commands executes steps C21.19 to C21.23 (send commands one by one) Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0830000 to configure DRCU to send SCU nominal frames.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E22.21	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa084001f to configure DRCU to send 31 frames. If this does not work, put manually the number 31 in the DRCU simulator Combo Box channel 2 (bottomcenter box) and press Transfer- ChannelSettingstoDriver.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E22.22	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0820001 to start DRCU data transfer form the SCU	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.23	Repeat previous step 9 more times	Verify reception, each time, of TM (1,1); (1,3) and (1,7). Verify reception of TM (21,1) with APID = 0x509 and SID = 0xa20.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.24	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,1) are received. A total of 20 packets should be received, corresponding to 310 frames (16fr/pkt).	OK	
E22.25	Load on SCOS2000 Manual Stack window the stack for TP5_GetPSW. This stack of commands executes steps C21.24 to C21.27 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0001 to configure DRCU to send PSW frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.26	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.27	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,2) packets with APID = 0x505 and SID = 0x102	OK	
E22.28	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,2) are received. A total of 85 packets should be received. Corresponding to 255 frames (3fr/pkt)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.29	Load on SCOS2000 Manual Stack window the stack for TP5_GetPMW. This stack of commands executes steps C21.28 to C21.31 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0002 to configure DRCU to send PMW frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.30	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.31	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,2) packets with APID = 0x505 and SID = 0x103	OK	
E22.32	Send TC8.4.CA-2.1 1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,2) are received. A total of 64 packets should be received. Corresponding to 255 frames (4fr/pkt)	OK	
E22.33	Load on SCOS2000 Manual Stack window the stack for TP5_GetPLW. This stack of commands executes steps C21.32 to C21.35 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0003 to configure DRCU to send PLW frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.34	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.35	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,2) packets with APID = 0x505 and SID = 0x104	OK	
E22.36	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,2) are received. A total of 29 packets should be received. Corresponding to 255 frames (9 fr/pkt).	OK	
E22.37	Load on SCOS2000 Manual Stack window the stack for TP5_GetSLW. This stack of commands executes steps C21.36 to C21.39 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0005 to configure DRCU to send SLW frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.38	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.39	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.40	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,2) packets with APID = 0x507 and SID = 0x106	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.41	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,2) are received. A total of 32 packets should be received. Corresponding to 510 frames (16 fr/pkt)	OK	
E22.42	Load on SCOS2000 Manual Stack window the stack for TP5_GetSSW. This stack of commands executes steps C21.40 to C21.43 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0006 to configure DRCU to send SSW frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.43	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.44	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,2) packets with APID = 0x507 and SID = 0x105	OK	
E22.45	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,2) are received. A total of 29 packets should be received. Corresponding to 255 frames (9 fr/pkt)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.46	Load on SCOS2000 Manual Stack window the stack for TP5_GetPhotTest. This stack of commands executes steps C21.44 to C21.49. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0008 to configure DRCU to send full Photometer Test Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.47	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000C.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.48	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.49	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.50	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x505 and SID = 0x309	OK	
E22.51	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 255 packets should be received. Corresponding to 255 frames (1 fr/pkt)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.52	Load on SCOS2000 Manual Stack window the stack for TP5_GetPSWTest. This stack of commands executes steps C21.50 to C21.55. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0009 to configure DRCU to send PSW Test Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.53	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000C.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.54	Send TC8.4.CA-5.1(**SEND_DRCU_COMMAND**) with parameter 0x84190070.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.55	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.56	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x505 and SID = 0x30a	OK	
E22.57	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 85 packets should be received. Corresponding to 255 frames (3 fr/pkt)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.58	Load on SCOS2000 Manual Stack window the stack for TP5_GetPMWTest. This stack of commands executes steps C21.56 to C21.61. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c000a to configure DRCU to send PMW Test Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.59	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000C.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.60	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.61	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.62	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x505 and SID = 0x30b	OK	
E22.63	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 64 packets should be received. Corresponding to 255 frames (4 fr/pkt)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.64	Load on SCOS2000 Manual Stack window the stack for TP5_GetPLWTest. This stack of commands executes steps C21.62 to C21.67 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c000b to configure DRCU to send PLW Test Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.65	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000C.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.66	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.67	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.68	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x505 and SID = 0x30c	OK	
E22.69	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 29 packets should be received. Corresponding to 255 frames (9 fr/pkt)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.70	Load on SCOS2000 Manual Stack window the stack for TP5_GetSpecTest. This stack of commands executes steps C21.68 to C21.71. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c000c to configure DRCU to send Full Spectrometer Test Pattern.	Verify reception of TM (1,1),(1,3) and (1,7).	OK	
E22.71	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.72	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.73	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x507 and SID = 0x30d	Not Performed	It could be possible that there is not the need to send this command
E22.74	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 43 packets should be received. Corresponding to 255 frames (6 fr/pkt)	OK	
E22.75	Load on SCOS2000 Manual Stack window the stack for TP5_GetSLWTest. This stack of commands executes steps C21.72 to C21.77. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c000d to configure DRCU to send SLW Test Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.76	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000C.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.77	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.78	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.79	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.80	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x507 and SID = 0x30f	NOT OK	See NCR-SPIRE-CGS-C-012
E22.81	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 32 packets should be received. Corresponding to 510 frames (16 fr/pkt).	NOT OK	See NCR-SPIRE-CGS-C-012
E22.82	Load on SCOS2000 Manual Stack window the stack for TP5_GetSSWTest. This stack of commands executes steps C21.78 to C21.81 Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c000e to configure DRCU to send SSW Test Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.83	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.84	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x507 and SID = 0x30e	OK	
E22.85	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 29 packets should be received. Corresponding to 255 frames (9 fr/pkt)	OK	
E22.86	Load on SCOS2000 Manual Stack window the stack for TP5_GetMCUEng. This stack of commands executes steps C21.82 to C21.85. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c40000, to configure sampling rate for MCU Engineering frames	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.87	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10001 to start DRCU data transfer from the MCU. *The MCU cannot be commanded to send a fixed number of packets but it sends them continuosly*	Verify reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,3) packets with APID = 0x509 and SID = 0x814.	OK	
E22.88	Wait 5 seconds and send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10000 to stop DRCU data transfer	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,3) packets stops.	OK	
E22.89	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.90	Load on SCOS2000 Manual Stack window the stack for TP5_GetMCUEngTest. This stack of commands executes steps C21.86 to C21.89. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c50000, to configure sampling rate for MCU Test frames	Verify reception of TM (1,1), (1,3) and (1,7).	OK	Check manually the "loop" checkbox for channel 1 on the DRCU simulator
E22.91	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10001 to start DRCU data transfer from the MCU. The MCU cannot be commanded to send a fixed number of packets but it sends them continuously	Verify reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,3) packets with APID = 0x509 and SID = 0x915.	OK	
E22.92	Wait 5 seconds and send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10000 to stop DRCU data transfer	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,3) packets stops.	OK	
E22.93	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received.	OK	
E22.94	Load on SCOS2000 Manual Stack window the stack for TP5_GetSCUTest. This stack of commands executes steps C21.90 to C21.94 (send commands one at a time) Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0838000 to configure DRCU to send SCU Test frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.95	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa084001f to configure DRCU to send 31 frames. If this does not work, put manually the number 31 in the DRCU simulator Combo Box channel 2 (bottomcenter box) and press Transfer- ChannelSettingstoDriver.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.96	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xA0820001 to start DRCU data transfer from the SCU.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.97	Repeat previous step 9 more times	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of ~~four TM (1,1), plus reception of~~ TM (21,3) with APID = 0x509 and SID = 0x1121.	OK	See PVS N°13
E22.98	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received. A total of 20 packets should be received. Corresponding to 310 frames (16 fr/pkt)	OK	
E22.99	Load on SCOS2000 Manual Stack window the stack for TP5_GetPhotOff. This stack of commands executes steps C21.95 to C21.100. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0010 to configure DRCU to send Full Photometer Offset Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.100	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000c	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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E22.101	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.102	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.103	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,4) packets with APID = 0x505 and SID = 0x207	OK	
E22.104	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,4) are received. A total of 255 packets should be received. Corresponding to 255 frames (1 fr/pkt)	OK	
E22.105	Load on SCOS2000 Manual Stack window the stack for TP5_GetSpecOff. This stack of commands executes steps C21.101 to C21.106. Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0014 to configure DRCU to send Full Spectrometer Offset Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.106	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000c	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.107	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.108	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.109	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,4) packets with APID = 0x507 and SID = 0x208	OK	
E22.110	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,4) are received. A total of 43 packets should be received. Corresponding to 255 frames (6 fr/pkt)	OK	
E22.111	Load on SCOS2000 Manual Stack window the stack for TP5_MiddleSteps		OK	
E22.112	Send TC8.4.CA-10.5 (**ENABLE_SELECTION**) to enable selection from a non-existing science frame. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x815 (Illegal Frame ID)	OK	
E22.113	Send TC8.4.CA-10.4 (**ENABLE_SELECTION**) to enable selection from frame ID 4 (photometer PLW) using an undefined table. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x817 (Undefined Selection Table)	OK	
E22.114	Send TC8.4.1-1.32 (**SET_TABLE**) to create a Table to be used to select a subset of a science frame. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.115	Send TC8.4.CA-10.3 (**ENABLE_SELECTION**) to enable selection from frame ID 4 using the newly created table. The selection tables should have the same length of the frames to which they are associated (which is not the present case, so that an error is expected). See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x818 (Invalid length of Selection Table)	OK	
E22.116	Send TC8.4.1-1.31 (**SET_TABLE**) to create a Table to be used to select a subset of a science frame. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.117	Send TC8.4.1-3.31 (**UPDATE_TABLE**) to load the selection Table to be used for science frame selection. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.118	Send TC8.4.CA-10.2 (**ENABLE_SELECTION**) to enable selection. Selection tables should be made of 0s (do not select) or 1 (select), while the present selection table contains a 2 so that an error is expected. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x819 (Invalid content of Selection Table)	OK	
E22.119	Send TC8.4.1-1.30 (**SET_TABLE**) to create a Table to be used to select a subset of a science frame. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.120	Send TC8.4.1-3.30 (**UPDATE_TABLE**) to load the selection Table to be used for science frame selection. Use TOPE IF to send the command selecting filename equal to command ID. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.121	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0003 to configure DRCU to send PLW Photometer Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.122	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d0000 to configure DRCU to send frames in continuous mode	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.123	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,2) packets with APID = 0x505 and SID = 0x104	OK	
E22.124	If the DRCU simulator allows it, change the Frame ID to an undefined value in the appropriate box of the DRCU GUI for channel 0	Verify reception of TM (5,1) with error code =0x2544 (Illegal Frame ID from DCU) Verify that TM (21,2) packets with APID = 0x504 and SID = 0x104 are no longer Received	Not Performed	The DRCU Simulator does not allow it
E22.125	Put the Frame ID back to normal value	Verify reception of TM (5,1) with error code =0xA544 to signal exit from previous error condition. Verify that TM (21,2) packets with APID = 0x505 and SID = 0x104 are again received	Not Performed	The DRCU Simulator does not allow it
E22.126	If the DRCU simulator allows it, change the Frame length to a wrong value in the bottom-left box of the DRCU GUI combo box for channel 0. Press TransferChannelSettingsto-Driver button	Verify reception of TM (5,1) with error code =0x2544 (Illegal Frame length) Verify that TM (21,2) packets with APID = 0x505 and SID = 0x104 are no longer Received	OK	The value has been set to 60

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.127	Put the Frame length back to normal value (54)	Verify reception of TM (5,1) with error code =0xA544 to signal exit from previous error condition Verify that TM (21,2) packets with APID = 0x505 and SID = 0x104 are again received	OK	
E22.128	If the DRCU simulator allows it, change the checksum method in the appropriate box of the DRCU GUI (XOR box)	Verify reception of TM (5,1) with error code =0x2554 (Illegal checksum) Verify that TM (21,2) packets with APID = 0x505 and SID = 0x104 are no longer Received	OK	
E22.129	Put the checksum method back to normal value	Verify reception of TM (5,1) with error code =0XA554 to signal exit from previous error condition Verify that TM (21,2) packets with APID = 0x505 and SID = 0x104 are again received	OK	
E22.130	Send TC8.4.CA-10.1 (**ENABLE-SELECTION**) to enable selection from frame ID 4 (Photometer PLW) See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Use **PacketDisplay** to verify that the TM (21,2) now contain the SID = 0xC1A0 Use **PacketDisplay** to verify that the TM (21,2) packets now contain frames 11 words shorter. (nominal length is 54 words)	OK	
E22.131	Send TC8.4.CA-11.2 (**DISABLE_SELECTION**) to disable selection from a non-existent science frame. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x815 (Illegal Frame ID)	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.132	Send TC8.5.CA.1 (**REPORT_FUNCTION**) to report science frame selection status. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) and (1,7) Use **PacketDisplay** to verify reception of TM (8,6) containing a series of FRAMEID - SID – TABLEID combinations for all science frames for which selection can be active. There should be a group with Frame Id = 4, SID = 0xC1A0 and Table Id = 0x30. All others should contain their nominal SID with Table ID = 0xFFFF (meaning that there is no selection active from that Frame ID, see table in Appendix 3)	OK	
E22.133	Send TC8.4.CA-11.1 (**DISABLE_SELECTION**) to disable the presently active selection on frame ID 4 See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Use **PacketDisplay** to verify that TM (21,2) packets now contain again the nominal SID = 0x104 Use **PacketDisplay** to verify that the TM (21,2) packets now contain nominal Photometer PLW frames.	OK	
E22.134	Send TC8.5.CA.1 (**REPORT_FUNCTION**) to report science frame selection status. See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) and (1,7) Verify reception of TM (8,6). Use **PacketDisplay** to verify that they contain nominal SIDs for all Frame IDs and all Table IDs should be 0xFFFF	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.135	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0000 to stop DRCU frame transmission from DCU If the command does not work (the DRCU occasionally does not execute the command), uncheck the “loop” checkbox for channel 0 on the DRCU simulator.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,2,0x104) are no longer received	OK	
E22.136	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,2) packets are received	OK	
E22.137	Load on SCOS2000 Manual Stack window the stack for TP5_Configure_ DRCU_Nominal. This stack of commands executes steps C21.132 to C21.138 Send TC8.4.CA-6.1 (**REST_FIFOs**). Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843c0000 to configure DRCU to send Full Photometer Pattern.	Verify reception of TM (1,1), (1,3) and (1,7) for both telecommand.	OK	
E22.138	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x8418000C	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.139	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x84190070	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.140	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843d0000 to configure DRCU to send frames in continuous mode	Verify reception of TM (1,1), (1,3) and (1,7).	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.141	Take note of HK parameters LOSTEVBLOCK, LOSTHKBLOCK, LOSTSDBLOCK, on the SCOS Telemetry Desktop.		All 00000000	
E22.142	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c0000C to set sampling rate for SMEC frames from MCU. Explicitely select "**loop**" checkbox in channel 1 on the DRCU simulator GUI and Fucntion 0 in the combo box; press "Transfer to Driver" button. Explicitely select "SMEC Frames 0x10" from Channel 1 pull-down menu	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.143	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0830000 to configure DRCU to send nominal SCU frames	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.144	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0840000 to configure DRCU to send SCU frames in continuous mode.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.145	Load on SCOS2000 Manual Stack window the stack for TP5_Start_DRCU_Transfer. This stack of commands executes steps C21.139 to C21.141 To arm the entire sequence present in the stack and press "go". Wait the sending of TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0001 to start DRCU data transfer from the DCU.	Verify after the sending of TC8.4.CA-5.1 the reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,1) packets with APID = 0x505 and SID =0x200	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.146	Wait the sending of TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10001 to start DRCU data transfer from the MCU.	Verify after the sending of TC8.4.CA-5.1 the reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,1) packets with APID = 0x509 and SID =0x410	OK	
E22.147	Wait the sending of TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0820001 to start DRCU data transfer from the SCU.	Verify after the sending of TC8.4.CA-5.1 the reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,1) packets with APID = 0x509 and SID =0xA20	OK	
E22.148	Wait 10 minutes. *In these conditions the DPU is receiving data from the three subsystems simultaneously, while also generating both Nominal and Essential HouseKeeping packets. The 1553 bus traffic between the DPU and the CDMS is:* *· 16 pkts/s from DCU* *· about 6 pkts/s from MCU* *· about 5 pkts/s from SCU* *· 1.5 HouseKeeping pkts/s* *So there is a total of about 29 TM packets per second, which is more than the nominal rate (both in terms of kbps and in terms of packets) foreseen for the SPIRE instrument.*	No TM (5,1) with error code = 0x50D, unless immediately followed by another (5,1) with code =0x850D (exit from anomaly condition). Verify that HK parameters LOSTEVBLOCK, LOSTHKBLOCK, LOSTSDBLOCK, on the SCOS Telemetry Desktop are equal to the ones noted in the step C 21.139 and do not change. Verify the telemetry log file and check that there is no jump in TM packet counter.	OK All 00000000	
E22.149	Increase science frame flow rate by decreasing of a factor two the timing value in the appropriate box of the DRCU GUI for channel 0	Verify reception of TM (5,1) with error code = 0x1503 (Science Memory pool is more than 80% occupied) Verify reception of TM (5,1) with error code	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
		= 0x1514(VIRTUOSO FIFO queue for Science TM packets is more than 80% occupied) Verify in the nominal HK packets that the counter for unsuccessfully allocated memory blocks for science packets increases		
E22.150	Change the frame timing to twice the normal value to allow fast buffer recovery.	Verify that reception of TM (5,1) with error code = 0x9503 (exit from 0x1503 error condition) Verify that reception of TM (5,1) with error code = 0x9514 (exit from 0x1514 error condition) Verify in the nominal HK packets that the counter for unsuccessfully allocated memory blocks for science packets stops increasing	OK	
E22.151	Load on SCOS2000 Manual Stack window the stack for TP5_LastSteps		OK	
E22.152	Send TC14.3.1 (**REPORT_ENABLED_TM**) to report the list of TM packets for which generation is enabled.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM(14,4) packets. Use **PacketDisplay** to check that transmission of all packets (see table in Appendix 3) is enabled.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.153	Send TC14.2.1 (**DISABLE_TM_GENERATION**) to disable telemetry generation for TM (21,1) from DCU and SCU See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1) with SID = 0x200 and 0xA20 are no longer received	OK	
E22.154	Send TC14.2.2 (**DISABLE_TM_GENERATION**) See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (3,25) essential HK Packets (SID = 0x300) are no longer received	OK	
E22.155	Send TC14.3.1 (**REPORT_ENABLED_TM**)	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (14,4) packet. Use **PacketDisplay** to verify that TM (21,1,0x200 and 0xA20) and TM (3,25,0x300) are not present in the report	OK	
E22.156	Send TC14.1.1 (**ENABLE_TM_GENERATION**) See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E22.157	Wait for x seconds	Verify that TM (21,1,0x200 and 0xA20) and TM (3,25,0x300) are again received	OK	
E22.158	Send TC14.3.1 (**REPORT_ENABLED_TM**)	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of a TM (14,4) packet. Use **PacketDisplay** to verify that transmission of all packets is enabled.	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.159	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x843e0000 to stop DRCU frame transmission from DCU If the command does not work (the DRCU occasionally does not execute the command), uncheck the “loop” checkbox for channel 0 on the DRCU simulator.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1,0x200) are no longer received	OK	
E22.160	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0x91c10000 to stop DRCU frame transmission from MCU If the command does not work (the DRCU occasionally does not execute the command), uncheck the “loop” checkbox for channel 1 on the DRCU simulator.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1,0x410 ~~and 0x612~~) are no longer received	OK	See PVS N°15
E22.161	Send TC8.4.CA-5.1 (**SEND_DRCU_COMMAND**) with parameter 0xa0820000 to stop DRCU frame transmission from SCU If the command does not work (the DRCU occasionally does not execute the command), uncheck the “loop” checkbox for channel 2 on the DRCU simulator.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1,0xa20) are no longer received	OK	
E22.162	Send TC8.4.CA-2.1 (**FLUSH_FIFO**) to flush the FIFOs See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM packets are received	OK	
E22.163	Send TC8.4.C1-1.1 (**SET_OBSID**) to change Observer ID See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify on SCOS2000 that OBSID value has been updated in nominal HK packet	OK OBSID: A5A55A5A	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.164	Send TC8.4.C1-2.1 (**SET_BBID**) to change Building Block ID See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify on SCOS2000 that BBID value has been updated in nominal HK packet	OK BBID: 12122121	
E22.165	Send TC8.4.C1-3.1 (**SET_OBS_MODE**) to change Observation MODE See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (5,1) with error code =0x0501 that notifies the current values of MODE and STEP according to format of RD1. Verify on SCOS2000 Telemetry Desktop that MODE value has been updated in nominal HK packet.	OK MODE: C1C1	
E22.166	Send TC8.4.C1-4.1 (**SET_OBS_STEP**) to change Observation STEP See Annex 10.1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (5,1) with error code =0x0501 that notifies the current values of MODE and STEP according to format of RD1. Verify on SCOS2000 Telemetry Desktop that STEP value has been updated in nominal HK packet	OK STEP: 1	
E22.167	Send TC8.4.C1-4.4 (**RESET_DRC_COUNTERS**) to reset DRCU internal timer	Verify reception of TM (1,1), (1,3) and (1,7). Verify on SCOS2000 Telemetry Desktop that parameter TRESET has been update	OK TRESET: 2018.116.09.37.26.222	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.168	Send TC8.4.10-1.1 (**ENGAGE_LATCH**) to engage the SMEC latch without enabling the command.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x831 (Function Stopped) and TM (5,2) with error code = 0x832 (EXCP FX UNARMED ID)	OK	
E22.169	Send TC8.4.10-ff.1 (**RELEASE_LATCH**) to release the SMEC latch without enabling the command.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x831 (Function Stopped) and TM (5,2) with error code = 0x832 (EXCP FX UNARMED ID)	OK	
E22.170	Send TC8.1.10.1 (**ENABLE_SMEC_LATCH**) to enable the SMEC latch engage/release commands.	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
E22.171	Send TC8.4.10-1.1 (**ENGAGE_LATCH**) to engage the SMEC latch. On the SCOS telemetry desktop click button AND at bottom left, and choose SMEC PARAMETERS	Verify reception of TM (1,1), (1,3) and (1,7). Verify on SCOS2000 Telemetry Desktop that the SMECLATCHSTAT parameter has changed to 2	OK	
E22.172	Send TC8.4.10-ff.1 (**RELEASE_LATCH**) to release the SMEC latch	Verify reception of TM (1,1) and TM (1,8) with error code = 0x831 (Function Stopped) and TM (5,2) with error code = 0x832 (EXCP FX UNARMED ID)	OK	
E22.173	Send TC8.1.10.1 (**ENABLE_SMEC_LATCH**) to enable the SMEC latch engage/release commands.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
E22.174	Send TC8.4.10-ff.1 (**RELEASE_LATCH**) to release the SMEC latch	Verify reception of TM (1,1), (1,3) and (1,7). Verify on SCOS2000 Telemetry Desktop that the SMECLATCHSTAT parameter has changed to 1	OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.175	Send TC8.4.CA-9.1 (**RESET_DPU**) to reset the OBS forcing a jump to the initial memory location of the code	Verify that the numbering of the HK packets restarts from 0.	OK	
E22.176	Execute the procedure A5		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
F	**LONG DURATION TEST OF REDUNDANT SECTION WITH 28V, 26V AND 29V POWER SUPPLY AND MIL-STD-1553B CHANNEL A OR B**			
F1	**OPERATIVE MODE POWER CONSUMPTION, ALIGNMENT AND GAP TEST OF TELEMETRY DATA**			
F1.1	Execute the procedure A2 for the redundant section test if needed.		OK	
F1.2	Execute the procedure A3 for the start up of the EGSE if needed.		OK	
F1.3	Disconnect the power supply cable		OK	
F1.4	Turn on the power supply.		OK	
F1.5	Set the power supply output to 28V and 1.5A		OK	
F1.6	Measure the power supply output with a voltmeter Vin	28 ± 0.1 V	28 V	
F1.7	Turn off the power supply.		OK	
F1.8	Reconnect the power supply cable.		OK	
F1.9	Stop and switch off CDMS executing steps from A5.2 to A5.3.		OK	
F1.10	Start CDMS executing steps from A3.40 to A3.51.		OK	
F1.11	Start PacketDisplay executing steps from A3.52 to A3.54.		OK	

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STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
F1.12	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
F1.13	Execute the procedure A4		OK	
F1.14	Check the power supply current on the power supply current indicator Iin	<1A	< 540 mA	The peak value detected in 5 minutes has been considered
F1.15	Check the average power consumption of DPU during a period of 5 minutes: Pin = Vin x Iin	<15.3W	< 15.12 W	Calculation based on the above specified value
F1.16	Wait at least 16h.	Verify that there is not the reception of TM (5,1) with error code 0x1 500 + 0x1519 and between 0x2540 + Ox257A, unless immediately followed by another (5,1) with code =Ox850D (exit from anomaly condition).	OK	18 hours of test have been performed
F1.17	Turn off the power supply.		OK	
F1.18	Disconnect the power supply cable		OK	
F1.19	Turn on the power supply.		OK	
F1.20	Set the power supply output to 26 V and 1.5A		OK	
F1.21	Measure the power supply output with a voltmeter Vin	26 ± 0.1 V	26 V	
F1.22	Turn off the power supply.		OK	

DATE: 26/04/2006, 27/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
F1.23	Stop and switch off CDMS executing steps from A5.2 to A5.3.		OK	
F1.24	On the EGSE side remove the connector of MIL-BUS channel A cable		OK	
F1.25	Start CDMS executing steps from A3.40 to A3.51		OK	
F1.26	On the CDMS Simulator click on icon **Select Bus** and choose the bus B channel		OK	
F1.27	Reconnect the power supply cable		OK	
F1.28	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
F1.29	Execute the procedure A4		OK	
F1.30	Check the power supply current on the power supply current indicator Iin	<1A	< 575 mA	The peak value detected in 5 minutes has been considered
F1.31	Check the average power consumption of DPU during a period of 5 minutes: Pin = Vin x Iin	<15.3W	< 14.95 W	Calculation based on the above specified value

DATE: 27/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	Model	Item	C.I.	S/N

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
F1.32	Wait at least 16h.	Verify that there is not the reception of TM (5,1) with error code 0x1 500 + 0x1519 and between 0x2540 + Ox257A, unless immediately followed by another (5,1) with code =Ox850D (exit from anomaly condition).	OK	8 hours of test have been performed; 48 hours of non-consecutive test has been assured during all the PFM test campaign
F1.33	Turn off the power supply.		OK	
F1.34	Disconnect the power supply cable		OK	
F1.35	Turn on the power supply.		OK	
F1.36	Set the power supply output to 29 V and 1.5A		OK	
F1.37	Measure the power supply output with a voltmeter Vin	29 ± 0.1 V	29 V	
F1.38	Turn off the power supply.		OK	
F1.39	Reconnect the power supply cable		OK	
F1.40	Turn on the power supply. At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits a command in order to load the OBS from the EEPROM or from the 1553 link.	An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool. Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**	OK	
F1.41	Execute the procedure A4		OK	
F1.42	Check the power supply current on the power supply current indicator Iin	<1A	< 520 mA	The peak value detected in 5 minutes has been considered

DATE: 27/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

UUT DATA :	**Model**	**Item**	**C.I.**	**S/N**

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
F1.43	Check the average power consumption of DPU during a period of 5 minutes: Pin = Vin x Iin	<15.3W	< 15.08 W	Calculation based on the above specified value
F1.44	Wait at least 16h.	Verify that there is not the reception of TM (5,1) with error code 0x1 500 + 0x1519 and between 0x2540 + Ox257A, unless immediately followed by another (5,1) with code =Ox850D (exit from anomaly condition).	OK	16 hours of test have been performed
F1.45	Verify the absence of gap error or alignment error	No TM (5,1) with error code indicated in RD#8 are received.	OK	
F1.46	On the EGSE side reconnect the connector of MIL-BUS channel A cable		OK	
F1.47	Execute the procedure A5		OK	

DATE: 27/04/2006, 28/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

10.1 APPENDIX 1 – INPUT TELECOMMAND SPECIFICATION

10.1.1 INPUT SPECIFICATION OF TP1 – SWITCH_ON

The input to this test case will be two TC(8,4) specified in AD1 to tell the Boot Software to start the OBS. These commands are:

TC Code	Description
TC8.4.70-3.1	*Force_Boot* TC. This TC is interpreted by the Boot Software; it forces the OBS image currently in PM to start. The format is that of a generic (8,4) TC with the following parameters: • One 16-bits word = 0
TC8.4.70-2.1	*Load_TC_and_Boot* TC. This TC is interpreted by the Boot Software; it copies the OBS image from DM to PM and starts it. The format is that of a generic (8,4) TC with the following parameters: • One 16-bits word = 0

In addition, the OBS executable shall be available on the SCOS2000 computer as a set of standard TCs (6,2).

10.1.2 INPUT SPECIFICATION OF TP2

10.1.2.1 DPU_COMMAND_EXEC

The input to this test case is a set of TCs built according to AD2, and requiring specific functions to be performed by the DPU. For this first test case this set shall be limited to self-contained commands that do not affect units not tested in this test case. Some of the TCs will contain invalid fields (e.g., APID etc.); if SCOS2000 is unable to send invalid packets, those packets will have to available as HEX text files in the CDMS simulator. The set of TCs is specified below:

TC Code	Description
TC17.1.1	*Test Connection* standard TC
TC17.1.2	Same as TC17.1.1, but with an incorrect APID of 0x300
TC17.1.3	Same as TC17.1.1, but with an incorrect packet length of 0xA
TC17.1.4	Same as TC17.1.1, but with an incorrect checksum of 0x1111
TC17.1.5	Same as TC17.1.1, but with an incorrect packet type of 0x1
TC17.1.6	Same as TC17.1.1, but with an incorrect packet subtype of 0xA
TC17.1.7	Same as TC17.1.1, but with the “ack” bits in the TC header set to ‘0000B’
TC17.1.8	Same as TC17.1.1, but with the “ack” bits in the TC header set to ‘0001B’
TC17.1.9	Same as TC17.1.1, but with the “ack” bits in the TC header set to ‘0010B’
TC17.1.10	Same as TC17.1.1, but with the “ack” bits in the TC header set to ‘1000B’
TC9.7.1	*Enable Time Verification* standard TC
TC14.3.1	*Report_Enabled_TMs* standard TC

TC packets from TC17.1.2 to TC17.1.6 will be sent as local commands from the CDMS simulator because SCOS cannot send packets with deliberately wrong header. All the others will be generated from SCOS2000. The TCs will have all “ack” bits set to 1 in the packet header according to specifications of AD2.

10.1.2.2 DPU_MEM

A set of TCs will be available. The TCs will have all “ack” bits set to 1 in the packet header according to specifications of AD2.

TC Code	Description
TC6.2.1	*Load Memory* standard TC. Application data is structured according to RD1 with the following parameter values: • · Memory_ID = 0 (PM) • · Start_Address = 0x12000 • · NSAU = 15 • · 15 data words all = 0xA5A5 • · CRC = 0xB421
TC6.2.2	Same as TC6.2.1, but an incorrect Memory_ID = 4
TC6.2.3	Same as TC6.2.1, but an incorrect Start_Address = 0x80000
TC6.2.4	Same as TC6.2.1, but with Start_Address = 0x7FFF0, NSAU = 0x30 and 48 data words =0xA5A5 (CRC=0x41ED)

TC6.2.5	Same as TC6.2.1, but with an incorrect number of 20 data words
TC6.2.6	Same as TC6.2.1, but an incorrect Application Data CRC of 0x1111
TC6.5.1	*Dump Memory* standard TC. Application data is structured according to RD1 with the following parameter values: • · Memory_ID = 0 (PM) • · Start_Address = 0x12000 • · NSAU = 15
TC6.9.1	*Check Memory* standard TC. Application data will be as in RD1 with the following parameter values: • · Memory_ID = 0 (PM) • · Start_Address = 0x12000 • · NSAU = 15
TC8.4.1-1.1	*Set Table* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x30 • · Length = 0x32 (in units of 32-bit words)
TC8.4.1-1.2	Same as TC8.4.1-1.1, but with Function_ID of 0xE0
TC8.4.1-1.3	Same as TC8.4.1-1.1, but with Activity_ID of 0xA
TC8.4.1-1.4	Same as TC8.4.1-1.1, but with Table_ID of 0x200
TC8.4.1-1.5	Same as TC8.4.1-1.1, but with Length = 0xFFFF
TC8.4.1-1.6	Same as TC8.4.1-1.1, but with Table_ID = 0x31 and Length = 0xFFFF
TC8.4.1-1.7	Same as TC8.4.1-1.1, but with Table_ID = 0x71 and Length = 0x30
TC8.4.1-1.8	Same as TC8.4.1-1.1, but with Table_ID = 0x72 and Length = 0x30
TC8.4.1-1.9	Same as TC8.4.1-1.1, but with Table_ID = 0x73 and Length = 0x30
TC8.4.1-1.10	Same as TC8.4.1-1.1, but with Table_ID = 0x72 and Length = 0
TC8.4.1-2.1	*Report Table* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x30 • · Index = 0 • · Length = 0x32
TC8.4.1-2.2	Same as TC8.4.1-2.1, but with Table_ID = 0xFF (the MOAT – see AD3), Index = 0 and Length = 0 (all the table)
TC8.4.1-3.1	*Update Table* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x30 • · Index = 0 • · Length = 0x32 • · 50 32-bit words with pattern 0xA5A55A5A
TC8.4.1-3.2	Same as TC8.4.1-3.1, but with Table_ID = 0x33
TC8.4.1-3.3	Same as TC8.4.1-3.1, but with Index = 0x64
TC8.4.1-3.4	Same as TC8.4.1-3.1, but with 51 data words

TC8.4.1-3.5	Same as TC8.4.1-3.1, but with Length = 0x40
TC8.4.1-3.6	Same as TC8.4.1-3.1, but with Table_ID = 0x71, Index = 0, length =0x30 and 48 32-bits data words all = 1
TC8.4.1-3.7	Same as TC8.4.1-3.1, but with Table_ID = 0x72, Index = 0, length =0x30 and 48 32-bits data words all = 2
TC8.4.1-3.8	Same as TC8.4.1-3.1, but with Table_ID = 0x73, Index = 0, length =0x30 and 48 32-bits data words all = 3
TC8.4.1-4.1	*Collect_Garbage* standard TC.
TC8.4.CA-7.1	*Write2EEPROM* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Start Address = 0x4000 • · End Address= 0x12000
TC8.4.70-3.1	*Force_Boot* standard TC.

10.1.3 INPUT SPECIFICATION OF TP3 – HK_COLLECT

A set of TCs will be available. The TCs will have all “ack” bits set to 1 in the packet header according to specifications of AD2.

TC Code	Description
TC8.4.1-1.10	*Set Table* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 2 • · Length = 0x14
TC8.4.1-1.11	Same as TC8.4.1-1.10 but with Table_ID = 3
TC8.4.1-1.12	Same as TC8.4.1-1.10 but with Table_ID = 4
TC8.4.1-1.13	Same as TC8.4.1-1.10 but with Table_ID = 0 and length = 0
TC8.4.1-3.10	Update Table standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 2 • · Index = 0 • · Ndata = 0x14 (in units of 32-bit words) • · 40 16-bit data words which will represent 20 HK collection commands
TC8.4.1-3.11	Same as TC8.4.1-3.10 but with Table_ID = 3 and a different set of HK collectioncommands
TC8.4.1-4.10	*Collect_Garbage* standard TC.
TC8.4.CA-1.1	*Reset_DRCU_Counter* standard TC.
TC8.4.CA-5.1	*Send_DRCU_Command* standard TC.
TC8.4.CC-1.1	*Define New Housekeeping Report* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · HKPCKTID = 0x302 • · HKSID = 0x302 • · HKINTERVAL = 1000 • · REPEAT = 1 • · MONTABID =2 • · TABLE_ID = 2
TC8.4.CC-1.2	Same as TC8.4.CC-1.1, but with HKPCKTID = 0x303, HKSID = 0x303 and Table_ID = 3 and MONTABID =3
TC8.4.CC-1.3	Same as TC8.4.CC-1.1, but with HKPCKTID = 0x304
TC8.4.CC-1.4	Same as TC8.4.CC-1.1, but with HKINTERVAL = 5
TC8.4.CC-1.5	Same as TC8.4.CC-1.1, but with HKSID = 0x028
TC8.4.CC-1.6	Same as TC8.4.CC-1.1, but with HKPCKTID = 0x302, MONTABID=3 and TABLE_ID = 3
TC8.4.CC-1.7	Same as TC8.4.CC-1.1, but with HKPCKTID = 0x303
TC8.4.CC-1.8	Same as TC8.4.CC-1.1, but with TABLE_ID = 0x10 and MONTABID=0x10
TC8.4.CC-2.1	*Clear HK Report* standard TC. Application data will be structured as specified in

	RD1 and will contain the following parameters: • · HKPCKTID = 0x302
TC8.4.CC-2.2	Same as TC8.4.CC-2.1, with HKPCKTID = 0x303
TC8.4.CC-2.3	Same as TC8.4.CC-2.1, with HKPCKTID = 0x300
TC8.4.CC-2.4	Same as TC8.4.CC-2.1, with HKPCKTID = 0x301
TC8.4.CC-3.1	*Report HK Report* standard TC with the following parameter: • · HKPCKTID = 0x300
TC8.4.CC-3.2	*Report HK Report* standard TC with the following parameter: • · HKPCKTID = 0x301
TC8.4.CC-3.3	*Report HK Report* standard TC with the following parameter: • · HKPCKTID = 0x302
TC8.4.CC-3.4	Report HK Report standard TC with the following parameter: • · HKPCKTID = 0x303
TCTest.1	*Perform Activity of Function* standard TC with function ID = 0xCB and activity ID = 0x01. This TC is used to force a wrong CRC to be attached to a TM packet being dispatched.

10.1.4 INPUT SPECIFICATION OF TP4 – VIRTUAL MACHINES

The following set of TCs will be available. The TCs will have all “ack” bits set to 1 in the packet header according to specifications of AD2.

TC Code	Description
TC8.4.1-1.20	*Set Table* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x20 • · Length = length of VME_GETHKBLOCK1
TC8.4.1-1.21	Same as TC8.4.1-1.20, but with: • · Table_ID = 0x21 • · Length = length of VME_GETHKBLOCK2
TC8.4.1-1.22	Same as TC8.4.1-1.20, but with: • · Table_ID = 0x22 • · Length = length of VME_GETHKBLOCK3
TC8.4.1-1.23	Same as TC8.4.1-1.20, but with: • · Table_ID = 0x28 • · Length = length of VME_GETHKBLOCK4
TC8.4.1-1.24	Same as TC8.4.1-1.20, but with: • · Table_ID = 0 • · Length = 0
TC8.4.1-1.25	Same as TC8.4.1-1.20, but with: • · Table_ID = 0x30 • · Length = 0x830
TC8.4.1-1.26	Same as TC8.4.1-1.20, but with: • · Table_ID = 0x31 • · Length = 0x20
TC8.4.1-3.20	*Update Table* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x20 • · INDEX = 0 • · NDATA = length of VME_GETHKBLOCK1 • · DATA = VME_GETHKBLOCK1

TC8.4.1-3.21	Same as TC8.4.1-3.20, but with: • · Table_ID = 0x21 • · NDATA = length of VME_GETHKBLOCK2 • · DATA = VME_GETHKBLOCK2
TC8.4.1-3.22	Same as TC8.4.1-3.20, but with: • · Table_ID = 0x22 • · NDATA = length of VME_GETHKBLOCK3 • · DATA = VME_GETHKBLOCK3
TC8.4.1-3.23	Same as TC8.4.1-3.20, but with: • · Table_ID = 0x28 • · NDATA = length of VME_GETHKBLOCK4 • · DATA = VME_GETHKBLOCK4
TC8.4.1-3.24	Same as TC8.4.1-3.20, but with: • · Table_ID = 0x30 • · Index = 0 • · NDATA = 0x34 • · DATA = 1st chunk of TC_VMTEST_0
TC8.4.1-3.25	Same as TC8.4.1-3.20, but with: • · Table_ID = 0x30 • · Index = 0x34 • · NDATA = 0x34 • · DATA = 2nd chunk of TC_VMTEST_1
TC8.4.1-3.26	Same as TC8.4.1-3.20, but with: • · Table_ID = 0x30 • · Index = 0x68 • · NDATA = 0x34 • · DATA = 3rd chunk of TC_VMTEST_2
TC8.4.1-3.27	Same as TC8.4.1-3.20, but with: • · Table_ID = 0x30 • · Index = 0x9c • · NDATA = 0x34 • · DATA = 4th chunk of TC_VMTEST_3
TC8.4.1-3.28	Same as TC8.4.1-3.20, but with: • · Table_ID = 0x30 • · Index = 0xd0 • · NDATA = 0x34 • · DATA = 5th chunk of TC_VMTEST_4

TC8.4.1-3.29	Same as TC8.4.1-3.20, but with: • · Table_ID = 0x30 • · Index = 0x104 • · NDATA = 0x1b • · DATA = 6th chunk of TC_VMTEST_5
TC8.4.1-3.30	Same as TC8.4.1-3.20, but with: • · Table_ID = 0x30 • · Index = 0x400 • · NDATA = 0x5 • · DATA = 7th chunk of TC_VMTEST_6
TC8.4.1-3.31	Same as TC8.4.1-3.20, but with: • · Table_ID = 0x30 • · Index = 0x800 • · NDATA = 0x1b • · DATA = 7th chunk of TC_VMTEST_7
TC8.4.1-4.20	*Collect_Garbage* standard TC.
TC8.4.2-1.1	*Execute Command List* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Length = length of VME GET_HK_PAR1 • · Data field contains VME GET_HK_PAR1
TC8.4.3-2.1	*Run_VM1* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x20 • · Index = 0 • · Repeat value = 0
TC8.4.4-2.1	*Run_VM2* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x21 • · Index = 0 • · Repeat value = 0
TC8.4.5-2.1	*Run_VM3* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x22 • · Index = 0 • · Repeat value = 0

TC8.4.3-3.1	*Halt_VM1* standard TC as specified in RD1
TC8.4.4-3.1	*Halt_VM2* standard TC as specified in RD1
TC8.4.5-3.1	*Halt_VM3* standard TC as specified in RD1
TC8.4.2-2.1	*Run_VM* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x28 • · Index = 0 • · Repeat value = 0
TC8.4.2-2.2	Same as TC8.4.2-2.1 but with Table_ID = 0x30 and Index =0
TC8.4.2-3.1	*Halt_VM* standard TC as specified in RD1
TC8.4.CC-2.1	*Clear Housekeeping Parameter Report Definition* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • HKPCKTID = 0x300
TC8.5.2.1	*Report_Function* standard TC with Function_ID = 2 (Hard VM)
TC8.5.3.1	*Report_Function* standard TC with Function_ID = 3 (Soft VM1
TC8.5.4.1	*Report_Function* standard TC with Function_ID = 4 (Soft VM2)
TC8.5.5.1	*Report_Function* standard TC with Function_ID = 5 (Soft VM3)

The following set of VMECs will be available:

VM Executable Code	Pseudo code
VME_GETHKBLOCK1	• While (1) o For I=0,49 ▪ Reserve LS port ▪ Wait 2 msec ▪ GetTestPar1 (SCU Get command, CID 0x8C4) ▪ Wait 2 msec ▪ Release LS port ▪ If (parameter != 0xC1A0) Generate_Event (5,1) with error code 0x50C ▪ Wait 10 msec o Wait (1 second)
VME_GETHKBLOCK2	• While (1) o For I=0,49 ▪ Reserve LS port ▪ Wait 2 msec ▪ GetTestPar2 (MCU Get command, CID 0x8C5) ▪ Wait 2 msec ▪ Release LS port ▪ If (parameter != 0xC1A1) Generate_Event (5,1) with error code 0x50C ▪ Wait 10 msec Wait (1 second)

VME_GETHKBLOCK3	• While (1) o For I=0,49 ▪ Reserve LS port ▪ Wait 2 msec ▪ GetTestPar3 (SCU Get command, CID 0x8C6) ▪ Wait 2 msec ▪ Release LS port ▪ If (parameter != 0xC1A2) Generate_Event (5,1) with error code 0x50C ▪ Wait 10 msec • Wait (1 second)
VME_GETHKBLOCK4	• While (1) o For I=0,49 ▪ Reserve LS port ▪ Wait 2 msec ▪ GetTestPar4 (DCU Get command, CID 0x8C7) ▪ Wait 2 msec ▪ Release LS port ▪ If (parameter != 0xC1A3) Generate_Event (5,1) with error code 0x50C ▪ Wait 10 msec • Wait (1 second)
TC_VMTesti	This VME code will test subroutine calls, operations with VM registers and generation of TM packets. The code and related “Update Table” TC packets will be available on SCOS2000.

10.1.5 INPUT SPECIFICATION OF TP5 – SPIRE ICD

The following set of TCs will be available. The TCs will have all “ack” bits set to 1 in the packet header according to specifications of AD2.

TC Code	Description
TC8.4.1-1.30	*Set Table* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x30 • · Length = 0x36
TC8.4.1-1.31	*Set Table* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x31 • · Length = 0x36
TC8.4.1-1.32	*Set Table* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x32 • · Length = 0x40
TC8.4.1-3.30	*Update Table* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x30 • · INDEX = 0 • · NDATA = 0x36 • DATA = 54 32-bit data words all = 1, but those from the 22nd to the 32nd that will be = 0.
TC8.4.1-3.31	*Update Table* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Table_ID = 0x31 • · INDEX = 0 • · NDATA = 0x36 • · DATA = 54 32-bit data words = 1, but the 4th which will be = 2.
TC8.4.CA-10.1	*Enable_Selection* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · FRAMEID = 0x4 • · SELSID = 0xC1A0 • · TABLEID = 0x30

TC8.4.CA-10.2	*Enable_Selection* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · FRAMEID = 0x4 • · SELSID = 0xC1A0 • · TABLEID = 0x31
TC8.4.CA-10.3	*Enable_Selection* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · FRAMEID = 0x4 • · SELSID = 0xC1A0 • · TABLEID = 0x32
TC8.4.CA-10.4	*Enable_Selection* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · FRAMEID = 0x4 • · SELSID = 0xC1A0 • · TABLEID = 0x33
TC8.4.CA-10.5	*Enable_Selection* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · FRAMEID = 0x44 • · SELSID = 0xC1A0 • · TABLEID = 0x30
TC8.4.CA-11.1	*Disable_Selection* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · FRAMEID = 0x04
TC8.4.CA-11.2	*Disable_Selection* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · FRAMEID = 0x44
TC8.5.CA.1	*Report_Function* standard TC. Application data will be structured as specified in RD1 and will contain the following parameters: • · Function_ID = 0xCA
TC8.4.C1-1.1	Set Observation ID standard TC. Application data will be structured as specified in RD1 and will contain the following 2 data words: 0xA5A5, 0x5A5A

TC8.4.C1-2.1	*Set Building Block ID* standard TC. Application data will be structured as specified in RD1 and will contain the following 2 data words: 0x1212, 0x2121
TC8.4.C1-3.1	*Set Observing Mode* standard TC. Application data will be structured as specified in RD1 and will contain the data words: 0xC1C1
TC8.4.C1-4.1	*Set Observation Step* standard TC. Application data will be structured as specified in RD1 and will contain the data word: 0x1
TC8.4.C1-4.4	*Synchronize DRCU Counters* standard TC as in RD1
TC8.4.CA-2.1	*Flush_FIFO* standard TC. The parameter will be 0xf000 to flush all FIFOs
TC8.4.CA-5.1	*Send DRCU Command* standard TC as in RD1. The command takes as parameter the 32-bits command word to be sent to the S/S; the parameter will be specified in the test procedure.
TC8.4.CA-6.1	*Reset_FIFOs* standard TC.
TC14.1.1	*Enable Generation of Telemetry Packets* standard TC. Application data will as specified in AD2 with the following parameters: • · N=3 • · 1st block o Type = 21 o Subtype = 1 o SID = 0x200 • · 2nd block o Type = 21 o Subtype = 1 o SID = 0xA20 • · 3rd block o Type = 3 o Subtype = 25 o SID = 0x300
TC14.2.1	*Disable Generation of Telemetry Packets* standard TC. Application data will as specified in AD2 with the following parameters: • · N=2 • · 1st block o Type = 21 o Subtype = 1 o SID = 0x200 • · 2nd block o Type = 21 o Subtype = 1 o SID = 0xA20
TC14.2.2	Same as TC14.2.1, but with: • · N=1 • · Type = 3 • · Subtype = 25 • · SID =0x300
TC14.3.1	*Report Enabled Telemetry Packets* standard TC.
TC8.1.10.1	*Enable_SMEC_Latch* Standard TC.
TC8.4.10-1.1	*Engage_Latch* standard TC.
TC8.4.10-ff.1	*Release_Latch* standard TC.
TC8.4.CA-9.1	*Reset_DPU* standard TC.

10.2 APPENDIX 2 – TP4 VIRTUAL MACHINES EXPECTED RESULTS

Output for VMs test case will consist of standard Acknowledge, HK and Event TM packets.

The expected output of the VME TEST_OPS VM code is a series of 18 TM (5,1) events with the flowing values in the parameter field of the packets (last two 16-bit words before the CRC Herschel – SPIRE On-Board Software Acceptance Test Report Issue 1.4 checkword):

0xA, 0x1906E, 0x0, 0x19072, 0x68, 0x68, 0x1964, 0xFFF614F0, 0xFFFFE69C, 0xFFFFF34E, 0x145, 0x45, 0x1145, 0x11, 0x44, 0xCC, 0x33, 0x10.

10.3 APPENDIX 3 – TABLE OF TM PACKETS GENERATED BY THE SPIRE OBS

These are the TM packets generated by the SPIRE OBS, and for which racket transmission can be enabled or disabled. The Enabled_TM_Packets report TM(0xE, 0x4) packet contains a pair of 16-bit words for each of the below entries: Type on the MSB of 1st word, Subtype on the LSB of the 1st word, and Packet ID on the 2nd word.
Many entries cannot be found in the SPIRE Data ICD and an SPR has been raised accordingly. Other entries specified in the SPIRE Data ICD and not present in this table refer either to features not present in the SPIRE OBS 1.2.N according to specifications, or to the BOOT SW and cannot be handled by the OBS.

Type	Subtype	Packet ID	Frame ID	Ref on SPIRE Data ICD v2.0
0x01	0x01	0x0000	N/A	ok
0x01	0x02	0x0000	N/A	ok
0x01	0x03	0x0000	N/A	ok
0x01	0x05	0x0000	N/A	ok
0x01	0x07	0x0000	N/A	ok
0x01	0x08	0x0000	N/A	ok
0x03	0x19	0x0300	N/A	ok
0x03	0x19	0x0301	N/A	ok
0x03	0x19	0x0302	N/A	ok
0x03	0x19	0x0303	N/A	ok
0x05	0x01	0x0501	N/A	ok
0x05	0x01	0x0504	N/A	ok
0x05	0x01	0x0505	N/A	ok
0x05	0x01	0x0509	N/A	ok
0x05	0x01	0x050A	N/A	ok
0x05	0x01	0x050B	N/A	ok
0x05	0x01	0x050C	N/A	ok
0x05	0x01	0x050F	N/A	ok
0x05	0x01	0x0510	N/A	ok
0x05	0x01	0x0511	N/A	ok
0x05	0x01	0x0520	N/A	ok
0x05	0x01	0x0521	N/A	ok
0x05	0x01	0x0522	N/A	ok
0x05	0x01	0x1500	N/A	see SPR-0355
0x05	0x01	0x1501	N/A	see SPR-0355
0x05	0x01	0x1502	N/A	see SPR-0355
0x05	0x01	0x1503	N/A	see SPR-0355
0x05	0x01	0x1510	N/A	see SPR-0355
0x05	0x01	0x1511	N/A	see SPR-0355
0x05	0x01	0x1512	N/A	see SPR-0355
0x05	0x01	0x1513	N/A	see SPR-0355
0x05	0x01	0x1514	N/A	see SPR-0355
0x05	0x01	0x1515	N/A	see SPR-0355
0x05	0x01	0x1516	N/A	see SPR-0355
0x05	0x01	0x1517	N/A	see SPR-0355
0x05	0x01	0x1518	N/A	see SPR-0355
0x05	0x01	0x1519	N/A	see SPR-0355
0x05	0x01	0x5113	N/A	see SPR-0355
0x05	0x01	0x2578	N/A	see SPR-0355
0x05	0x01	0x2579	N/A	see SPR-0355
0x05	0x01	0x257A	N/A	see SPR-0355
0x05	0x01	0x2540	N/A	see SPR-0355
0x05	0x01	0x2541	N/A	see SPR-0355
0x05	0x01	0x2542	N/A	see SPR-0355

0x05	0x01	0x2543	N/A	see SPR-0355
0x05	0x01	0x2544	N/A	see SPR-0355
0x05	0x01	0x2545	N/A	see SPR-0355
0x05	0x01	0x2546	N/A	see SPR-0355
0x05	0x01	0x2547	N/A	see SPR-0355
0x05	0x01	0x2548	N/A	see SPR-0355
0x05	0x01	0x2549	N/A	see SPR-0355
0x05	0x01	0x254A	N/A	see SPR-0355
0x05	0x01	0x254B	N/A	see SPR-0355
0x05	0x01	0x254C	N/A	see SPR-0355
0x05	0x01	0x254D	N/A	see SPR-0355
0x05	0x01	0x254E	N/A	see SPR-0355
0x05	0x01	0x254F	N/A	see SPR-0355
0x05	0x01	0x2550	N/A	see SPR-0355
0x05	0x01	0x2551	N/A	see SPR-0355
0x05	0x01	0x2552	N/A	see SPR-0355
0x05	0x01	0x2553	N/A	see SPR-0355
0x05	0x01	0x2554	N/A	see SPR-0355
0x05	0x01	0x2555	N/A	see SPR-0355
0x05	0x01	0x2556	N/A	see SPR-0355
0x05	0x01	0x2557	N/A	see SPR-0355
0x05	0x01	0x2558	N/A	see SPR-0355
0x05	0x01	0x2559	N/A	see SPR-0355
0x05	0x01	0x255A	N/A	see SPR-0355
0x05	0x01	0x255B	N/A	see SPR-0355
0x05	0x01	0x255C	N/A	see SPR-0355
0x05	0x01	0x255D	N/A	see SPR-0355
0x05	0x01	0x255E	N/A	see SPR-0355
0x05	0x01	0x255F	N/A	see SPR-0355
0x05	0x01	0x2560	N/A	see SPR-0355
0x05	0x01	0x2561	N/A	see SPR-0355
0x05	0x01	0x2563	N/A	see SPR-0355
0x05	0x01	0x2565	N/A	see SPR-0355
0x05	0x01	0x2568	N/A	see SPR-0355
0x05	0x01	0x2569	N/A	see SPR-0355
0x05	0x01	0x256B	N/A	see SPR-0355
0x05	0x01	0x256D	N/A	see SPR-0355
0x05	0x01	0x2570	N/A	see SPR-0355
0x05	0x01	0x2571	N/A	see SPR-0355
0x05	0x01	0x2574	N/A	see SPR-0355
0x05	0x01	0x2575	N/A	see SPR-0355
0x05	0x02	0xC000	N/A	ok
0x05	0x02	0xC010	N/A	ok
0x05	0x02	0xC100	N/A	ok
0x05	0x02	0xC110	N/A	ok
0x05	0x02	0x0832	N/A	ok
0x05	0x02	0x5201	N/A	see SPR-0355
0x06	0x06	0x0000	N/A	ok
0x06	0x0A	0x0000	N/A	ok
0x08	0x06	0x0000	N/A	ok
0x08	0x06	0x0860	N/A	ok
0x08	0x06	0x0861	N/A	ok
0x09	0x09	0x0000	N/A	ok
0x0E	0x04	0x0000	N/A	ok
0x11	0x02	0x0000	N/A	ok

0x15	0x01	0x0200	0x00	ok
0x15	0x01	0x0201	0x01	ok
0x15	0x02	0x0102	0x02	ok
0x15	0x02	0x0103	0x03	ok
0x15	0x02	0x0104	0x04	ok
0x15	0x02	0x0105	0x05	ok
0x15	0x02	0x0106	0x06	ok
0x15	0x04	0x0207	0x07	ok
0x15	0x04	0x0208	0x08	ok
0x15	0x03	0x0309	0x09	ok
0x15	0x03	0x030A	0x0A	ok
0x15	0x03	0x030B	0x0B	ok
0x15	0x03	0x030C	0x0C	ok
0x15	0x03	0x030D	0x0D	ok
0x15	0x03	0x030E	0x0E	ok
0x15	0x03	0x030F	0x0F	ok
0x15	0x01	0x0410	0x10	ok
0x15	0x01	0x0612	0x12	ok
0x15	0x03	0x0814	0x14	ok
0x15	0x03	0x0915	0x15	ok
0x15	0x01	0x0A20	0x20	ok
0x15	0x03	0x1121	0x21	ok
0x15	0x04	0x0209	N/A	ok
0x15	0x04	0x020A	N/A	ok
0x15	0x04	0x020B	N/A	ok

11. CONCLUSIONS

All the final electrical interface and full functional performance tests have been performed.
The following NCR has been raised:

NCR-SPIRE-CGS-C-012 Rev. 1

The NCR has been closed.

annex a – collection of pvs

The Procedure Variation Sheets collected during the test are reported hereafter.

PROCEDURE VARIATION SHEET ref. N°: 1

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **44**	Paragraph Revised: **A4 (Steps 3, 4, 5, 6, 7, 8, 9)**

Description of Change:

Steps 3 to 9 become:

Step 3
TEST SEQUENCE:
Load on SCOS2000 Manual Stack window the stack named Long_Duration_PFM.scos2. This stack executes the commands to set DRCU Simulator in Long Duration Test configuration
EXPECTED VALUE:
Verify the reception of TM (1,1), (1,3) and (1,7) for all commands sent

Steps 4, 5, 6, 7, 8, 9
Deleted

Reason for Change:

A stack with all the needed commands has been created.

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 20/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 2

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **68, 173**	Paragraph Revised: **C1 (Steps 19, 20, 21), E1 (Steps 19, 20, 21)**

Description of Change:

WAS:

- Send TC8.4.CA-7.1 (**WRITE2EEPROM**) to write into the EEPROM a copy of the OBS currently running on the PM
  · Start Address = 0x4000
  · End Address= 0x2E000
- On SCOS2000 select “ARM” and “GO”
- The following TM packets are received TM(1,1), TM(1,3) and after about 30 seconds TM(1,7)

IS:

- Deleted
- Deleted

Deleted

Reason for Change:

In order to reduce the EEPROM erase/write cycles (re-programming) during PFM test campaign, the steps have been deleted (see GSFC NASA Advisory Number NA-GSFC-2005-04 Paragraph 11. Problem Description and Details).

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 20/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 3

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **68, 173**	Paragraph Revised: **C1 (Step 22), E1 (Step 22)**

Description of Change:

WAS:

Turn off the Power Supply

IS:

Deleted

Reason for Change:

It is not necessary to power off the unit

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 20/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 4

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **69, 105, 114, 116, 124, 174, 210, 219, 221, 238**	Paragraph Revised: **C2 (Step 3), C18 (Step 5), C19 (Step 55), C20 (Step 1), C21 (Step 3), E2 (Step 3), E18 (Step 5), E19 (Step 55), E20 (Step 1), E22 (Step 1)**

Description of Change:

WAS:

Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.

IS:

On scos 2000 select command "**DPU_Jump_Boot**". At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.

Reason for Change:

The unit is already on.

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 20/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 5

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **80**	Paragraph Revised: **C7 (Step 1)**

Description of Change:

WAS:

Stop and switch off CDMS executing steps A5.2 and A5.3 and turn off the power supply.

IS:

Stop and switch off CDMS executing steps A5.2 and A5.3

Reason for Change:

It is not necessary to power off the unit.

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 20/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 6

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **80, 82, 84, 86, 88, 90, 185, 187, 189, 191**	Paragraph Revised: **C7 (Step 6), C8 (Step 3), C9 (Step 3) , C10 (Step 3), C11 (Step 3), E7 (Step6), E8 (Step 3), E9 (Step 3), E10 (Step 3)**

Description of Change:

WAS:

TEST SEQUENCE:
Turn on the power supply (see par. 6.4). At this point the Boot Software is loaded from the PROM to PM. The Boot SW checks the free PM and DM memory then reads the EEPROM verifying the checksum. When these tasks are finished, if no error are detected, an event TM(5,1) is issued. After completion, the Boot SW stops and waits for a command in order to load the OBS from the EEPROM or from the 1553 link.

EXPECTED VALUE:
An event **TM(5,1)** should be received by CDMS Simulator and visualized in the **PacketDisplay** tool.
Verify that the words in the fixed part of the TM packet is equal to the one reported in **Table 6-1 Msg 1**

IS:

TEST SEQUENCE:
Deleted

EXPECTED VALUE:
Verify that the same TM message of the previous test is still received.

Reason for Change:

The unit is already on.

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 20/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 7

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **81, 186**	Paragraph Revised: **C7 (Step 12), E7 (Step 12)**

Description of Change:

WAS:

Start CDMS executing steps from A3.41 to A3.48 and turn off the power supply.

IS:

Start CDMS executing steps from A3.41 to A3.48.

Reason for Change:

It is not necessary to power off the unit.

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 20/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 8

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **83, 85, 87, 89, 104, 114, 115, 123, 188, 190, 192, 194, 209, 219, 220, 237**	Paragraph Revised: **C8 (Step 7), C9 (Step 7), C10 (Step 7), C11 (Step 7), C18 (Step 4), C19 (Steps 54, 60), C20 (Step 49), E8 (Step 7), E9 (Step 7), E10 (Step 7), E11 (Step 7), E18 (Step 4), E19 (Step 54, 60), E21 (Step 54)**

Description of Change:

WAS:

Turn off the power supply.

IS:

Deleted.

Reason for Change:

It is not necessary to power off the unit.

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 20/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 9

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **101, 102, 103, 206, 207, 208**	Paragraph Revised: **C17 (Steps 1 to 9), E17 (Steps 1 to 9)**

Description of Change:

Steps 1 to 9 have been deleted

Reason for Change:

In order to reduce the EEPROM erase/write cycles (re-programming) during PFM test campaign, the steps have been deleted (see GSFC NASA Advisory Number NA-GSFC-2005-04 Paragraph 11. Problem Description and Details).

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 20/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 10

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **114, 219**	Paragraph Revised: **C19 (Step 53), E19 (Step 53)**

Description of Change:

WAS:

TEST SEQUENCE:
Send TC8.4.CA-7.1 (**WRITE2EEPROM**) to write into the EEPROM primary partition a copy of the OBS currently running on the PM
See Annex 10.1.2 for parameters of TC.

EXPECTED VALUE:
Verify reception of TM (1,1), (1,3) and, after about 20 seconds, (1,7)

IS:

TEST SEQUENCE:
Deleted

EXPECTED VALUE:
Deleted

Reason for Change:

In order to reduce the EEPROM erase/write cycles (re-programming) during PFM test campaign, the steps have been deleted (see GSFC NASA Advisory Number NA-GSFC-2005-04 Paragraph 11. Problem Description and Details).

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 20/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 11

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **115, 123, 220, 237**	Paragraph Revised: **C19 (Steps 58, 59), C20 (Step 47, 48), E19 (Steps 58, 59), E21 (Steps 52, 53)**

Description of Change:

WAS:

Step 58 (52):
Stop DRCU Simulator

Step 59 (53):
Stop CDMS Simulator

IS:

Step 58 (52):
Deleted

Step 59 (53):
Deleted

Reason for Change:

The test continues so it is not necessary to stop simulators.

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 20/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 12

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **130, 235**	Paragraph Revised: **C21 (Step 36), E21 (Step 36)**

Description of Change:

WAS:

Open the file **TelemetryA.txt** resident on the CDMS Simulator.
Perform a search for the values 0xC1A0, 0xC1A1, 0xC1A2 and 0xC1A3

IS:

Open the file **TelemetryA.txt** resident on the CDMS Simulator.
Perform a search for the values 0xC1A1, 0xC1A0, 0xC1A2 and 0xC1A3

Reason for Change:

Typing error.

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 20/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 13

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **150, 255**	Paragraph Revised: **C22 (Step 97), E22 (Step 97)**

Description of Change:

WAS:

EXPECTED VALUE:
Verify reception of TM (1,1), (1,3) and (1,7).
Verify reception of four TM (1,1), plus reception of TM (21,3) with APID = 0x508 and SID = 0x1121.

IS:

EXPECTED VALUE:
Verify reception of TM (1,1), (1,3) and (1,7).
Verify reception of TM (21,3) with APID = 0x508 and SID = 0x1121

Reason for Change:

Typing error.

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 21/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 14

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **161**	Paragraph Revised: **C22 (Step 153)**

Description of Change:

WAS:

EXPECTED VALUE:
Verify reception of TM (1,1), (1,3) and (1,7).
Verify that TM (21,1) with APID = 0x200 and 0xA20 are no longer received.

IS:

EXPECTED VALUE:
Verify reception of TM (1,1), (1,3) and (1,7).
Verify that TM (21,1) with SID = 0x200 and 0xA20 are no longer received.

Reason for Change:

Typing error.

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 21/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 15

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **162, 267**	Paragraph Revised: **C22 (Step 160), E22 (Step 160)**

Description of Change:

WAS:

EXPECTED VALUE:
Verify reception of TM (1,1), (1,3) and (1,7).
Verify that TM (21,1,0x410 and 0x612) are no longer received

IS:

EXPECTED VALUE:
Verify reception of TM (1,1), (1,3) and (1,7).
Verify that TM (21,1,0x410) are no longer received.

Reason for Change:

Typing error.

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 21/04/2006	Date	Date		Date

PROCEDURE VARIATION SHEET ref. N°: 16

Test Procedure Ref.: **HERS-SPIRE-PR-CGS-002 Issue 2**	Page Revised: **195**	Paragraph Revised: **E12 (Step 4)**

Description of Change:

WAS:

Type the following commands:
> **cd**
> **cd /DPU_SPIRE_TC**
> **mv DmPageTC00001.dm DmPageTC00001.err**
> **mv DmPageTC00020.dm DmPageTC00020.err**

IS:

Type the following commands:
> **cd**
> **cd /DPU_SPIRE_TC**
> **mv DmPageTC00001.dm DmPageTC00001.err**
> **mv DmPageTC00021.dm DmPageTC00021.err**

Reason for Change:

Typing error.

CONCURRENCE

Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 21/04/2006	Date	Date		Date