

CARLO GAVAZZI SPACE SpA

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HERSCHEL DPUs/ICU

HERSCHEL SPIRE DPU PFM FINAL ELECTRICAL INTERFACE AND FULL FUNCTIONAL PERFORMANCE TEST REPORT

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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.IFSI2001.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	А	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



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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
ТМ	Telemetry
UUT	Unit Under Test
VM	Virtual Machine
VMEC	Virtual Machine Executable Code



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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.



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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:

OCOE: OVERALL CHECKOUT EQUIPMENT 6.1

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



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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		Event ID SID	SID	Packet	TC_PK	State	
Num.	Test ID	(Word #9) (Word #10)	(Word #10)	Counter (Word #15)	TC_PKT_ID (Word #16)	TC_PKT_SEQ_CTRL (Word #17)	(Word #18)
1.	C2 to C16 E2 to E16	0x8008	0x0003	0	0xABAB	0xCDCD	0xAAAA
2.	01-03	0x8001	0x00FF	0	0xABAB	0xCDCD	0xAAAA
3.	02-04	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.	01-03	0x4001	0x0009
2.	02-04	0x8001	0x0006
3.	C 15.7 E 15.7	0x4001	0x0800

Table 6-2: TM Packet Event Variable part



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

Table 6-3: TM Packet Acknowledge Fixed part



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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	0χΑΑΑΑ ΑΑΑΑ
2.	C 7.9 E 7.9	0x0500	0x000C	0xAAAA	0xAAAA	0xAAAA	0ΧΑΑΑΑ ΑΑΑΑ
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	0χΑΑΑΑ ΑΑΑΑ
6.	C 11.6 E 11.6	0x08FF	0x000B	0xAAAA	0xAAAA	0xAAAA	0χΑΑΑΑ ΑΑΑΑ
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°C) 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.



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6.6 REQUIREMENTS CROSS REFERENCE

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

REQ. n°	Specification /	PROCEDURE	REMARKS
	REQ. ID / Description	VERIFICATION	
Hardware	Requirements		
HW1	AD4 /	B3, C.	
	5.9.5.1 / Bus Voltage		
	5.9.5.2 / Main Bus Characteristics		
HW2	AD4/	B3, C1, D1.	
1.0.4/0	5.9.5.4 / Power Distribution	<u></u>	
HW3	AD4 /	C1, D1.	
	5.9.5.6 / Power Demand	D4	
HVV5	AD5 /	BJ	
		P2	
11000	5 10 3 4 / Isolation between primary power lines	02	
	and the structure of the hosting S/C		
HW7	AD4 /	B2	
	5.14.2.15 / DC Resistance between Shield		
	Ground Pin and Equipment Chassis		
Boot-Soft	ware Requirements		
BS1	AD19 /	C1 to C16	
	BSRD-011	E1 to E16	
BS2	AD19/	Sections C and E:	
	BSRD-012	2, 12, 13,14,15	
D 00		and 16	
BS3		Sections C and E:	
BC1	BSRD-013	2,3,4,5 and 10	
D34	BSRD-020	E1 to E16	
BS5	AD19 /	C1 to $C16$	
200	BSRD-030	E1 to E16	
BS6	AD19/	C1 to C16	
	BSRD-040	E1 to E16	
BS7	AD19 /	C1 to C16	
	BSRD-050	E1 to E16	
BS8	AD19 /	C1 to C16	
	BSRD-060	E1 to E16	
BS9	AD19/	C1 to C16	
DQ 40	BSRD-080	E1 to E16	
BS10	AD19/		
DC11	BSRD-090		
0311	RSPD_100		
BS12		C1 to $C16$	
0012	BSRD-110	E1 to E16	
BS13	AD19/	C6 F6	
	BSRD-120		
BS14	AD19/	C1, E1	
	BSRD-130	· ·	



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REQ. n°	Specification /	PROCEDURE	REMARKS
	REQ. ID / Description	VERIFICATION	
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	



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REQ. n°	Specification /	PROCEDURE	REMARKS
	REQ. ID / Description	VERIFICATION	
	BSRD-420	E1 to E16	
BS42	AD19/	C1 to C16	
	BSRD-430	E1 to E16	
Software	Requirements		
SW1	AD13 /	TP2	
	UR-TC3 / Initialization and configuration		
SW2	AD13 /	TP2	
	UR-TM2 / Initialization and configuration		
SW3	AD13 /	TP2	
C)A/4	UR-1C3 / Spacecraft Interface	TDO	
5004	AD13/	TP2	
S\M/5		TP2	
3003	UR-TC8 / Telecommand		
SW6	AD13/	TP2	
00	UR-TC11 / Telecommand		
SW7	AD13 /	TP1	
	UR-TC20 / Telecommand	TP2	
		TP3	
		TP4	
		TP5	
SW8	AD13 /	TP2	
	UR-TC1 / Telecommand	TP3	
		TP4	
		TP5	
SW9	AD13/	TP2	
	UR-GE3 / Telecommand	TP3	
SW/10	AD12 /		
30010	IIP GE4 / Tolocommand		
	OR-GE47 Telecommand	ТРИ	
		TP5	
SW11	AD13 /	TP2	
01111	UR-GE5 / Telecommand	TP3	
		TP4	
		TP5	
SW12	AD13 /	TP2	
	UR-TC10 / Telecommand	TP3	
		TP4	
		TP5	
SW13	AD13 /	TP2	
	UR-TC14 / Telecommand	TP3	
		TP4	
		TP5	
SW14	AD13/	TP2	
	UR-IC16 / Telecommand	TP3	
CN/4F			
50015	AUI3/		
SW/16			
00010	עושאן	154	



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REQ. n°	Specification /	PROCEDURE	REMARKS
	REQ. ID / Description	VERIFICATION	
	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/	TP3	
	UR-GE13 / Telemetry	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	
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REQ. n°	Specification /	PROCEDURE	REMARKS
	REQ. ID / Description	VERIFICATION	
SW43	AD13 /	TP2	
	UR-SM11 / Memory management		
SW44	AD13 /	TP5	
	UR-TM5 / Memory management		
SW45	AD13 /	TP2	
	UR-SM4 / Memory management		
SW46	AD13 /	TP2	
	UR-SM6 / Memory management		
SW47	AD13 /	TP2	
	UR-TC14 / Subsystem interface		
SW48	AD13 /	TP3	
	UR-SY3 / Subsystem interface		
SW49	AD13 /	TP5	
	UR-FU11 / Subsystem interface		
SW50	AD13 /	TP5	
	UR-GE9 / Subsystem interface		
SW51	AD13 /	TP5	
	UR-GE10 / Subsystem interface		
SW52	AD13 /	TP5	
	UR-GE8 / Subsystem interface		
SW53	AD13 /	TP3	
	UR-SY1 / Synchronization		
SW54	AD13 /	TP3	
	UR-SY2 / Synchronization		
SW55	AD8 /	TP6	
	BSRD-330		

Table 6-5: REQUIREMENTS CROSS REFERENCE



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7. INSTRUMENTATION AND TEST EQUIPMENT

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

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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 Relative humidity	25 ℃ +/- 3℃ 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.



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	PROCEDURE V/	ARIATION SHEET re	ef. N°:
Test Procedure Ref.:		Page Revised:	Paragraph Revised:
Description of Change			
Reason for Change:	QA Syst	ONCURRENCE em Eng.	Customer
Data	Data Data		Data
Date Questo documen	Date Date	ietà di CARLO GAVA77I SPA	CE SpA Tutti i diritti sono riservati
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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

PREPARE THE TEST ENVIRONMENT А

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.

0 OPEN UNIT BOOT SOFTWARE TESTS OF MAIN AND REDUNDANT SECTION

CLOSED BOX TESTS:

ELECTRICAL INTERFACES TEST:

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

FUNCTIONAL TESTS:

- С 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
- Е 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.

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UUT DATA :	Model	Item	C.I.	S/N	
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

Α	PREPARE THE TEST ENVIRONMENT		
A1	CABLES CONNECTION FOR MAIN SECTION TEST		
A 1.1	Install the SPIRE DPU on the test bench	ОК	
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.	ОК	
A 1.5	Check if the MIL-STD-1553B Network is compliant with Figure 10-1 and Table 10-1.	ОК	
A 1.6	Connect the cable labeled DPU-CHA of the MIL-STD-1553B network with the connector J03 on the Unit.	ОК	
A 1.7	Connect the cable labeled DPU-CHB of the MIL-STD-1553B network with the connector J04 on the Unit.	ОК	
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.	ОК	
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.	ОК	
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.	ОК	

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

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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	DATE: 20/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER
			۱ <u>ــــــــــــــــــــــــــــــــــــ</u>	l

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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	
CH2A (see Figure 10-1)	MIL-STD-1553B	305 DF 0 CIT D (See Figure 10-1)
CH1B (see Figure 10-1)	MIL-STD-1553B	
CH2B (see Figure 10-1)	MIL-STD-1553B	JU4 DPU CH A (see Figure 10-1)
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		

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UUT DATA :	Model	ltem	C.I.	S/N		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	

A2 CAB	LES 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.	ОК	
A 2.5	Check if the MIL-STD-1553B Network is compliant with Figure 10-1 and Table 10-1.	ОК	
A 2.6	Connect the cable labeled DPU-CHA of the MIL-STD-1553B network with the connector J05 on the Unit.	ОК	
A 2.7	Connect the cable labeled DPU-CHB of the MIL-STD-1553B network with the connector J06 on the Unit.	ОК	
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.	ОК	
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.	ОК	
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.	ОК	

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UUT DATA :	Model	Item	C.I.		S/N
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A3 EGS	SE START- U	P				
A 3.1	Turn ON the Switch and	e PDU on the EGSE. Turn on the Fault Current then the Circuit Breakers.			ОК	
A 3.2	SCOS2000 Turn on the	setup SCOS2000 workstation			ОК	
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 u	ser desktop is displayed	ОК	
A 3.4	4 From a shell window run the following commands: The cd ~/local-bin and press <enter>. RestartRouterSPIRE and press <enter>. StartRouterSPIRE and press <enter>.</enter></enter></enter>		Two w Route	vindows appear: router and e rS2Kgateway (see Figure 10-2).	OK	
A 3.5	From a she run the follo Set_links	l window in /home/sops23e wing command s_SPIRE_MIB then press <enter>.</enter>			ОК	
A 3.6	From a shel s2.start a	I window run the following command: nd press <enter>.</enter>	S2K F scos1	2.3E - Startup & overview of window appears (see Figure 10-3).	ОК	
A 3.7	Click on the	EGSEsrv button	Sever 10-3).	al buttons are toggled (see Figure	ОК	
A 3.8	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	
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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 warnin alarm checkbo	g bell. Press button Alarm tone disable , click x and confirm.		ОК		
A 3.10	From esa SCC	S-2000 bar, click on the Users button	SCOS-2000 - Roles and Privileges window appears	ОК		
A 3.11	Login as Matt	user, role SUPE_001, password Matt .		ОК		
A 3.12	From S2K R2 . and MSTK2 b requested.	3E-Startup & overview of scos1 , select MON1 uttons, click on Start button and confirm when	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).	ОК		
A 3.13	On the telemet left of the wind	ry desktop window, select AND button at bottom ow and choose DPU and OBS parameters		ОК		
A 3.14	Go to the /hom	ne/sops23e directory		OK		
A 3.15	Run script exif	start		OK		
A 3.16	Select buttons TOPE1, then p	Exif_TMM, Exif_CHM, Exif_TM1, Exif_CH1 and ress Start and Confirm		ОК		
A 3.17	At this point the	e SCOS2000 system is up and running		OK		
A 3.18	Start the DRC	U Simulator PC.		OK		
A 3.19	Make sure that from SPIRE PC	the cables DCU, MCU, SCU are well connected C to the SPIRE unit.		ОК		
A 3.20	After the exec Operating Syst	ution of system hardware start-up, screen of the em appears.		ОК		

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UUT DATA :	Model	Item	C.I.	S/	/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS



Figure 10-2 Router and RouterS2Kgateway windows.

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UUT DATA :	Model	ltem	C.I.	S/N		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	

0.94 DO 35 Otostan & manufacture of event discuss in the second

MONI	MON2	MONS	VPD1	VPD2	VPD3
RelASTKI	RelASTK2	RelASTK3	MSTKI	MSTKZ	MSTKJ
ExecASTK1	ExecASTK2	ExecASTK3	OBQD1	OBOD2	OBQD3
TCSCI	TCSC2	TCSC3	TCHISTI	TCHIST2	TCHIST3
TMSCI	TMSCZ	TMSCI	FARCB1	FARCB2	FARCB3
TMprint1	TMprint2	TMprint3	0011	0012	0013
EVLOGI	EVLOG2	EVLOG3	MSG1	MSG2	MSG3
OBSMI	OBSM2	OBSM3	MIMICS	GRAPHS	PDSadmin
PDSTM	POSTC	PDSEV	HFAretTM	HFAretTC	HFAretEV
NAME	TMD	CMC	GPC		
LIMITS	PIF	SPPG	FARCS	DDSS	HPRS
MULTI	VERIF	RELEAS	OBOM	TPF	l a construction of the second se
MISC	USER	EVAC	ACTION	NMSG	Ï
TMR	RPLY	TCSIM	ADMSIM	CLCWsim	1
DESK	PSRVserver	PROM			
тмрн	OBEH	TPKT	TERM	1 Contraction	
IMPORT	EXIF				
EGSE_IF	EGSEsim	PDS_DISP			
Clean	AR Dico	MCSsrv	OBSMsrv	EGSEsrv	Update Task Sta
💷 Kill	📕 Start	_ Warm		Do not restart aiready runnio	Last refresh 00:00
-					
l					
53					

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

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UUT DATA :	Model	ltem	С.І.	S/N		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	



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

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UUT DATA :	Model	ltem	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

*	S2K R2.3	BE - Star	tup & overvie	w of scos1 (Linux) [sco	os1 - se	cos1]	• 🖬 🗄
MON1	M	DN2	MON3	VPD1	VPC	2	VPD3	
RelAST	CI RelA	STK2	RelASTK3	MSTK1	MST	ка	мотка	
ExecAST	K1 Exec/	ASTK2	ExecASTK3	OBQD1	OBQ	D2	OBQD3	
TCSC1	тс	SC2	TCSC3	TCHISTI	TCHI	ST2	TCHIST3	
TMSCI	ТМ	SC2	TMSC3	FARCB1	FARC	:B2	FARCB3	
TMprint	1 TMp	rint2	TMprint3	00L1	001	2	00L3	
EVLOG	1 EVL	OG2	EVLOG3	MSG1	MSC	32	MSG3	
OBSMI		SM2	OBSM3	MIMICS	GRAF	HS	PDSadmin	
PDSTM	I PD	STC	PDSEV	HFAretTM	HFAre	tTC [HFAretEV	
NAME	TI	4D	СМС	GPC				
LIMITS	6 P	1F [SPPG	FARCS	DDS	S	HPRS	
MULTI	MULTI VERIF		RELEAS	OBQM	TP	F		
MISC USER		BER	EVAC	ACTION	NMS	G		
TMB	R	PLY	TCSIM	ADMSIM	CLCW	sim		
DESK	PSRV	server	PRQM					
ТМРН	OE	BEH	ТРКТ	TERM				
IMPOR	т Б	KIF						
EGSE_I	F EGS	Esim	PDS_DISP	(
Clean	Ali	Client	MCSsrv	OBSMsrv	EGSEsrv		Update Tasl	< Statu
🗆 Kill	📕 St	art	🔲 Warm		Do not re: f aiready r	start unning	Last update	16:02:5
<pre></pre>								
s2. Started	>> max. au >> status start COM UPDATE of UPDATE of	other 1 reports PLETION f tasks f tasks	status status comp	seconds fro leted	m start			
#2. Started	>> max. au >> status start COMI UPDATE of UPDATE of	other : report PLETION E tasks E tasks	status	seconds fro leted	m start			

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

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UUT DATA :	Model	Item	C.I.	S/N				
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS			

l⊉ +			SCOS-2000 Manua	d Stack 1 W/S: sco	st S/C: HERS	CHEL			
FILE ENIT									ki1
STATUS LINK TG: SIG NOTIS TH: SIG IN ELON	STATIC PTV GLODAL ENVILLE LOCAL ENVILLES	DYNALC FTV VERIFIC FNALED FNAL FNALED FNAL	ATION INTERLOCK	INSTER INNAL INDE	WHIT HODE DISABLED	AUTO REJILLY TRAM	anission mode RD	SURIE Rinding	
contino.	STA. ENATES	Drn. 1997= 1 (1)	INTERLOOK	REGULEST	WRIT HOSE]	RATIN RELECT		\$10P 1 million -	
	00	SE0	RESET TL	3	Ø-SYSTERS	DISPLAY MODE:	EXPANDED BRIEF 📂	No. of Entries:	1
Num Hand 1 SC009505	Description FoecE_Boot			PTV Kolasse	Time IL ASAP	6 B EV Encur	ion Tine I INVEDIATE	Pgront Sug. Sub-System	2

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

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS



Figure 10-7 Telemetry Desktop window.

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UUT DATA :	Model	Item	С.І.		S/N
STEP n°	TEST SEQUE	NCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
A 3.21	Insert the .TestContro	login name sops23e and user ol and click on the OK button.	password The user desktop is displayed.		
	NOTE: If th error, an err the step 3). inputs.	e password is not correct, for example for for message will appear and you will have Proceed paying attention to typing the corr	a typing o repeat ect	ОК	
A 3.22	After succes Desktop.	ssful login, click on DRCU Simulator shor	cut on the The Hermes 5.2 window appear Figure 10-9).	ars (see OK	
A 3.23	Select settir	ngs from the menu bar of the GUI and choo	ose CH0	OK	
A 3.24	Click on the Settings for	LoadOldSettings button and Load the file or Acc Tests.ch0	9	ОК	
A 3.25	Click on the	TransferGUlchangesToDriver button		OK	
A 3.26	Close the C	H0 setting window		OK	
A 3.27	Select settir	ngs from the menu bar of the GUI and choo	ose CH1	OK	
A 3.28	Click on the Settings_fo	LoadOldSettings button and Load the file or_Acc_Tests.ch1	9	ОК	
A 3.29	Click on the	TransferGUlchangesToDriver button		OK	
A 3.30	Close the C	H1 setting window		OK	
A 3.31	Select settir	ngs from the menu bar of the GUI and choo	ose CH2	OK	
A 3.32	Click on the Settings_fo	LoadOldSettings button and Load the file or_Acc_Tests.ch2	9	ОК	
A 3.33	Click on the	TransferGUlchangesToDriver button		OK	
A 3.34	Close the C	H2 setting window		OK	
A 3.35	Select the lo already sele	pop option for channels CH0, CH1 and CH acted	2 if not	ОК	
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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.		ОК	
A 3.38	After the execution of system hardware start-up, screen of the Operating System appears.		ОК	
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.	ОК	
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.		ОК	
A 3.41	To start the CDMS Simulator click on CDMS_SIM file on desktop.		ОК	
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		ОК	
A 3.43	Click on Launch Router Command Interface		OK	

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UUT DATA :	Model	Item	C.I.	S/N		
STEP n°	TEST SEQUENCE	<u> </u>	EXPECTED VALUE	MEASURED VALUE	REMARKS	
A 3.44	Click on Conn	ect		OK		
A 3.45	Select NAME_	CLIENT; write spire and click Send Comm	nand	ОК		
A 3.46	Select ADD_C	LIENT, write 500 and click Send Command	d	OK		
A 3.47	Click on Close	Without Sending		OK		
A 3.48	On the CDMS the bus A cha	Simulator click on icon Select Bus and chinnel	oose	ОК		
A 3.49	Select Route Herschel/Plar	r option from Select TC Source menu tock CDMS Simulator Control Panel.	in the	ОК		
A 3.50	Start CDMS S the Herschel/	imulator by pressing the Start/Stop BC bu Planck CDMS Simulator Control Panel.	utton on The 1553 Bus Alive Led on the Herschel/Planck CDMS Simulator Control Panel blinks.	ОК		
A 3.51	The CDMS is	now ready		OK		
A 3.52	Launch Packet PacketDisplay corresponding EGSEConfigu	tDisplaySPIRE_Main.bat or ySPIRE_RED.bat files to configure the nominal or redundant APIDs in the ration file.		ОК		
A 3.53	Start the Pacl On the CDMS SPIRE icon	ketDisplay tool Simulator PC double-click the Packet Disp	lay	ОК		
A 3.54	When the wind TM buttons to that are not ne tests.	dow appears, click on the CDMS TC and C mask packets generated by the CDMS itse reded for the present	DMS e ^{lf and} CDMS_TC and CDMS_TM become RED	ОК		

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

Router T Hal	tommand increase Sendlocal TC	Select Bus Select Bustist on towar EXIT SIMBATI
cal Command to Send:		
tens name Te not responding:	ys first few words of selected local command	Launch Router Command Interface Client Name: Launch Command Interface
an (Select RT)		Pause CDM5 Housekeeping Packets
Command: (APID + Max 32 I	DWa Wordi) Eve	nt TM SAST 0 0 Unit Status 0 0
TELECOMMAND PACEET INTO	View Log File Pause Display Ack Service Service APED Count Length Flags Type Subtype	THEMETRY PACKET INTO Data Field Seg mere Time Hid APID Flags Court Length & segen

Figure 10-8 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	

anduland CH CMD PAB SET/GET	N 15	1 200 200	Simulator Operat	ionall Mode
AREDODOD 2. ORED DODO C	TXOR CCC DECT	DetectorDisplay	00-accquisition photometer	h ID=0 🔹
ASEE0000 2 08EE 0000 G	Channel 0	A 35 0 0		
ABEF0000 2 08EF 0000 G		C 002 X pos Y pos		
A8F00000 2 08F0 0000 G	₩ Loop 1086 0 •	- Jage - Chiefe - Chiefe		
ABF10000 2 08F1 0000 G	294 1 62	Signal=A Exp[-C*(x^2+y^2]]		
	1001	(0.0)=detector centre point		
	Channel 1	Rand* 0 500 Set		
	17 Loss 449 4 -	Hean Stdev		
	ie roob laas la T	SMEC FramelD=0x10		
	11 1 3	Telemetry ON 💌 Edit29		
		D Trajectory gen. is stopped 🔹		
	Channel 2			
	F 1000 130 0 +	OFF Scan Stopped		
70758 BesetBegCounter		SCU Normal		
	30 1 12	Open (EVHSHEAT B) Cloted (SPHSHEAT B		
		0.3 K Nomal 1.7 K		
	TransferChannelSettingsToDriver	CEVTemp CPHPTemp		
	ScanTimes / Ins) [Sastan	HS		
	Searchine to finite Tacators	CHECO-		
	Status	SMECFORNON MirorPas		
	I family for			
		N= 0		
	Uev 10	iii lo		
	FiBate10			
	Efferent2 [0	0		
	Timet	Sap FrameRatio		
	ResetTimer Times	CMD+3		

Figure 10-9 Hermes 5.2 Simulator Panel

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

		N° Doc: Doc N°	HERS-S	PIRE-	PR-CGS-002	N° Doc: Doc N°	HERS-	SPIRE-I	RP-CGS-008
CARLO GAVAZZI		Ediz.: <i>Issue:</i>	2	Data: <i>Date:</i>	APRIL 2006		1	Data: <i>Date:</i>	MAY 2006
	HERSCHEL SPIRE DPU PFM FINAL ELECTRICAL	Pagina <i>Pag</i> e		di of	293	Pagina <i>Page</i>	45	di of	312
CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST RE	PORT RE	FERENCE

UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

A4 SI	ETUP FOR LONG DURATION TEST			
A 4.1	Load on SCOS2000 Manual Stack window the stack for LongDurationTest contained in "/home/sops23e/CMD/SPIRE/STACKS".		ОК	
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.	ОК	
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 N୩
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

		N° Doc: Doc N°:	HERS-S	SPIRE-	PR-CGS-002	N°Doc: Doc N?	HERS-	SPIRE-I	RP-CGS-008
CARLO GAVAZZI		Ediz.: <i>Issue:</i>	2	Data: <i>Date:</i>	APRIL 2006		1	Data: <i>Date:</i>	MAY 2006
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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST RE	PORT RE	EFERENCE

UUT DATA :	Model	Item	C.I.	S/N		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	

A5	STOP TEST		
Δ51	Switch-off the DPLI 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).	nulator)-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 Sir v2.5 window disappears and the Simulator turn off. 	nulator CDMS OK	
A 5.4	To stop the SPIRE Simulator click on the X button in the The Hermes 5.2 window disappears Hermes 5.2 window (see Figure 10-10).	S. OK	
A 5.5	To stop the SCOS2000 ,from S2K R2.3E - Startup & overview Several buttons are toggled. of scos1, click on the EGSEsrv, MON1 and MSTK2 buttons.	ОК	
A 5.6	Select the Kill option, then click on the Start button and confirm Wait until all the services are stopp the corresponding windows disappe	ed and OK ar.	
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	0 If no further test are foreseen, power off DRCU PC	OK	
A 5.1	1 If no further test are foreseen, logout and turn off SCOS2000 workstation	ОК	
A 5.12	2 If no further test are foreseen, turn OFF the PDU on the EGSE.	OK	

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

	HERSCHEL DPUs/ICU	N°Doc: Doc N°	HERS	-SPIRE-	PR-CGS-002	N° Doc: Doc N°	HERS-S	PIRE-I	RP-CGS-008	
CARLO GAVAZZI		Ediz.: <i>Issue:</i>	2	Data: Date:	APRIL 2006		1	Data: <i>Date:</i>	MAY 2006	
	HERSCHEL SPIRE DPU PFM FINAL ELECTRICAL	Pagina <i>Pag</i> e		di of	293	Pagina <i>Page</i>	47	di of	312	
CARLO GAVAZZI SPACE SpA	INTERFACE AND FULL FUNCTIONAL PERFORMANCE		TEST PROCEDURE REFERENCE				TEST REPORT REFERENCE			

UUT DATA :	Model	Item	С.І.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

Ç	
Version 2.4 Herschel/Planck	CDMS Simulator Control Panel The Retentor Appendix Control Panel
ect TC Source Select Command services Send I	OCAL TC Select Bus Select Busist on sense EXIT SDMRATOR
al Command to Send:	
slays first few words of selected local command)	Lawerh Router Command Interface Client Name: Interface
SSEmar Sorrag m (Select RT) 0 ~	Pause CDMS Housekeeping Packets
RT Direct Commanding: Select Command type: Send Command Link Col (SATR)	RT Status Messagest Instrument Time Ethic 0 0 0 Event 1M 545T 0 0 0 0 0 Event 1M 545T 0 0 0 0 0
LUCOMMAND ACKET INO Time APID Court Length Flogs Type	TELEMETRY PACKET DVD Yesw Log File Pause Display Service Subtrye Diss Peid Time Service Hot APED Pause Display Image: Court Length Ver American Ver American
E under Martin D	

Figure 10-10 Stopping CDMS Simulator Control Panel

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

		N° Doc: Doc N°	HERS-	SPIRE-	PR-CGS-002	N°Doc: Doc N°	HERS-	SPIRE-I	RP-CGS-008
CARLO GAVAZZI		Ediz.: <i>Issue:</i>	2	Data: <i>Date:</i>	APRIL 2006		1	Data: <i>Date:</i>	MAY 2006
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CARLO GAVAZZI SPACE SpA	INTERFACE AND FULL FUNCTIONAL PERFORMANCE TEST REPORT		TEST PROCEDURE REFERENCE			TEST REPORT REFERENCE			

UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

OPE	N BOX TESTS			
0	OPEN UNIT BOOT SOFTWARE TESTS O	F MAIN AND REDUNDANT	SECTION	
O1 SECTION The pur send a corrupte	BOOT SW PROGRAM MEMORY TEST FAIL ON MAIN ON pose is to demonstrate the capability of the HERSCHEL BOOT-SW to Telemetry Message when one or more Program Memory cells are ad. 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)
01.1	Open the unit box and attach the ADSP21020 POD to the JTAG of the main section of the CPU board			
01.2	Execute the procedure A3.2 to A3.4 for the start up of the router if needed			
01.3	Execute the procedure A3.36 to A3.50 for the start up of the CDMS-Simulator Control Panel if needed.			
01.4	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		

DATE:	TEST CONDUCTOR:	QA:	CUSTOMER

		N° Doc: Doc N°	HERS-S	SPIRE-I	PR-CGS-002	N° Doc: Doc N°	HERS-S	PIRE-I	RP-CGS-008
CARLO GAVAZZI		Ediz.: <i>Issue:</i>	2	Data: <i>Date:</i>	APRIL 2006		1	Data: <i>Date:</i>	MAY 2006
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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST REP	ORT RE	FERENCE

UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
01.7	In the Memory	menu of the ADSP21020 Emulator choose the	The Program Memory window opens		
O1.8	Set a breakpoir	nt at PM Address 0x0C90			
O1.9	Press F4 to run breakpoint.	the program and wait until it stop at the	A message window appears with the following message: Software breakpoint at PM Address 0x0C90		
O1.10	Goto PM Addr	ess 0x2400 and set 0xFFFFFFFF data.			
O1.11	Unset the brea the keyboard.	<pre>kpoint at PM Address 0x0C90 and press F4 on</pre>	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		

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CARLO GAVAZZI	HERSCHEL DPUs/ICU	N°Doc: Doc N° Ediz.: Issue:	HERS- 2	- SPIRE- Data: Date:	PR-CGS-002 APRIL 2006	N°Doc: Doc N?	HERS-	SPIRE-I Data: Date:	RP-CGS-008 MAY 2006
CARLO GAVAZZI SPACE SpA	HERSCHEL SPIRE DPU PFM FINAL ELECTRICAL INTERFACE AND FULL FUNCTIONAL PERFORMANCE TEST REPORT	Pagina Page TE	ST PROC	di of EDURE R	293 EFERENCE	Pagina <i>Page</i>	50 TEST RE	di of PORT RE	312 FERENCE

UUT DATA :	Model Item	C.I.		S/N
STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
O2 BOC The purpose send a Tele corrupted. T	DT SW DATA MEMORY TEST FAIL ON MAIN SECTION e is to demonstrate the capability of the HERSCHEL BOOT-SW emetry Message when one or more Program Memory cells a This test require open box unit and ADSP21020 Emulator.	to re		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 JTA on the main section of the CPU board	.G		
02.2	Execute the procedure A3.2 to A3.4 for the start up of the rout if needed	er		
02.3	Execute the procedure A3.36 to A3.50 for the start up of the CDMS-Simulator Control Panel if needed.	ne		
O2.4	In the Execution menu of the ADSP21020 Emulator choose the option Chip Reset.	se		
O2.5	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.	ne		
O2.6	Start CDMS Simulator by pressing the Start/Stop BC button o the Herschel/Planck CDMS Simulator Control Panel.	n 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.	e The Program Memory window opens		
DATE:	TEST CONDUCTOR:	QA:	CUSTOMER	

			HERS-SPIRE-PR-CGS-002			N°Doc: Doc N? HERS-SPIRE-RP-CGS-008			P-CGS-008
CARLO GAVAZZI		Ediz.: <i>Issue:</i>	2	Data: <i>Date:</i>	APRIL 2006		1 ^D)ata: Date:	MAY 2006
	HERSCHEL SPIRE DPU PFM FINAL ELECTRICAL	Pagina <i>Pag</i> e		di of	293	Pagina <i>Page</i>	51	di of	312
CARLO GAVAZZI SPACE SpA	TEST REPORT	TEST PROCEDURE REFERENCE				TEST REPORT REFERENCE			

UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
O2.8	Set a breakpoir	nt at PM Address 0x098C			
O2.9	Press F4 to rur breakpoint.	the program and wait until it stop at the	A message window appears with the following message: Software breakpoint at PM Address 0x098C		
O2.10	In the Memory option Data .	menu of the ADSP21020 Emulator choose the	The Data Memory window opens		
O2.11	Goto the DM A	ddress 0x15ED and set 0xFFFFFFFF00 data.			
O2.12	Unset the brea the keyboard.	kpoint at PM Address 0x098C and press F4 on	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

CARLO GAVAZZI	HERSCHEL DPUs/ICU	N° Doc: Doc N°HERS-SPIRE-PR-CGS-002Ediz.: Issue:2Data: Date:APRIL 2006				N°Doc: Doc Nº	HERS-SPIRE-RP-CGS-008 1 Data: Data: Data: Data:		
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CAREO GAVAZZI SPACE SPA			TEST PROCEDURE REFERENCE			TEST REPORT REFERENCE			

UUT DATA :	Model	Item	С.І.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

O3 REDUNDA The purpose send a Tele corrupted. T	BOOT SW PROGRAM MEMORY TEST FAIL ON DUNDANT SECTION e purpose is to demonstrate the capability of the HERSCHEL BOOT-SW to d a Telemetry Message when one or more Program Memory cells are rupted. 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 ur on the redu	nit box and attach the ADSP21020 POD to the JTAG ndant section of the CPU board.				
O3.2	Execute the if needed	procedure A3.2 to A3.4 for the start up of the router				
O3.3	Execute the CDMS-Simu	e procedure A3.36 to A3.50 for the start up of the ulator Control Panel if needed.				
O3.4	In the Execution menu of the ADSP21020 Emulator choose the option Chip Reset.					
O3.5	Select Rou Herschel/P	ter option from Select TC Source menu in the lanck 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 1 Hersc Panel	553 Bus Alive Led on the chel/Plack CDMS Simulator Control blinks		
O3.7	In the Mem option Prog	ory menu of the ADSP21020 Emulator choose the ram.	The Program Memory window opens			
DATE:		TEST CONDUCTOR:		QA:	 CUSTOMER	

	HERSCHEL DPUs/ICU	N° Doc: Doc N°	HERS-SPIRE-PR-CGS-002			N°Doc: Doc N° HERS-SPIRE-RP-CGS-008			
CARLO GAVAZZI		Ediz.: <i>Issue:</i>	2	Data: <i>Date:</i>	APRIL 2006		1	Data: <i>Date:</i>	MAY 2006
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CARLO GAVAZZI SPACE SpA		TEST PROCEDURE REFERENCE				TEST REPORT REFERENCE			

UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENC	E	EXPECTED VALUE	MEASURED VALUE	REMARKS
O3.8	Set a breakpo	int at PM Address 0x0C90			
O3.9	Press F4 to rubreakpoint.	in the program and wait until it stop at the	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 bre the keyboard.	akpoint at PM Address 0x0C90 and press F4 on	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		

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	HERSCHEL DPUS/ICU		^{I°Doc:} HERS-SPIRE-PR-CGS-002			N° Doc: Doc N°: HERS-SPIRE-RP-CGS-008			
CARLO GAVAZZI	TIERSCHEL DF 03/100	Ediz.: <i>Issue:</i>	2	Data: <i>Date:</i>	APRIL 2006		1	Data: <i>Date:</i>	MAY 2006
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CARLO GAVAZZI SPACE SpA		TEST PROCEDURE REFERENCE			TEST REPORT REFERENCE				

UUT DATA :	: Model Item		C.I.		S/N		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS		
					-		

O4 The pu send a corrup	BOOT SW DATA MEMORY TEST FAIL ON MAIN SECTION urpose is to demonstrate the capability of the HERSCHEL BOOT-SW to a Telemetry Message when one or more Program Memory cells are ted. 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.		
04.2	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.		
04.4	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

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CARLO GAVAZZI	HERSCHEL DPUS/ICU	Ediz.: <i>Issue:</i>	2	Data: <i>Date:</i>	APRIL 2006		1	Data: <i>Date:</i>	MAY 2006
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CARLO GAVAZZI SPACE SpA		TE	ST PROCE	DURE R	EFERENCE		TEST REP	ORT RE	FERENCE

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 0xFFFFFFF00 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	

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CARLO GAVAZZI SPACE SpA		TE	ST PROCE	EDURE R	EFERENCE		TEST RE	PORT RE	FERENCE

UUT DATA :	Model	ltem	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	

DATE: 19/04/2006	TEST CONDUCTOR: A. Sciortino	QA:	CUSTOMER

	HERSCHEL DPUIs/ICU	N° Doc: Doc N?	HERS	-SPIRE-	PR-CGS-002	N°Doc: Doc N°	HERS-S	SPIRE-F	RP-CGS-008
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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

B2 PRI	MARY 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		ОК	
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 thro least 1 M Ω be calculate by th the pin 2 of J subtract from t series resistan	ugh a power supply with a series resistance of at etween the pin 2 of J02 and the chassis and then e reading of input current the resistance between 02 and the chassis chassis (paying attention to he total resistance measured the part due to the ce added to the power supply)	>1 M Ω	> 5 MΩ	The instrument cannot measure resistance higher than 5 MΩ		
B 2.7	Measure the ca chassis	apacitance between the pin 2 of J02 and the	< 50 nF	39.2 nF			
B 2.8	Apply 50V thro least 1 M Ω be calculate by the the pin 4 of J02 subtract from t series resistan	ugh a power supply with a series resistance of at tween the pin 4 of J02 and the chassis and then e reading of input current the resistance between 2 and the chassis chassis (paying attention to the total resistance measured the part due to the ce added to the power supply)	>1 M Ω	> 5 MΩ	The instrument cannot measure resistance higher than 5 MΩ		
B 2.9	Measure the ca	apacitance between the pin 4 of J02 and the	< 50 nF	39.3 nF			

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UUT DATA :	Model	Item	C.I.	C.I.				
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE REMARKS				

B3 GROUND	DC RESISTANCE BETWEEN CONNECTORS SHELL & PINS AND EQUIPMENT CHASSIS			
B 3.1	Measure the DC resistance between pin 1 of J07 and the chassis.	< 2.5 m Ω (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.	$< 2.5 \text{ m}\Omega$ (per joint)	14.47 mΩ	Expected value: < 20 m Ω (8 joints)
B 3.3	Measure the DC resistance between pin 9 of J07 and the chassis. $< 2.5 \text{ m}\Omega$ (per joint) 14.44 m Ω		Expected value: < 20 m Ω (8 joints)	
B 3.4	Measure the DC resistance between pin 12 of J07 and the chassis.	< 2.5 m Ω (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 m Ω (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 m Ω (per joint)	15.2 mΩ	Expected value: < 20 m Ω (8 joints)
B 3.7	Measure the DC resistance between connector back-shell of J07 and the chassis.	$< 2.5 \text{ m}\Omega$ (per joint)	0.56 mΩ	
B 3.8	Measure the DC resistance between pin 1 of J08 and the chassis.	< 2.5 m Ω (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 m Ω (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.	$< 2.5 \text{ m}\Omega$ (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.	$< 2.5 \text{ m}\Omega$ (per joint)	11.51 mΩ	Expected value: < 20 m Ω (8 joints)
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UUT DATA :	Model	Item		C.I.			S/N
STEP n°	TEST SEQUEN	ICE		EXPECTED VALUE	MI	EASURED VALUE	REMARKS
B 3.12	Measure th chassis.	e DC resistance between pin 14 of J08 and the		< 2.5 mΩ (per joint)	N	lot Performed	This measurement has been performed during open box test. See HERS- SPIRE-RP-012 ls. 1
B 3.13	Measure th chassis.	e DC resistance between pin 23 of J08 and the		$< 2.5 \text{ m}\Omega$ (per joint)		11.58 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.14	Measure th J08 and the	e DC resistance between connector back-shell of chassis.		< 2.5 m Ω (per joint)		0.57 mΩ	
B 3.15	Measure th chassis.	e DC resistance between pin 1 of J09 and the		< 2.5 mΩ (per joint)	N	lot Performed	This measurement has been performed during open box test. See HERS- SPIRE-RP-012 Is. 1
B 3.16	Measure th chassis.	e DC resistance between pin 5 of J09 and the		< 2.5 mΩ (per joint)		15.78 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.17	Measure th chassis.	e DC resistance between pin 9 of J09 and the		< 2.5 mΩ (per joint)		15.77 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.18	Measure th chassis.	e DC resistance between pin 12 of J09 and the		< 2.5 m Ω (per joint)		14.68 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.19	Measure th chassis.	e DC resistance between pin 14 of J09 and the		< 2.5 mΩ (per joint)	N	lot Performed	This measurement has been performed during open box test. See HERS- SPIRE-RP-012 Is. 1
B 3.20	Measure th chassis.	e DC resistance between pin 23 of J09 and the		< 2.5 mΩ (per joint)		14.80 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.21	Measure th J09 and the	e DC resistance between connector back-shell of chassis.		< 2.5 mΩ (per joint)		0.52 mΩ	
B 3.22	Measure th chassis.	e DC resistance between pin 1 of J10 and the		< 2.5 mΩ (per joint)	N	lot Performed	This measurement has been performed during open box test. See HERS- SPIRE-RP-012 Is. 1
B 3.23	Measure th chassis.	e DC resistance between pin 5 of J10 and the		$< 2.5 \text{ m}\Omega$ (per joint)		14.99 mΩ	Expected value: < 20 mΩ (8 joints)
B 3.24	Measure th chassis.	e DC resistance between pin 9 of J10 and the		$< 2.5 \text{ m}\Omega$ (per joint)		14.45 mΩ	Expected value: < 20 mΩ (8 joints)
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UUT DATA :	JT DATA : Model Item									S/N		
STEP n°	TEST SEQUENCE			EXPE	CTED VALU	E		MEAS	SURED VALUE	Ē	REMARKS	
B 3.25	Measure the DC resis chassis.	stance between pin 12 of J10 and the		< 2.5 n	nΩ (per joi	int)		1	5.35 mΩ	Expecte	ed 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) N				Not	Performed	This me durin	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 m Ω (per joint)				1	15.32 mΩ		Expected value: < 20 mΩ (8 joints)	
B 3.28	Measure the DC resis	stance between connector back-shell of		< 2.5 mΩ (per joint)				(0.36 mΩ			
B 3.29	Measure the DC resis	stance between pin 1 of J11 and the		< 2.5 mΩ (per joint)				Not Performed		This me durin	This measurement has been performed during open box test. See HERS- SPIRE-RP-012 Is. 1	
B 3.30	Measure the DC resis	stance between pin 5 of J11 and the		< 2.5 n	< 2.5 m Ω (per joint)				7.32 mΩ	Expecte	Expected value: < 20 mΩ (8 joints)	
B 3.31	Measure the DC resist chassis.	stance between pin 9 of J11 and the		< 2.5 n	η Ω (per joi	int)		1	7.36 mΩ	Expecte	ed value: < 20 mΩ (8 joints)	
B 3.32	Measure the DC resis chassis.	stance between pin 12 of J11 and the		< 2.5 n	nΩ (per joi	int)		1	7.49 mΩ	Expecte	ed value: < 20 mΩ (8 joints)	
B 3.33	Measure the DC resis	stance between pin 14 of J11 and the		< 2.5 n	nΩ (per joi	int)		Not	Performed	This me durin	asurement has been performed g open box test. See HERS- SPIRE-RP-012 Is. 1	
B 3.34	Measure the DC resis chassis.	stance between pin 23 of J11 and the		< 2.5 n	nΩ (per joi	→r joint)			7.61 mΩ	Expecte	ed value: < 20 mΩ (8 joints)	
B 3.35	Measure the DC resis J11 and the chassis.	stance between connector back-shell of		< 2.5 mΩ (per joint) 0.4					0.43 mΩ			
B 3.36	Measure the DC resis	stance between pin 1 of J12 and the		< 2.5 m Ω (per joint) N				Not	Performed	This me durin	asurement has been performed g open box test. See HERS- SPIRE-RP-012 Is. 1	

QA:

 $< 2.5 \text{ m}\Omega \text{ (per joint)}$

18.82 mΩ

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Expected value: < 20 mΩ (8 joints)

Measure the DC resistance between pin 5 of J12 and the

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B 3.37

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chassis.

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UUT DATA :	Model	Item		C.I.							S/N	
STEP n°	TEST SEQUENCE			EXP	ECTED V	ALUE		MEA	SURED '	VALUE		REMARKS
B 3.38	Measure the DC residence of the chassis.	stance between pin 9 of J12 and the		< 2.5	mΩ (pe	er joint)			18.80 m	nΩ	Expected	value: < 20 mΩ (8 joints)
B 3.39	Measure the DC resi chassis.	stance between pin 12 of J12 and the		< 2.5	mΩ (pe	er joint)			18.82 m	nΩ	Expected	value: < 20 mΩ (8 joints)
B 3.40	Measure the DC resi	stance between pin 14 of J12 and the		< 2.5	mΩ (pe	er joint)		No	t Perfor	med	This measu during o	rement has been performed pen box test. See HERS- PIRE-RP-012 Is. 1
B 3.41	Measure the DC resi chassis.	stance between pin 23 of J12 and the		< 2.5	mΩ (pe	er joint)			18.91 m	nΩ	Expected	value: < 20 mΩ (8 joints)
B 3.42	Measure the DC resi J12 and the chassis.	stance between connector back-shell of		< 2.5	mΩ (pe	er joint)			0.37 m	Ω		

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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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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS		

B4 SUR	VIVAL 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	ОК	
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 lin	<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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UUT DATA :	Model	Item	C.I.	S/	Ν
STEP n°	TEST SEQUE	NCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
B 4.16	Connect the	power cable to the unit.		ОК	
B 4.17	Turn on the	power supply.		OK	
B 4.18	Check the p indicator lin	ower supply current on the power supply current	<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 needed.	procedure A3 for the start up of the EGSE if		ОК	
B 4.22	Disconnect	the Unit power cable.		OK	
B 4.23	Turn on the	power supply.		OK	
B 4.24	Set the pow	er supply output at 29V and 1.5A.		OK	
B 4.25	Measure the	e 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	e power cable to the unit.		OK	
B 4.28	Turn on the loaded from PM and DM checksum. detected, an SW stops a from the EE	power supply. At this point the Boot Software is the PROM to PM. The Boot SW checks the free memory then reads the EEPROM verifying the When these tasks are finished, if no error are n event TM(5,1) is issued. After completion, the Boot nd waits for a command in order to load the OBS EPROM 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	ок	
B 4.29	Set the pow	er supply output at 32V and 3A.		OK	
B 4.30	Check the p indicator lin	oower supply current on the power supply current	<1A	393 mA	
B 4.31	Turn off the	power supply.		OK	
B 4.32	Set the pow	er supply output at 22V and 1.5A.		OK	
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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
B 4.33	Measure the ou	tput of the power supply with a voltmeter Vin	22 ± 0.1 V	OK	
B 4.34	Turn off the pov	ver supply.		OK	
B 4.35	Connect the po	wer cable to the unit.		OK	
B 4.36	Turn on the pov	ver supply.		OK	
B 4.37	Check the powe	er supply current on the power supply current	<0.1A	11	
	indicator lin			44 MA	
B 4.38	Turn off the pov	ver supply.		OK	

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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 SOFTWAF EEPROM	STAND-BY POWER CONSUMPTION, APID, RT AND RE VERSION IDENTIFICATION AND WRITING OF			
C1.1	Execute the procedure A1 for the main section test		ОК	
C1.2	Execute the procedure A3 for the start up of the EGSE		OK	
C1.3	Disconnect the Unit power cable.		ОК	
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.		ОК	
C1.7	Connect the power cable to the unit.		ОК	
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		ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C1.9	Turn on the po Software is load the free PM an the checksum. detected, an ev SW stops and from the EEPR	wer supply (see par. 6.4). At this point the Boot ded from the PROM to PM. The Boot SW checks d DM memory then reads the EEPROM verifying When these tasks are finished, if no error are rent TM(5,1) is issued. After completion, the Boot waits for a command in order to load the OBS OM 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	ОК	
C1.10	Check the power indicator lin	er supply current on the power supply current	<1A	~ 455 mA	
C1.11	Check the aver of 5 minutes: Pin = Vin x lin	age power consumption of DPU during a period	<15.3W	~ 12.74 W	
C1.12	At SCOS2000 cd OBS/SPIRE and writes the f SDOLnew –int	prompt /home/sops23, select the directory /Tcset_PFMversion ollowing command: erval 250 DmPageTc0*.dm		ОК	
C1.13	Verify that the T telecommand	TM(5,1) packets are received for each		ОК	
C1.14	At the end of th Command " and	e uploading from CDMS simulator select " Local d "S_Load_Boot" command		ОК	
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	ОК	

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CARLO GAVAZZI SPACE SpA TEST REPORT TEST REPORT TEST PROCEDURE REFERENCE TEST REPORT REFERENCE	CARLO GAVAZZI SPACE SpA	INTERFACE AND FULL FUNCTIONAL PERFORMANCE		TEST PROCEDURE REFERENCE			TEST REPORT REFERENCE			

UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C1.17	Verify on Telemetry Des parameters that the OE is the correct one	sktop window DPU and OBS 3S version installed DP_SW_VERS_ID	Check the PFM software version indicated in the Par. 6.3.2	1.2.p OK	
C1.18	Select "Router" on CD	AS Simulator		OK	
C1.19	Send TC8.4.CA-7.1 (EEPROM a copy of the • Start Address • -End Address=	WRITE2EEPROM) to write into the OBS currently running on the PM = 0x4000		Not Performed	See PVS N2
C1.20	On SCOS2000 select "/	\RM" and "GO"		Not Performed	See PVS N ^o 2
C1.21	The following TM packet after about 30 seconds	ets are received TM(1,1), TM(1,3) and TM(1,7)		Not Performed	See PVS N2
C1.22	Turn off the Power Sup	əly		Not Performed	See PVS N ³

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CARLO GAVAZZI SPACE SpA	INTERFACE AND FULL FUNCTIONAL PERFORMANCE TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST RE	PORT RE	FERENCE

UUT DATA :	Model	Item	C.I.	S/N		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	

C2 E The purp load and	OOT-SW LOAD AND BOOT TEST ose is to demonstrate the capability of the HERSCHEL BOOT-SW to boot OBS.			
C2.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	

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UUT DATA :	Model	Item	C.I.		S/N	
STEP n°	TEST SEQUENC	E	EXPECTED VALUE	MEASURED VALUE	REMARKS	
	terminal winde	ow of the computer hosting SCOS 2000, type the	Verify that the fixed part of the TM packet			
	following com	mands:	is equal to the one reported in Table 6-3			
			Msg 1.			
	> cd		Verify that the fixed part of the last TM is			
	$>$ cd /DPU_SP2	IRE_TC	equal to the one reported in Table 6-3 Msg			
	>/local-bin/0	DbswLoader -apid 1280 –dpu –interval 250	2.			
	DmPageTc0*	.dm	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	On the TM log window of the CDMS or on			
	the window).	About 6 minutes are needed to complete the	PacketDisplay tool, verify that no TM(5,4)	OK		
	operation		are received until the last TC is sent.			
C2.6	When the up-	loading of TCs in the TELECOMMAND PACKET				
	INFO text a	ea of the Herschel/Planck CDMS Simulator				
	Control Pane	I is finished, select Local Command option from		OK		
	Select TC S	Source menu in the Herschel/Planck CDMS				
	Simulator Co	ntrol Panel.				
C2.7			The local command selected appears in			
	Select S_Loa	d_boot.txt command from the Select Command	the Local Command to send text field			
	menu in the H	erschel/Planck CDMS Simulator Control Panel.	Verify that the 'packet header' and 'Packet	OK		
			data fields of TC (8,4) is compliant to AD19			

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UUT DATA :	Model	ltem	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C2.8	Click on the Sen CDMS Simulato	d Local TC button in the Herschel/Planck or 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	ОК	
			Then the OBS start to send telemetry.		

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

C3 The pu choose	BOOT-SW FORCE BOOT DEFAULT OPTION Irpose is to demonstrate the capability of the HERSCHEL BOOT-SW to an EEPROM partition and boot OBS.			
C3.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
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	ОК	
C3.4	Select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	

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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_ menu in the Hers	Boot.txt command from the Select Command chel/Planck CDMS Simulator Control Panel.	Verify that the 'packet header' and 'Packet data' fields of TC (8,4) is compliant to AD19	ОК	
C3.6	Click on the Send CDMS Simulator	I Local TC button in the Herschel/Planck r Control Panel.	An event TM(5,1) should be received by CDMS Simulator and visualized in the PacketDisplay tool.	OK	
			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.	ŬŔ	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

C4 The pu boot C	BOOT-SW FORCE BOOT PRIMARY PARTITION urpose is to demonstrate the capability of the HERSCHEL BOOT-SW to BS from Primary EEPROM partition.			
C4.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
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	ОК	
C4.4	Select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	

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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_ Command menu in the Control Panel.	Pri.txt command from the Sele Herschel/Planck CDMS Simulate	 Verify that the 'packet header' and 'Packet data' fields of TC (8,4) is compliant to AD19 	ОК	
C4.6	Click on the Send Loc CDMS Simulator Contro	al TC button in the Herschel/Pland I 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	ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

C5 The pu boot O	BOOT-SW FORCE BOOT SECONDARY PARTITION rpose is to demonstrate the capability of the HERSCHEL BOOT-SW to BS from Secondary EEPROM partition.			
C5.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
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	ОК	
C5.4	Select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
C5.5	Select S_Force_Boot_Sec.txt command from the Select	Verify that the 'packet header' and 'Packet	ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
					1
	Command me Control Panel.	inu in the Herschel/Planck CDMS Simulator	AD19		
C5.6	Click on the S CDMS Simulat	end Local TC button in the Herschel/Planck or 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	OK	

Msg[']4.

is equal to the one reported in Table 6-3

Then the **OBS** start to send telemetry. Check TMs in the CDMS: the APID must

be as indicated in the Par. 6.3.2

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UUT DATA :	Model	ltem	C.I.	S/N	
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE R	EMARKS

C6 BO The purpos send a Tele received .	OT-SW TELECOMMAND FCS ERROR be is to demonstrate the capability of the HERSCHEL BOOT-SW to emetry Message when a Telecommand with wrong FCS has been			
C6.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
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	ОК	
C6.4	Select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	

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C6.5	Select S_FCS Command me Control Panel	S_Error_Test.txt command from the Se anu in the Herschel/Planck CDMS Simula	lect ator	ОК	
C6.6	Click on the S	Send Local TC button in the Herschel/Pla tor 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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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	

send a Te received.	elemetry Message when a Telecommand with wrong APID has been			
C7.1	Stop and switch off CDMS executing steps A5.2 and A5.3 and turn off the power supply.		ОК	See PVS N5
C7.2	Go to the directory <cdms directory="" install="">\Other Files</cdms> and replace the file APID2RT.txt with: APID2RT_for_SPIRE_Test.txt		ОК	
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	ОК	
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 Nିଟ

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	detected, an ev SW stops and from the EEPR	rent TM(5,1) is issued. After completion, the Boot waits for a command in order to load the OBS OM or from the 1553 link.	TM packet is equal to the one reported in Table 6-1 Msg 1		
C7.7	Select Local C in the Hersche	command option from Select TC Source menu //Planck CDMS Simulator Control Panel.		ОК	
C7.8	Select S_For Select Comm Simulator Con	ce_Boot_APID_error.txt command from the and menu in the Herschel/Planck CDMS trol Panel.		ОК	
C7.9	Click on the S CDMS Simulat	end Local TC button in the Herschel/Planck or 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	o off CDMS executing steps A5.2 and A5.3.		ОК	
C7.11	Go to the direc replace the file	tory <cdms directory="" install="">\Other Files and APID2RT.txt with: APID2RT_Orig.txt</cdms>		ОК	
C7.12	Start CDMS ex the power supp	ecuting steps from A3.41 to A3.48 and turn off		ОК	See PVS N7

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UUT DATA :	Model	Item	C.I.	S/N			
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS		

C8 B The purp send a T been rec	OOT-SW TELECOMMAND WRONG FUNCTION ID ose is to demonstrate the capability of the HERSCHEL BOOT-SW to elemetry Message when a Telecommand with wrong Function ID has eived.			
C8.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
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.		ОК	
C8.5	Select S_Function_ID_Error_Test.txt command from the		OK	
		0.04:	CUSTOMER	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select Comm Simulator Con	and menu in the Herschel/Planck CDM trol Panel.	S		
C8.6	Click on the S CDMS Simulat	end Local TC button in the Herschel/Planc or 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 	ОК	
			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		
C8.7	Turn off the pov	ver supply.		Not Performed	See PVS N [®]

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UUT DATA :	Model	Item	C.I.		S/N
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C9 B The purp send a T been rec	OOT-SW TELECOMMAND WRONG ACTIVITY ID ose is to demonstrate the capability of the HERSCHEL BOOT-SW to elemetry Message when a Telecommand with wrong Activity ID has eived.			
C9.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.		ОК	
C9.5	Select S_Activity_ID_Error_Test.txt command from the Select		OK	
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	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	ОК	
C9.7	Turn off the power supply		Not Performed	See PVS N [®]

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C10 I The purp- send a T has been	BOOT-SW TELECOMMAND PACKET TYPE ERROR ose is to demonstrate the capability of the HERSCHEL BOOT-SW to elemetry Message when a Telecommand with wrong Packet Type received.			
C10.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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 Nଂତ
C10.4	Select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
C10.5	Select S_Packet_Type_Error_Test.txt command from the		OK	

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	Select Command menu in the Herschel/Planck CDMS Simulator Control Panel.			
C10.6	Click on the Send Local TC button in the Herschel/Planck	An event TM(5,4) should be received by		
	CDMS Simulator Control Panel.	CDMS Simulator and visualized in the		
		TELEMETRY PACKET INFO text area of		
		the Herschel/Planck CDMS Simulator		
		Control Panel	OK	
		Verify that the words in the fixed part of the	UK	
		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		
C10.7	Turn off the power supply		Not Performed	See PVS N [®]

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C11	BOOT-SW TELECOMMAND PACKET SUBTYPE ERROR			
The pur send a has bee	pose is to demonstrate the capability of the HERSCHEL BOOT-SW to Telemetry Message when a Telecommand with wrong Packet Subtype in received.			
C11.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
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 N6
C11.4	Select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
C11.5	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 Comman	d many in the Hersche	I/Planck CDMS		

	Simulator Control Panel.			
C11.6	Click on the Send Local TC button in the Herschel/Planck	An event TM(5,4) should be received by		
	CDMS Simulator Control Panel.	CDMS Simulator and visualized in the		
		TELEMETRY PACKET INFO text area of		
		the Herschel/Planck CDMS Simulator		
		Control Panel	OK	
		Verify that the words in the fixed part of the	UK	
		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		
C11.7	Turn off the power supply		Not Performed	See PVS N [®]

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C12 The purp send a T the OBS	BOOT-SW TELECOMMAND MEMORY PAGE LOST pose is to demonstrate the capability of the HERSCHEL BOOT-SW to relemetry Message when a Telecommand when a page is lost during upload.			
C12.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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 N6
C12.4	Type the following commands: > cd > cd /DPU_SPIRE_TC > mv DmPageTC00001.dm DmPageTC00001.err		ОК	

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	> 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.	ОК	
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	ОК	
C12.7	After the reception of two TM(5,4), at console prompt of SCOS2000 press CTRL-C to stop the Telecommands upload.	~	ОК	

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C12.8	Type the following	ng commands:			
	> cd				
	> cd /DPU_SPIR	E_TC		OK	
	> mv DmPageT	C00001.err DmPageTC00001.dm			
	> mv DmPageT	C00021.err DmPageTC00021.dm			

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C13 E	SOOT-SW TELECOMMAND DATA MEMORY FCS ERROR			
The purp send a T occurs du	ose is to demonstrate the capability of the HERSCHEL BOOT-SW to elemetry Message when a Telecommand Data Memory FCS error uring the OBS upload.			
C13.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
C13.3	Deleted			
C13.4	At console prompt of SCOS2000 type: /home/sops23e/local-bin and press <enter> then type : SDOLnew –interval</enter>	An event TM(5,4) should be received by CDMS Simulator and visualized in the PacketDisplay tool.		
	250/home/sops23e/BootSW_TCs_Test/SPIRE/FCS_Error_Te st/DMPageTc_DM_FCS_Error_Test.dm	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	ОК	

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C14 The pursend a Format	BOOT-SW TELECOMMAND DATA MEMORY WRONG FORMAT pose is to demonstrate the capability of the HERSCHEL BOOT-SW to Telemetry Message when a Telecommand Data Memory has a Wrong during the OBS upload.			
C14.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
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_Form at_Test/DMPageTc_DM_Wrong_Format_Test.dm</enter>	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	ОК	

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UUT DATA :	Model	Item	C.I.	S/N		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	

C15 B Pl	OOT-SW PRO	DGRAM FCS ERROR DURING THE DM TO E BOOT			
The purpo send a T Memory to	se is to demons elemetry Mess Program Mem	strate the capability of the HERSCHEL BOOT-SW to age when an FCS error occurs during the Data ory immediate boot.			
C15.1	Select Rou Herschel/P	ter option from Select TC Source menu in the anck CDMS Simulator Control Panel.		ОК	
C15.2	Start CDMS the Hersche	Simulator by pressing the Start/Stop BC button on el/Planck CDMS Simulator Control Panel.	The 1553 Bus Alive Led on the Herschel/Planck CDMS Simulator Control Panel blinks.	ОК	
C15.3	Deleted				
C15.4	At console p /home/sops then type : SDOLnew - /home/sops e_Program and press <	orompt of SCOS2000 type: s23e/local-bin and press <enter> -interval 250 s23e/BootSW_TCs_Test/SPIRE/FCS_Error_Whol _Test/*.dm senter></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 u INFO text Control Pa	p-loading of TCs in the TELECOMMAND PACKET area of the Herschel/Planck CDMS Simulator nel is finished, select Local Command option from		ОК	
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UUT DATA :	Model	Item	С.І.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select TC So Simulator Con	ource menu in the Herschel/Planck CDMS trol Panel.			
C15.6	Select S_Load_ menu in the Her	_boot.txt command from the Select Command rschel/Planck CDMS Simulator Control Panel.		ОК	
C15.7	Click on the S CDMS Simulat	end Local TC button in the Herschel/Planck or 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	ОК	

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UUT DATA :	Model	ltem	C.I.	S/N	
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE R	EMARKS

C16	BOOT-SW LOAD AND WAIT TEST			
The pur load a lii	pose is to demonstrate the capability of the HERSCHEL BOOT-SW to mited 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.		ОК	
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.	ОК	
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></enter></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.	ОК	
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		ОК	

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST REF	PORT RE	FERENCE	

UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENC	E	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select TC S Simulator Co	Source menu in the Herschel/Planck CDMS ntrol Panel.			
C16.6	Select S_Loa menu in the H	d_Wait.txt command from the Select Command erschel/Planck CDMS Simulator Control Panel.	Verify that the 'packet header' and 'Packet data' fields of TC (8,4) is compliant to AD19	ОК	
C16.7	AD19 Click on the Send Local TC button in the Herschel/Planck CDMS Simulator Control Panel. An event TM(5,1) should be receive CDMS Simulator and visualized in PacketDisplay tool. Verify that the words in the fixed part TM packet is equal to the one repor Table 6-3 Msg 14 Select Router option from Select TC Source menu in the		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	ОК	
C16.8	Select Route Herschel/Pla	r option from Select TC Source menu in the nck CDMS Simulator Control Panel.		ОК	
Herschel/Planck CDMS Simulator Contro C16.9 At console prompt of SCOS2000 type: sops23e/local-bin and press <enter> then type: SDOLnew – interval 250 /home/sops23e/E Test/SPIRE/Load_and_Wait_Test_2/*.dm and press <enter></enter></enter>		ompt of SCOS2000 type: II-bin hter> nterval 250 /home/sops23e/BootSW_TCs_ oad_and_Wait_Test_2/*.dm hter>	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	ОК	
C16.10	When the up- INFO text and Control Pane	loading of TCs in the TELECOMMAND PACKET rea of the Herschel/Planck CDMS Simulator I is finished, select Local Command option from		ОК	
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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST RE	PORT RE	FERENCE

UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select TC S Simulator Cor	ource menu in the Herschel/Planck CDMS htrol Panel.			
C16.11	Select S_Load menu in the He	I_Wait.txt command from the Select Command erschel/Planck CDMS Simulator Control Panel.		ОК	
C16.12	Click on the S CDMS Simula	Send Local TC button in the Herschel/Planck tor 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	ОК	
C16.13	Select Router Herschel/Plan	option from Select TC Source menu in the ck CDMS Simulator Control Panel.		ОК	
C16.14	At console pro sops23e/local and press <ent then type : SDOLnew – ir Test/SPIRE/Lo and press <ent< td=""><td>mpt of SCOS2000 type: -bin ter> nterval 250 /home/sops23e/BootSW_TCs_ pad_and_Wait_Test_3/*.dm ter></td><td>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</td><td>ОК</td><td></td></ent<></ent 	mpt of SCOS2000 type: -bin ter> nterval 250 /home/sops23e/BootSW_TCs_ pad_and_Wait_Test_3/*.dm ter>	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	ОК	
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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST REP	PORT RE	FERENCE

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.		ОК	
C16.16	Select S_LoadWait_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	ОК	
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	ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

C17 BO	OT DETECT	ION OF CORRUPTED EEPROM PAGE				
The purpose send a Teler	e is to demon metry Messag	strate the capability of the HERSCHEL BOOT-SW to ge when one or more EEPROM page are corrupted.				
C17.1	Select Rou Herschel/P	ter option from Select TC Source menu in the lanck CDMS Simulator Control Panel.			Not Perfomed	See PVS N9
C17.2	Start CDMS the Hersch	Simulator by pressing the Start/Stop BC button on Sil/Planck CDMS Simulator Control Panel.	The Herse Contr	1553 Bus Alive Led on the chel/Planck CDMS Simulator rol Panel blinks.	Not Perfomed	
C17.3	On scos 20 point the Boot SW cl EEPROM finished, if After compl order to load	200 select command " DPU_Jump_Boot ". At this bot Software is loaded from the PROM to PM. The necks the free PM and DM memory then reads the verifying the checksum. When these tasks are no error are detected, an event TM(5,1) is issued. etion, the Boot SW stops and waits a command in d the OBS from the EEPROM or from the 1553 link.	An ev CDMS Packe Verify TM pa Table	vent TM(5,1) should be received by S Simulator and visualized in the etDisplay tool. / that the words in the fixed part of the backet is equal to the one reported in 2 6-1 Msg 1	Not Perfomed	
C17.4	At console r /home/sope then type : SDOLnew - /home/sope orruption/* -and press -	erompt of SCOS2000 type: s23e/local-bin and press <enter> -interval 250 s23e/BootSW_TCs_Test/SPIRE/Load_Program_C .dm <enter></enter></enter>	During be teleco the Pa Verify is equ	g the upload an event TM(5,1) should received by CDMS for each ommand uploaded and visualized in acketDisplay tool. / that the fixed part of the TM packet ual 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 PACKE INFO text area of the Herschel/Planck CDMS Simulate Control Panel is finished, select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.	F F F	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/Planc 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 TImSPIRE.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	ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

C18 TP	1 SWITCH_ON e is to demonstrate the ability of the OBS to correctly initialize and for 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	ОК	
C18.2	Load on SCOS2000 Manual Stack window the stack for TP1 contained in "/home/sops23e/CMD/SPIRE/STACKS".		ОК	
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	ОК	
C18.4	Turn off the power supply		Not Performed	See PVS N [®]

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UUT DATA :	Model	Item	С.І.		S/N	
STEP n°	TEST SEQUENCE	E	EXPECTED VALUE	MEASURED VALUE	REMARKS	
C18.5	Turn on the p loaded from the PM and DM checksum. W detected, an e SW stops and the EEPROM	ower supply. At this point the Boot Software is he PROM to PM. The Boot SW checks the free memory then reads the EEPROM verifying the when these tasks are finished, if no error are went TM(5,1) is issued. After completion, the Boot I waits a command in order to load the OBS from 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	ОК	See PVS N ⁴	
C18.6	On a terminal > cd ~/OBS_T > ObswLoade	window of SCOS2000: Felecommands/spire/1.2.p/ er –dpu –apid 1280 –interval 250 *.dm	Verify that no TM(5,4) are received.	ОК		
C18.7	From SCOS20 to copy the OE	000 send TC8.4.70-2.1 (LOAD_TC_AND_BOOT) 3S 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.	ОК		

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UUT DATA :	Model	ltem	C.I.	S/N			
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS		

C19 TP2 DPU	U_COMMAND_EXEC AND DPU_MEM			
The purpose is to da a) correct implement in AD2 b) Reception, valida c) Command identif d) Verification report	demonstrate the link S/C-DPU by verifying the: entation of the TM/TC packet transfer protocol as specified lation and interpretation of TCs iffication and execution orting			
dump memory area	purpose is to demonstrate the ability to load, check and eas resident on the DPU. This will be done by absolute (via			
Service 6) and rela	ative (via dedicated functions with Service 8) addresses in			
EEPROM and to sta	tart again the OBS will also be tested here.			
C19.1 Load	on SCOS2000 Manual Stack window the stack for TP2		OK	
contai	ained in "/home/sops23e/CMD/SPIRE/STACKS".			
C19.2 Send	TC17.1.1 (TEST_CONNECTION)	Verify reception of: TM (1,1), (1,3), (17,2) and (1,7)	ОК	

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C19.3	Send TC14 type-subtype which gener	.3.1 (REPORT_ENABLE_TM) to dump the list e- Sid combinations for all telemetry packets ation is enabled.	t of Verify for and (Use I SIDs enable RD1,	 Preception of: TM (1,1), (1,3), (14,4) 1,7) PacketDisplay to verify that the list of in TM (14,4) matches the list of led TM packets (all of them are led by defaults at start-up, the list is in see also table in Appendix 3). 	ОК				
C19.4	Send TC9. time verifica	7.1 (ENABLE_TIME_VERIFICATION) to per tion.	orm Verify and (Pack Telen	 reception of: TM (1,1), (9,9), (1,3) 1,7) et (9,9) will be verified in the netry Log on the CDMSSimulator. 	ОК				
C19.5	Stop CDMS SPIRE with send TCs w	S. Open CDMS file APID2RT.txt and associated approximate and associated and associated and approximate and associated and approximate and associated approximate approxi	ciate S to		ОК				
C19.6	Start CDMS	. Wait 5 seconds	Ignor due t CDM prese	e all TM (5,1) coming out at this stage to internal buffer overflow caused by S shutdown (not relevant for the ent test).	ОК				
C19.7	Send TC17 (switch Sele wrong APID	.1.2 (TEST_CONNECTION) from CDMS Simu ect TC Source to local) to test OBS reaction aga in TC	ator Verify ainst code	v reception of TM (1,2) with failure 0 (11th word in packet)	ОК	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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C19.8	Stop CDMS. SPIRE's APID	Open CDMS file APID2RT.txt and change back to nominal (0x500)		ОК	
C19.9	Start CDMS. W	/ait 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).	ОК	
C19.10	Send TC17.1.3 to test OBS rea	3 (TEST_CONNECTION) from CDMS Simulato action against wrong TC packet length.	Verify reception of TM (1,2) with failure code 1	ОК	
C19.11	Send TC17.1.4 against wrong	4 from CDMS Simulator to test OBS reactior TC packet checksum.	Verify reception of TM (1,2) with failure code 2	ОК	
C19.12	Send TC17.1.	5 from CDMS Simulator to test OBS reactior TC packet type.	Verify reception of TM (1,2) with failure code 3	ОК	
C19.13	Send TC17.1.0 against wrong	6 from CDMS Simulator to test OBS reactior TC packet subtype.	Verify reception of TM (1,2) with failure code 4	ОК	
C19.14	Send TC17.1. against differer	7 from CDMS Simulator to test OBS reactior at TC " ack " bits	Verify that only TM (17,2) is received	ОК	
C19.15	Send TC17.1.8 against differer	8 from CDMS Simulator to test OBS reactior at TC " ack " bits	Verify that only TM (1,1) and TM (17,2) are received	ОК	
C19.16	Send TC17.1. against differer	9 from CDMS Simulator to test OBS reaction at TC "ack" bits	Verify that only TM (1,3) and TM (17,2) are received	ОК	
C19.17	Send TC17.1.	10 from CDMS Simulator to test OBS reactior at TC " ack " bits	Verify that only TM (17,2) and TM (1,7) are received	ОК	

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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C19.18	Send TC6.5.1 Select TC Source PM memory are See Annex 10.1	(DUMP_MEMORY) from SCOS2000 (switch ce to Router on the CDMS Simulator) to dump a a from location 0x12000 to 12005 (15 NSAU). .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 (memory area as See Annex 10.1	LOAD_MEMORY) to load a patch in the same s above (put 15 in repeater box). .2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
C19.20	Send TC6.5.1 same memory a See Annex 10.1	(DUMP_MEMORY) to dump again from the area. .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.	ОК	
C19.21	Send TC6.9.1 checksum over See Annex 10.1	(CHECK_MEMORY) to compute the CRC the same memory area. .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	ОК	
C19.22	Send TC6.2.2 f to local) to test t	rom CDMS Simulator (switch Select TC Source he 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.	ОК	
C19.23	Send TC6.2.3 t address.	to test the OBS reaction against a wrong start	Verify reception of TM (1,1) and TM (1,8) with error code 0x602 (Illegal Start Address) at the 11th word.	ОК	

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C19.24	Send TC6.2.4 write out of me	to test the OBS reaction against the attempt to emory.	Verify reception of TM (1,1) and TM (1,8) with error code 0x603 (Illegal NSAU) at the 11th word.	ОК	
C19.25	Send TC6.2.5 of data words	to test the OBS reaction against a wrong number 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.	ОК	
C19.26	Send TC6.2.6 checksum for whole TC). Switch back S	to test the OBS reaction against a wrong CRC the uplinked memory patch (not the CRC of the elect TC Source to Router.	Verify reception of TM (1,1) and TM (1,8) with error code 0x605 (Bad CRC) at the 11th word.	ОК	
C19.27	Send TC8.4.1 Select TC Southe contents o See Annex 10	-2.1 (REPORT_TABLE) from SCOS2000 (switch urce to Router on the CDMS Simulator) to report f an undefined table .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.	ОК	
C19.28	Send TC8.4.1 See Annex 10	1.1 (SET_TABLE) to create a new table .1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
C19.29	Send TC8.4.1 the newly crea See Annex 10	-2.1 (REPORT_TABLE) to report the contents of ted table. .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 17 th word to the third last) is all 0s.	ОК	

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C19.30	Send TC8.4.1-3. the newly created See Annex 10. procedure list bo click Run and co	I (UPDATE_TABLE) to update the contents of table, using the LoadTable TOPE script. 1.2 for parameters of TC.In the local test x, select the procedure S_Updatetable3.1.tcl; onfirm. Select file with the same name as the	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
C19.31	Send TC8.4.1-2. the newly update See Annex 10.1.2	(REPORT_TABLE) to report the contents of d table. 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.	ОК	
C19.32	Send TC8.4.1-1. Source to local) t the TC packet.	2 from CDMS Simulator (switch Select TC o test the OBS against a wrong Function_ID in	Verify reception of TM (1,1) and (1,8) with error code 0x0801 (Illegal Function ID) at the 11th word.	ОК	
C19.33	Send TC8.4.1-1.3 a wrong Activity_	B from CDMS Simulator to test the OBS against D in the TC packet.	Verify reception of TM (1,1) and (1,8) with error code 0x0802 (Illegal Activity ID) at the 11th word.	ОК	
C19.34	Send TC8.4.1-1 Select TC Sourc an out of limits ta See Annex 10.1.2	4 (SET_TABLE) from SCOS2000 (switch e in CDMS to Router) to test the OBS against ble ID. 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.	ОК	
C19.35	Send TC8.4.1-1.5 See Annex 10.1.2	5 (SET_TABLE) 2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
C19.36	Send TC8.4.1-1.6 respect to the ava See Annex 10.1.2	6 (SET_TABLE) to update a too-long table with ailable space on-board. 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.	ОК	

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C19.37	Send TC8.4.1- table using TOF ID. See Annex 10.1	3.2 (UPDATE_TABLE)to update an undefined PE I/F selecting file name equal to the command.2 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code 0x0811 (Undefined Table) at the 11th word.	ОК		
C19.38	Send TC8.4.1- original Length See Annex 10.1	1.1 (SET_TABLE) to reset the table to the .2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК		
C19.39	Send TC8.4.1-3 from an out-of- equal to the cor See Annex 10.1	3.3 (UPDATE_TABLE) to update a table starting table index using TOPE I/F selecting file name nmand ID2 for parameters of TC.	Verify reception of TM (1,1) (1,8) with error code 0x0806 (Illegal Table Index) at the 11th word.	ОК		
C19.40	Send TC8.4.1- Source to local) the application coincide.	3.4 from CDMS Simulator (switch Select TC to update a table with a TC where the length on data and the number of data words do not	Verify reception of TM (1,1) and (1,8) with error code 0x0808 (Bad Data) at the 11th word.	ОК		
C19.41	Send TC8.4.1-3 more words tha	3.5 from CDMS Simulator to update a table with n the table size.	Verify reception of TM (1,1) and (1,8) with error code 0x080D (Bad NData) at the 11th word.	ОК		
C19.42	Send TC8.4.1 Select TC Source See Annex 10.1	1.7 (SET_TABLE) from SCOS2000 (switch ce in CDMS to router) to create a new table .2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК		
C19.43	Send TC8.4.1- using TOPE I/F See Annex 10.1	3.6 (UPDATE_TABLE) to load the new table selecting file name equal to the command ID2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК		
C19.44	Send TC8.4.1-1 See Annex 10.1	.8 (SET_TABLE) to create a new table .2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK		

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C19.45	Send TC8.4.1- new table usin command ID. See Annex 10.	3.7 (not standard UPDATE_TABLE) to load the ng TOPE I/F selecting file name equal to the 1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК		
C19.46	Send TC8.4.1- See Annex 10.	1.9 (SET_TABLE) to create a new table 1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК		
C19.47	Send TC8.4.1- See Annex 1 selecting file na	3.8 (UPDATE_TABLE) to load the new table. 0.1.2 for parameters of TC using TOPE I/F ame equal to the command ID.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК		
C19.48	Send TC8.4.1- See Annex 10.	2.2 (REPORT_TABLE) to dump the MOAT.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.	ОК		
C19.49	Send TC8.4.1- See Annex 10.	1.10 (SET_TABLE) to delete Table 0x72 1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК		
C19.50	Send TC8.4.1- See Annex 10.	2.2 (REPORT_TABLE) to dump the MOAT 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 2 th 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 4 th words)	ОК		

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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	Verify reception of TM (1,1), (1,3) and		
	See Annex 10.1.2 for parameters of TC.	(1,7).		
		Verify reception of TM (21,4).		
		Inspect the second TM(21,4) packet and		
		check that the start address for table 0x73	OK	
		(offset 370, 3th and 4^m words) is different		
		from previous MOAT dump and at offset		
		0x30 from start address of table 0x71		
		(offset 350, 3th and 4 th words)		
C19.53	Send TC8.4.CA-7.1 (WRITE2EEPROM) to write into the	Verify reception of TM (1,1), (1,3) and,		
	EEPROM primary partition a copy of the OBS currently running	after about 20 seconds, (1,7)	Not Performed	See PVS Nº10
	on the PM		Not renonned	
	See Annex 10.1.2 for parameters of TC.			
C19.54	Turn off the power supply		Not Performed	See PVS N [®]
C19.55	Turn on the power supply. At this point the Boot Software is	An event TM(5,1) should be received by		
	loaded from the PROM to PM. The Boot SW checks the free	CDMS Simulator and visualized in the		
	PM and DM memory then reads the EEPROM verifying the	PacketDisplay tool.		
	checksum. When these tasks are finished, if no error are		OK	See PVS N ²
	detected, an event TM(5,1) is issued. After completion, the Boot	Verify that the words in the fixed part of the		
	SW stops and waits a command in order to load the OBS from	TM packet is equal to the one reported in		
	the EEPROM or from the 1553 link.	Table 6-1 Msg 1		
C19.56	Send TC8.4.70-3.1 (FORCE_BOOT) to force rebooting the		OK	
	DPU		UN	
C19.57	Send TC17.1.1 (TEST_CONNECTION) to perform a connection	Verify reception of TM (1,1), (1,3), (17,2)	OK	
	test and verify the OBS is regularly running.	and (1,7)	UN	

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C19.58	Stop DRCU Simul	lator		Not Performed	See PVS N୩1	
C19.59	Stop CDMS Simu	lator		Not Performed	See PVS N°1	
C19.60	Turn off the power	r supply		Not Performed	See PVS N [®]	

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C20 TP The purpose transmission at packet lev	3 HK_COLLECT e is to test the DPU-S/S chain by demonstrating the collection and n of HK packets. The ability to support the TM transmission retry vel 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	ОК	See PVS N°4
C20.2	Load on SCOS2000 Manual Stack window the stack for TP3 contained in "/home/sops23e/CMD/SPIRE/STACKS".		ОК	
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)	ОК	
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.		ОК	
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).	ОК	
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.	ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C20.11	Find parameter	TSYNC on the SCOS2000 Telemetry Desktop.	Verify that the TSYNC time does not		
	This is the time the 1553 bus	when the last valid "Sync" has been received on	change and stays at the same value of step C20.8	OK	
C20.12	Switch-off CDN select bus profile	IS. Switch it on again following step A3.40, e SPIRE_nominal, Start BC	Verify that the TSYNC time increases of 1 second every second	OK	
C20.13	Find parameter and record its DPU internal tim	TDIFF on the SCOS2000 Telemetry Desktop, value This is the time difference between the le 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 simulator. In thi the CDMS simu	possible the Stop/Start BC button on the CDMS s way the new PC system time is reloaded into lator	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 paran Desktop, and re signal to the S/S	neter TRESET on the SCOS2000 Telemetry cord its value This is the time when the last sync b has been sent		1970.001.00.00.00.000 OK	
C20.17	Send TC8.4.C	A-1.1 (RESET_DRCU_COUNTERS) to reset	Verify that TRESET time is updated	2018.110.15.05.02.485 OK	

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UUT DATA :	Model	Item	Item C.I.		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C20.18	Send TC8.4.C	C-1.8 (DEFINE_NEW_HK_REPORT) to define	Verify reception of TM (1,1) and (1,8) with		
	an HK packet b	before the related table ID has been defined.	error code 0x0825 (Undefined HK Table)	OK	
	See Annex 10.	1.3 for parameters of TC.			
C20.19	Send TC8.4.1-	1.10 (SET_TABLE)	Verify reception of TM (1,1), (1,3) and	OK	
	See Annex 10.	1.3 for parameters of TC.	(1,7).	ÖR	
C20.20	Send TC8.4.1-	1.11 (SET_TABLE)	Verify reception of TM (1,1), (1,3) and	OK	
	See Annex 10.	1.3 for parameters of TC	(1,7).	ÖN	
C20.21	Send TC8.4.1-	3.10 (UPDATE_TABLE).	Verify reception of TM (1,1), (1,3) and		
	See Annex 1	0.1.3 for parameters of TC using TOPE I/F	(1,7).	OK	
_	selecting file na	ame equal to the command ID.			
C20.22	Send TC8.4.1-	3.11. (UPDATE_TABLE).	Verify reception of TM (1,1), (1,3) and		
	See Annex 1	0.1.3 for parameters of TC using TOPE I/F	(1,7).	OK	
	selecting file na	ame equal to the command ID.			
C20.23	Send TC8.4.0	CC-1.1 (DEFINE_NEW_HK_REPORT) to start	Verify reception of TM (1,1), (1,3) and		
	collection of ad	Iditional HK packets.	(1, 7).	01/	
	See Annex 10.	1.3 for parameters of TC.	Verify periodic (1/sec) reception of	OK	
			additional IM (3,25) diagnostic packets		
000.04			With SID $0x302$		
620.24	Send TC8.4.C	Iditional HK postote			
		1.3 for parameters of TC	Verify periodic (1/sec) reception of	OK	
	See Annex TU.	1.5 for parameters of TC.	additional TM (3.25) diagnostic packets	OR	
			with SID 0x303		
C20.25	Send TC8.4.C	C-1.3 (DEFINE NEW HK REPORT) to try and	Verify reception of TM (1.1) and (1.8) with		
	define an invali	id HK packet ID.	error code = 0x0821 (Illegal HK Packet ID)	OK	
	See Annex 10.	1.3 for parameters of TC.	, °, °,		

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UUT DATA :	Model	Item	С.І.	:	S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C20.26	Send TC8.4.CC packet collection See Annex 10.1	-1.4 (DEFINE_NEW_HK_REPORT) to force HK n with a too short interval. .3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0834 (Illegal HK Sampling Interval)	ОК	
C20.27	Send TC8.4.CC an HK packet S See Annex 10.1	C-1.5 (DEFINE_NEW_HK_REPORT) to change ID to an out-of-limits value. .3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0822 (Illegal HK SID)	ОК	
C20.28	Send TC8.4.C0 the SID to a vali See Annex 10.1	C-1.7 (DEFINE_NEW_HK_REPORT) to change d value but while the HK collection is running3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0827 (err HK Sampling Running)	ОК	
C20.29	Send TC8.4.CC the HK definition See Annex 10.1	C-1.6 (DEFINE_NEW_HK_REPORT) to change table while the HK collection is active. .3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0827 (err HK Sampling Running)	ОК	
C20.30	Send TC8.4.C0 definition of the See Annex 10.1	C-3.1 (REPORT_HK_REPORT) to report the HK packet with ID 0x300. .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	ОК	
C20.31	Send TC8.4.C0 definition of the See Annex 10.1	C-3.2 (REPORT_HK_REPORT) to report the HK packet with ID 0x301 .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	ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCI	Ξ	EXPECTED VALUE	MEASURED VALUE	REMARKS
C20.32	Send TC8.4.0 definition of th See Annex 10	CC-3.3 (REPORT_HK_REPORT) to report the e HK packet with ID 0x302 .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	ОК	
C20.33	Send TC8.4.0 definition of th See Annex 10	CC-3.4 (REPORT_HK_REPORT) to report the e HK packet with ID 0x303 .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	ОК	
C20.34	Send TC8.4.0 HK collection See Annex 10	C-2.3 (CLEAR_HK_REPORT) to stop Essential .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 On the SCOS SCU Paramet See Annex 10	-1.13 (SET_TABLE) to remove table 0 S2000 Telemetry Desktop, click AND and select ers. .1.3 for parameters of TC.	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
C20.36	On the SCOS2 SCU Paramete Send TC8.4.1 tables on board With this comr running HK coll this does not parameter in the	2000 Telemetry Desktop, click AND and select rs. -4.10 (COLLECT_GARBAGE) to re-allocate mand the HK definition tables for all currently ection tasks will be moved. The test verifies that affect the HK tasks visualized on the SCU e telemetry desktop.	t 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.	ОК
C20.37	Send TC8.4.1- currently being See Annex 10.1	1.11 (SET_TABLE) to try and reset a table used for HK collection .3 for parameters of TC.	e Verify reception of TM (1,1) and (1,8) with error code = 0x0813 (Busy Table)	ОК
C20.38	Send TC8.4.C definition of the See Annex 10.1	C-2.1 (CLEAR_HK_REPORT) to clear the HK packet with ID 0x302 .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 	ОК
C20.39	Send TC8.4.CC an HK packet S See Annex 10.1	C-1.5 (DEFINE_NEW_HK_REPORT) to change ID to a wrong value. .3 for parameters of TC.	e Verify reception of TM (1,1) and (1,8) with error code = 0x0822 (Illegal HK SID)	ОК
C20.40	Send TC8.4.C definition of an See Annex 10.1	C-3.3 (REPORT_HK_REPORT) to report the HK packet that has been cleared. .3 for parameters of TC.	e Verify reception of TM (1,1) and (1,8) with error code = 0x0829 (Undefined HK ID)	ОК
C20.41	Send TC8.4.C definition of the See Annex 10.1	C-2.2 (CLEAR_HK_REPORT) to clear the HK packet with ID 0x303 .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 	ОК

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C20.42	Send TC8.4.C of nominal HK See Annex 10.	C-2.4 (CLEAR_HK_REPORT) to stop collection packets. All HK tasks are now stopped. 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	ОК	
C20.43	Send TC8.4.1- no longer used See Annex 10.	1.11 (SET_TABLE) to try and reset a table that is as an HK packet definition.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
C20.44	Send TC8.4.C definition of an HK packet that See Annex 10.	C-3.4 (REPORT_HK_REPORT) to report the has been cleared. 1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0829 (Undefined HK ID)	ОК	
C20.45	Send TC8.4 parameter 0x8 S/S	I.CA-5.1 (SEND_DRCU_COMMAND) with 8FF0000 to send an unknown command to the	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)	ОК	
C20.46	Send TC8.4 parameter 0x80	I.CA-5.1 (SEND_DRCU_COMMAND) with C020000 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)	ОК	
C20.47	Stop DRCU Sir	nulator		Not Performed	See PVS N୩1
C20.48	Stop CDMS Sir	nulator		Not Performed	See PVS N୩1
C20.49	Turn off the por	wer supply		Not Performed	See PVS N [®]

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UUT DATA :	Model	Item	C.I.	S/N				
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS			

C21 IF4 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						
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 ev CDMS Packe Verify TM pa Table	vent TM(5,1) should be received by S Simulator and visualized in the etDisplay tool. That the words in the fixed part of the acket is equal to the one reported in e 6-1 Msg 1	ОК	See PVS N ^o 4
C21.4	Load on SO contained in	COS2000 Manual Stack window the stack for TP4 of '/home/sops23e/CMD/SPIRE/STACKS ''.			ОК	
C21.5	21.5 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.		Paran Telem about (expre	neter LSLOAD on the SCOS netry Desktop should be oscillating between 570000 and 600000 essed in decimal form)	570000÷590000 OK	
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		TEST REPORT		TEC		LDORLIN	LI ERENOL			TEOTINE		
UUT DATA :	Model	Item		C.I.							S/N	
STFP n°	TEST SEQUENCE			EXPE	CTED VA	LUE		MEAS	SURED V	ALUE		REMARKS
C21.6	Send TC8.4.1-1.20 (S	ET_TABLE) to create table for VM code	Verify re	ception of	TM (1,	I), (1,3)	and (1,7)		OK			
C21 7	See Annex 10.1.4 for	parameters of TC.	Vorify ro	contion of	TNA (1 /	(1.2)	and $(1, 7)$					
021.7	See Annex 10 1 4 for	parameters of TC	veniyie		1101 (1,	1), (1,3)	anu (1,7)		OK			
C21.8	Send TC8.4.1-1.22 (S	ET TABLE) to create table for VM code	Verify re	ception of	TM (1,), (1,3)	and (1,7)		01/			
	See Annex 10.1.4 for	parameters of TC.		•		,, , , ,			OK			
C21.9	Send TC8.4.1-1.23 (S	ET_TABLE) to create table for VM code	Verify re	ception of	TM (1,′	I), (1,3)	and (1,7)		OK			
	See Annex 10.1.4 for	parameters of TC.							ÖN			
C21.10	Send TC8.4.1-3.20 (U	PDATE_TABLE) to load VM code	Verify re	ception of	TM (1, ⁻	I), (1,3)	and (1,7)					
	See Annex 10.1.4 fo	or parameters of IC; using IOPE I/F							OK			
C21 11	Send TC8 4 1-3 21 (II	PDATE TABLE) to load VM code	Verify re	cention of	TM (1 ·	(1 3)	and (1.7)					
021111	See Annex 10.1.4 f	or parameters of TC; using TOPE I/F	Veniyie			i), (i,o)			ОК			
	selecting file name VN	I_GetHKBlock2.txt.										
C21.12	Send TC8.4.1-3.22 (U	PDATE_TABLE) to load VM code	Verify re	ception of	TM (1,	I), (1,3)	and (1,7)					
	See Annex 10.1.4 fe	or parameters of TC; using TOPE I/F					-		OK			
	selecting file name VN	I_GetHKBlock3.txt.										
C21.13	Send TC8.4.1-3.23 (U	PDATE_TABLE) to load VM code	Verify re	ception of	TM (1,	I), (1,3)	and (1,7)		<u></u>			
	See Annex 10.1.4 f	or parameters of IC; using TOPE I/F							OK		1	

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confirming VM is inactive, and (1,7).

TM(8,6) shall contain 0x0203 and 0x0860 in 9^{th} and 10^{th} words

OK

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Send TC8.5.2.1 (**REPORT_FUNCTION**) to report the status of Verify reception of TM (1,1), (1,3), (8,6)

selecting file name VM_GetHKBlock4.txt.

See Annex 10.1.4 for parameters of TC.

C21.14

the VM

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_					
C21.15	Send TC8.5.3.1 the VM1 See Annex 10.1	(REPORT_FUNCTION) to report the status of .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 9 th and 10 th words	ОК	
C21.16	Send TC8.5.4.1 the VM2 See Annex 10.1	(REPORT_FUNCTION) to report the status of .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 9 th and 10 th words	ОК	
C21.17	Send TC8.5.5.1 the VM3 See Annex 10.1	(REPORT_FUNCTION) to report the status of .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 9 th and 10 th words	ОК	
C21.18	Send TC8.4.2-2 Now there are 5 LS port; each re See Annex 10.1	.1 (RUN_VM) 50 additional HK parameter requests going to the equires 4 msec in total to be served. .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 tables on board	4.20 (COLLECT_GARBAGE) to re-allocate	Verify reception of TM (1,1) and (1,8) with error code = 0x080C (VM Running)	ОК	
C21.20	Send TC8.4.3-2 Now there are 5 LS port; each re See Annex 10.1	.1 (RUN_VM1) 50 additional HK parameter requests going to the equires 4 msec in total to be served. .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. Now there are 5 LS port; each ree See Annex 10.1.	1 (RUN_VM2) 0 additional HK parameter requests going to the quires 4 msec in total to be served. .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. Now there are 5 LS port; each re we have passed can go through some HK packet See Annex 10.1.	1 (RUN_VM3) 0 additional HK parameter requests going to the quires 4 msec in total to be served. At this point 4 the number of total requests (about 500) that the LS port each second: we might be losing ts, but this is no problem for the current tests. .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 the VM See Annex 10.1.	(REPORT_FUNCTION) to report the status of .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 9 th to 12 th word	ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C21.24	Send TC8.5.3. the VM1 See Annex 10.	1 (REPORT_FUNCTION) to report the status of 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 9 th to 12 th word	ОК	
C21.25	Send TC8.5.4. the VM2 See Annex 10.	 (REPORT_FUNCTION) to report the status of 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 9 th to 12 th word	ОК	
C21.26	Send TC8.5.5. the VM3 See Annex 10.	1 (REPORT_FUNCTION) to report the status of 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 9 th to 12 th word	ОК	
C21.27	Send TC8.4.1- by the fourth VI See Annex 10.1	1.22 (SET_TABLE) to reset the table being used M 1.4 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0813 (Busy Table)	ОК	
C21.28	Send TC8.4.2-3	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.	ОК	

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	EDURE R	EFERENCE		TEST RE	PORT RE	FERENCE

UUT DATA :	Model	Item	S/N			
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	
C21.29	Send TC8.4.C of Essential HM See Annex 10.	C-2.1 (CLEAR_HK_REPORT) to stop collection (packets 1.4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	TM(3,25) with SID 300 are no longer received	
C21.30	Send TC8.4.1- See Annex 10.	1.24 (SET_TABLE) to cancel table 0 1.4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
C21.31	TC8.4.1-4.20 (board	COLLECT_GARBAGE) to re-allocate tables on	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 $(1,7)$.	ОК		
C21.33	Send TC8.4.4-	3.1 (HALT_VM2) to stop the VM2	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
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- used by the fou See Annex 10.	1.22 (SET_TABLE) to reset the table that was urth VM 1.4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		

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UUT DATA :	JT DATA : Model Item C.I.		C.I.	S/N		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	
C21.36	Open the file T e Perform a sear 0xC1A3	elemetryA.txt resident on the CDMS Simulator. The values 0xC1A0, 0xC1A1, 0xC1A2 and	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.	ОК	See PVS Nº12	
C21.37	Send TC8.4.1-1 See Annex 10.1	.25 (SET_TABLE) to create table ID 0x30 .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
C21.38	Send TC8.4.1-1 See Annex 10.1	.26 (SET_TABLE) to create table ID 0x31 .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	OK		
C21.39	Send TC8.4.1- load file with na See Annex 10.1	3.24 (UPDATE_TABLE) using TOPE I/F and me TC_VMTest_0.txt. .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
C21.40	Send TC8.4.1- load file with na See Annex 10.1	3.25 (UPDATE_TABLE) using TOPE I/F and me TC_VMTest_1.txt . .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
C21.41	Send TC8.4.1- load file with na See Annex 10.1	3.26 (UPDATE_TABLE) using TOPE I/F and me TC_VMTest_2.txt . .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
C21.42	Send TC8.4.1- load file with na See Annex 10.1	3.27 (UPDATE_TABLE) using TOPE I/F and me TC_VMTest_3.txt . .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
C21.43	Send TC8.4.1- load file with na See Annex 10.1	3.28 (UPDATE_TABLE) using TOPE I/F and me TC_VMTest_4.txt . .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		

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UUT DATA :	Model	Item		C.I.		S/N
STEP n°	TEST SEQUENCE			EXPECTED VALUE	MEASURED VALUE	REMARKS
C21.44	Send TC8.4.1-	3.29 (UPDATE_TABLE) using TO	PE I/F and	Verify reception of TM (1,1), (1,3) and		
	load file with na	me TC_VMTest_5.txt.		(1,7).	OK	
	See Annex 10.1	.4 for parameters of TC.				
C21.45	Send TC8.4.1-	3.30 (UPDATE_TABLE) using TO	PE I/F and	Verify reception of TM (1,1), (1,3) and		
	load file with na	me TC_VMTest_6.txt.		(1,7).	OK	
	See Annex 10.1	.4 for parameters of TC.				
C21.46	Send TC8.4.1-	3.31 (UPDATE_TABLE) using TO	PE I/F and	Verify reception of TM (1,1), (1,3) and		
	load file with na	me TC_VMTest_7.txt.		(1,7).	OK	
	See Annex 10.1	.4 for parameters of TC.				
C21.47	Send TC8.4.2-2	2.2 (RUN_VM) to start Hardware VM	on Table ID	Verify reception of TM (1,1), (1,3) and		
	0x30			(1,7).		
				Verify that 18 TM (5,1) events are received		
				with the correct values in the parameter		
				field (16" and 17" word) as specified in		
				Appendix 10.2		
				Verify reception of 2 IM (21,4) with APID =	01/	
				0x0508 and SID = $0x020B$. The first	OK	
				contains the same parameters previously		
				received with the IM (5,1) event packets,		
				starting from 19 word, preceeded by the		
				number of following words(i.e. 0x13). The		
				Second should contain 0x0000 and		
				CRC		

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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	
C21.48	Send TC8.4.2 Source to loca with the comm	-1.1 from CDMS Simulator (switch Select TC II), to execute a command list uplinked together and.	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 Select TC Sou See Annex 10.	.1 (REPORT_FUNCTION) from SCOS (switch rce to Router), to report the status of the VM 1.4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$, $(8,6)$ (words from 9 th to 12 th are 0x0201, 0x860, 0x0078 and 0x0000), and $(1,7)$	ОК		
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.	ОК ~ 570000		
C21.51	Send TC8.5.2. the VM See Annex 10.	1 (REPORT_FUNCTION) to report the status of 1.4 for parameters of TC.	Verify reception of TM (1,1), (1,3), (8,6) (with 9^{th} word = 0x0203) confirming VM is inactive, and (1,7)	ОК		
C21.52	Stop DRCU Si	nulator		OK		
C21.53	Stop CDMS Si	mulator		OK		
C21.54	Turn off the po	wer supply		OK		

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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS			

С22 Т	P5 SPIRE_ICD			
The purpo	se is to demonstrate the reception (from S/Ss), control, packing and			
transmissi	on (to S/C) of science frames. It will be shown that acquisition of			
science fra	imes can be initiated by standard ICs. The execution of particular			
Control th	a Time Management, the Report Function Status and the "arm-go"			
feature for	the commands to engage/release the launch safety latch of the			
SPIRE spe	ectrometer 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	An event TM(5,1) should be received by		
	loaded from the PROM to PM. The Boot SW checks the free	CDMS Simulator and visualized in the		
	PM and DM memory then reads the EEPROM verifying the	PacketDisplay tool.	014	
	checksum. When these tasks are finished, if no error are detected on event $TM(5,4)$ is isourd. After completion the Dect		OK	
	SW/ stops and waits a command in order to lead the OBS from	Verify that the words in the fixed part of the		
	the EEPROM or from the 1553 link	Table 6.1 Mag 1		
C22.4		Poth accortial (APID 0x500) and nominal		
022.4	From SCOS2000 send TC8.4.70-3.1 (FORCE_BOOT) to start	(APID 0x502) HK TM packets TM (3.25)	OK	
	the OBS.	should be received by SCOS2000	ÖN	
C22.5	Load on SCOS2000 Manual Stack window the stack for	Verify the reception of TM (1,1), (1,3) and		
	TP5_GetFullPhot. This stack of commands executes steps	(1,7) for all commands sent	OK	
	steps C22.5 to C22.7.			

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENC	E	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Series of configure the of parameters • 0x84 from • 0x84 timin • 0x84 timin • 0x84 255 f	TC8.4.CA-5.1 (SEND_DRCU_COMMAND) to DRCU science data frames, using the following list : 3C0000 selects Frame_ID 0 DCU 18000C sets DCU frame g 190070 sets DCU frame g 3D00FF sets DCU to send rames			
C22.6	TC8.4.CA-5.1 0x843e0001 tr	(SEND_DRCU_COMMAND) with parameter o 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	ОК	
C22.7	Send TC8.4.C See Annex 10	A-2.1 (FLUSH_FIFO) to flush the FIFOs .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.	ОК	

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C22.8	Load on SCOS TP5_GetFullSp C21.7 to C21.1 Send TC8.4.CA parameter 0x84 Spectrometer f	2000 Manual Stack window the stack for bec. This stack of commands executes steps 0 A-5.1 (SEND_DRCU_COMMAND) with 43c0004, to configure DRCU to send	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
C22.9	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with 43d0ff. to configure DRCU to send 255 frames	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
C22.10	Send TC8.4.CA parameter 0x84 DCU.	A-5.1 (SEND_DRCU_COMMAND) with 43e0001 to start DRCU data transfer from the	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 See Annex 10.	A-2.1 (FLUSH_FIFO) to flush the FIFOs 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 SCC TP5_GetSMEC C21.11 to C21. TC8.4.CA-5.1 0x91c00000, tc	DS2000 Manual Stack window the stack for CNom. This stack of commands executes steps 14 (SEND_DRCU_COMMAND) with parameter configure sampling rate for SMEC frames	Verify reception of TM (1,1), (1,3) and (1,7.)	ОК	

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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.13	Send TC8.4.CA parameter 0x9' MCU. The MC of packets but i NOTE: on the I INTERVAL betw manually correct	A-5.1 (SEND_DRCU_COMMAND) with 1c10001 to start DRCU data transfer from the U cannot be commanded to send a fixed number t sends them continuously DRCU Simulator check that the box "SAMPLE ween blocks" of CH1 is 3 msec. Otherwise ct 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 = $0x410$.	ОК	
C22.14	Wait 5 seconds (SEND_DRCU_ stop DRCU dat	and send TC8.4.CA-5.1 COMMAND) with parameter 0x91c10000 to a transfer	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1) packets stops.	ОК	
C22.15	Send TC8.4.CA See Annex 10.7	A-2.1 (FLUSH_FIFO) to flush the FIFOs 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.	ОК	
C22.16	Load on SCOS TP5_GetBSMN C21.15 to C21. Send TC8.4.CA parameter 0x91 frames	2000 Manual Stack window the stack for lom. This stack of commands executes steps 18 \-5.1 (SEND_DRCU_COMMAND) with Ic20000, to configure sampling rate for BSM	Verify reception of TM (1,1), (1,3), and (1,7)	ОК	
C22.17	Send TC8.4.C/ parameter 0x9' MCU. The MCU cann packets but it so	A-5.1 (SEND_DRCU_COMMAND) with 1c10001 to start DRCU data transfer from the ot be commanded to send a fixed number of ends them continuously	Verify reception of TM (1,1), $\overline{(1,3)}$, and (1,7). Verify continuous reception of TM (21,1) packets with APID = 0x508 and SID = 0x612.	ОК	

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C22.18	Wait 5 seconds (SEND_DRCU_ stop DRCU data	and send TC8.4.CA-5.1 COMMAND) with parameter 0x91c10000 to transfer	Verify reception of TM (1,1), (1,3), and (1,7). Verify that TM (21,1) packets stops.	ОК	
022.19	See Annex 10.1.	5 for parameters of TC.	(1,7). Verify that the last TM (21.1) are received.	ОК	
C22.20	Load on SCOS2 TP5_GetSCUNc C21.19 to C21.2 Send TC8.4.CA- parameter 0xa08 nominal frames.	000 Manual Stack window the stack for om. This stack of commands executes steps 3 (send commands one by one) 5.1 (SEND_DRCU_COMMAND) with 330000 to configure DRCU to send SCU	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
C22.21	Send TC8.4.CA- parameter 0xa08 If this does not w simulator Combo Transfer- Chann	5.1 (SEND_DRCU_COMMAND) with 84001f to configure DRCU to send 31 frames. work, put manually the number 31 in the DRCU b Box channel 2 (bottomcenter box) and press elSettingstoDriver.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
C22.22	Send TC8.4.CA- parameter 0xa08 SCU	5.1 (SEND_DRCU_COMMAND) with 320001 to start DRCU data transfer form the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
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.	ОК	

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STEP n°	TEST SEQUENC	E	EXPECTED VALUE	MEASURED VALUE	REMARKS	
C22.24	Send TC8.4.0 See Annex 10	CA-2.1 (FLUSH_FIFO) to flush the FIFOs 0.1.5 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).	ОК		
C22.25	Load on SCO TP5_GetPSW to C21.27 Send TC8.4.0 parameter 0x8 frames.	S2000 Manual Stack window the stack for 7. This stack of commands executes steps C21.24 CA-5.1 (SEND_DRCU_COMMAND) with B43c0001 to configure DRCU to send PSW	Verify reception of TM (1,1), (1,3) and (1,7).	ОК		
C22.26	Send TC8.4.0 parameter 0x8	CA-5.1 (SEND_DRCU_COMMAND) with B43d00ff to configure DRCU to send 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	OK		
C22.27	Send TC8.4.0 parameter 0x8 DCU.	CA-5.1 (SEND_DRCU_COMMAND) with 343e0001 to start DRCU data transfer from the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$. Verify reception of TM $(21,2)$ packets with APID = 0x504 and SID = 0x102	ОК		
C22.28	Send TC8.4.0 See Annex 10	CA-2.1 (FLUSH_FIFO) to flush the FIFOs 0.1.5 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)	ОК		

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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.29	Load on SCOS	2000 Manual Stack window the stack for This stack of commands executes steps C21.28	Verify reception of TM (1,1), (1,3) and (1,7)		
	to C21.31 Send TC8.4.C/ parameter 0x8 frames.	A-5.1 (SEND_DRCU_COMMAND) with 43c0002 to configure DRCU to send PMW		ОК	
C22.30	Send TC8.4.C/ parameter 0x8	A-5.1 (SEND_DRCU_COMMAND) with 43d00ff to configure DRCU to send 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
C22.31	Send TC8.4.C/ parameter 0x8- DCU.	A-5.1 (SEND_DRCU_COMMAND) with 43e0001 to start DRCU data transfer from the	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.C/ See Annex 10.	A-2.1 1 (FLUSH_FIFO) to flush the FIFOs 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)	ОК	
C22.33	Load on SCOS TP5_GetPLW. to C21.35 Send TC8.4.C/ parameter 0x8 frames.	22000 Manual Stack window the stack for This stack of commands executes steps C21.32 A-5.1 (SEND_DRCU_COMMAND) with 43c0003 to configure DRCU to send PLW	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
C22.34	Send TC8.4.C/ parameter 0x8	A-5.1 (SEND_DRCU_COMMAND) with 43d00ff to configure DRCU to send 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	

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C22.35	Send TC8.4.C parameter 0x8 DCU.	A-5.1 (SEND_DRCU_COMMAND 343e0001 to start DRCU data trans) with sfer from the	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.C See Annex 10	A-2.1 (FLUSH_FIFO) to flush the .1.5 for parameters of TC.	FIFOs	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).	ОК		
C22.37	Load on SC TP5_GetSLW to C21.39 Send TC8 parameter 0x frames.	OS2000 Manual Stack window . This stack of commands execute 4.CA-5.1 (SEND_DRCU_CON .843c0005 to configure DRCU	the stack for es steps C21.36 (MAND) with to send SLW	Verify reception of TM (1,1), (1,3) and (1,7).	OK		
C22.38	Send TC8 parameter 0x8	4.CA-5.1 (SEND_DRCU_CON 343d00ff to configure DRCU to ser	IMAND) with nd 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
C22.39	Send TC8.4.C parameter 0x8 DCU.	A-5.1 (SEND_DRCU_COMMAND 343e0001 to start DRCU data trans) with sfer from the	Verify reception of TM (1,1), (1,3) and (1,7).	ОК		
C22.40	Send TC8.4.C parameter 0x8 DCU.	A-5.1 (SEND_DRCU_COMMAND 43e0001 to start DRCU data trans) with sfer from the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$. Verify reception of TM $(21,2)$ packets with APID = 0x506 and SID = 0x106	ОК		

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C22.41	Send TC8.4.C See Annex 10	A-2.1 (FLUSH_FIFO) to flush the FIFOs .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 SCO TP5_GetSSW to C21.43 Send TC8.4.C parameter 0x8 frames.	S2000 Manual Stack window the stack for . This stack of commands executes steps C21.40 A-5.1 (SEND_DRCU_COMMAND) with 343c0006 to configure DRCU to send SSW	Verify reception of TM (1,1), (1,3) and (1,7).	OK			
C22.43	Send TC8.4.C parameter 0x8	A-5.1 (SEND_DRCU_COMMAND) with 343d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	OK			
C22.44	Send TC8.4.C parameter 0x8 DCU.	A-5.1 (SEND_DRCU_COMMAND) with A3e0001 to start DRCU data transfer from the	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,2) packets with APID = 0x506 and SID = 0x105	ОК			
C22.45	Send TC8.4.C See Annex 10	A-2.1 (FLUSH_FIFO) to flush the FIFOs .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)	ОК			

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UUT DATA :	Model	Item	Item C.I.		
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C22.46	Load on SCOS TP5_GetPhotT C21.44 to C21. Send TC8.4.CA parameter 0x84 Photometer Te	2000 Manual Stack window the stack for est. This stack of commands executes steps 49. A-5.1 (SEND_DRCU_COMMAND) with 43c0008 to configure DRCU to send full st Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
C22.47	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with 418000C.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
C22.48	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with 4190070.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
C22.49	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with 43d00ff to configure DRCU to send 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
C22.50	Send TC8.4.CA parameter 0x84 DCU.	A-5.1 (SEND_DRCU_COMMAND) with 43e0001 to start DRCU data transfer from the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$. Verify reception of TM $(21,3)$ packets with APID = 0x504 and SID = 0x309	ОК	
C22.51	Send TC8.4.CA See Annex 10.	A-2.1 (FLUSH_FIFO) to flush the FIFOs 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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C22.52	Load on SCOS20 TP5_GetPSWTe C21.50 to C21.55 Send TC8.4.CA-5 parameter 0x843 Pattern.	000 Manual Stack window the stack for st. This stack of commands executes steps 5. 5.1 (SEND_DRCU_COMMAND) with c0009 to configure DRCU to send PSW Test	Verify reception of TM (1,1), (1,3) and (1,7).	ОК		
C22.53	Send TC8.4.CA- parameter 0x841	5.1 (SEND_DRCU_COMMAND) with 8000C.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
C22.54	Send TC8.4.CA- 0x84190070.	5.1(SEND_DRCU_COMMAND) with parameter	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
C22.55	Send TC8.4.CA- parameter 0x843	5.1 (SEND_DRCU_COMMAND) with d00ff to configure DRCU to send 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
C22.56	Send TC8.4.CA- parameter 0x843 DCU.	5.1 (SEND_DRCU_COMMAND) with e0001 to start DRCU data transfer from the	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 See Annex 10.1.5	2.1 (FLUSH_FIFO) to flush the FIFOs 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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C22.58	Load on SCOS2000 M TP5_GetPMWTest. This C21.56 to C21.61. Send TC8.4.CA-5.1 parameter 0x843c000a to Pattern.	anual Stack window the stack fo stack of commands executes steps (SEND_DRCU_COMMAND) with configure DRCU to send PMW Tes	Verify reception of TM (1,1), (1,3) and (1,7).	OK	
C22.59	Send TC8.4.CA-5.1 parameter 0x8418000C.	(SEND_DRCU_COMMAND) with	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
C22.60	Send TC8.4.CA-5.1 parameter 0x84190070.	(SEND_DRCU_COMMAND) with	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
C22.61	Send TC8.4.CA-5.1 parameter 0x843d00ff to c	(SEND_DRCU_COMMAND) with configure DRCU to send 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
C22.62	Send TC8.4.CA-5.1 (SEN parameter 0x843e0001 to DCU.	D_DRCU_COMMAND) with start DRCU data transfer from the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$. Verify reception of TM $(21,3)$ packets with APID = 0x504 and SID = 0x30b	ОК	
C22.63	Send TC8.4.CA-2.1 (FLU See Annex 10.1.5 for para	SH_FIFO) to flush the FIFOs ameters 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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C22.64	Load on SCOS2000 Manual Stack window TP5_GetPLWTest. This stack of commar C21.62 to C21.67 Send TC8.4.CA-5.1 (SEND_DRCU_COM parameter 0x843c000b to configure DRC Pattern.	w the stack for nds executes stepsVerify reception of TM (1,1), (1,3) and (1,7).IMAND) with U to send PLW Test	ОК		
C22.65	Send TC8.4.CA-5.1 (SEND_DRCU_COM parameter 0x8418000C.	MAND) with Verify reception of TM (1,1), (1,3) and (1,7).	ОК		
C22.66	Send TC8.4.CA-5.1 (SEND_DRCU_COM parameter 0x84190070.	MAND) with Verify reception of TM (1,1), (1,3) and (1,7).	ОК		
C22.67	Send TC8.4.CA-5.1 (SEND_DRCU_COM parameter 0x843d00ff to configure DRCL	MAND) with Verify reception of TM (1,1), (1,3) and (1,7).	ОК		
C22.68	Send TC8.4.CA-5.1 (SEND_DRCU_COM parameter 0x843e0001 to start DRCU da DCU.	IMAND) with ta transfer from theVerify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x504 and SID = 0x30c	ОК		
C22.69	Send TC8.4.CA-2.1 (FLUSH_FIFO) to flu See Annex 10.1.5 for parameters of TC.	sh the FIFOs (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)	ОК		

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STEP n°	TEST SEQUENC	E	EXPECTED VALUE	MEASURED VALUE	REMARKS
[1
C22.70	Load on SC TP5_GetSpec C21.68 to C2 ⁷ Send TC8 parameter 0: Spectrometer	OS2000 Manual Stack window the stack for Test. This stack of commands executes steps 1.71. 4.CA-5.1 (SEND_DRCU_COMMAND) with (843c000c to configure DRCU to send Full Test Pattern.	Verify reception of TM (1,1),(1,3) and (1,7).	ОК	
C22.71	Send TC8 parameter 0x8	4.CA-5.1 (SEND_DRCU_COMMAND) with 343d00ff to configure DRCU to send 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
C22.72	Send TC8 parameter 0x DCU.	4.CA-5.1 (SEND_DRCU_COMMAND) with 843e0001 to start DRCU data transfer from the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
C22.73	Send TC8 parameter 0x DCU.	4.CA-5.1 (SEND_DRCU_COMMAND) with 843e0001 to start DRCU data transfer from the	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.C See Annex 10	A-2.1 (FLUSH_FIFO) to flush the FIFOs .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)	ОК	
C22.75	Load on SCO TP5_GetSLW C21.72 to C2 ⁻ Send TC8.4.C parameter 0x8 Pattern.	S2000 Manual Stack window the stack for Test. This stack of commands executes steps .77. A-5.1 (SEND_DRCU_COMMAND) with 343c000d to configure DRCU to send SLW Test	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	

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0,		TEST REPORT		IE	EST PROU		REFERENCE			IESI K	EPURTRI	FERENCE
UUT DATA :	Model	Item		C.I.							S/N	
STEP n°	TEST SEQUENCE			EXP	ECTED V	ALUE		MEASU	JRED \	/ALUE		REMARKS
C22.76	Send TC8.4.CA-5.1 (S	END_DRCU_COMMAND) with	Verify r (1,7).	eception	of TM	(1,1),	(1,3) and		ОК			
C22.77	Send TC8.4.CA-5.1 (S	END_DRCU_COMMAND) with	Verify r	eception	of TM	(1,1),	(1,3) and		ОК			
C22.78	Send TC8.4.CA-5.1 (S parameter 0x843d00ff	END_DRCU_COMMAND) with to configure DRCU to send 255 frames.	Verify r (1,7).	eception	of TM	(1,1),	(1,3) and		OK			
C22.79	Send TC8.4.CA-5.1 (S parameter 0x843e000 DCU.	END_DRCU_COMMAND) with 1 to start DRCU data transfer from the	Verify r (1,7).	eception	of TM	(1,1),	(1,3) and		ОК			
C22.80	Send TC8.4.CA-5.1 (S parameter 0x843e000 DCU.	END_DRCU_COMMAND) with 1 to start DRCU data transfer from the	Verify r (1,7). Verify re APID =	eception eception 0x506 an	of TM of TM (2 d SID =	(1,1), 21,3) pa 0x30f	(1,3) and ckets with		ОК		It could there is send th	l be possible that s not the need to his command
C22.81	Send TC8.4.CA-2.1 (F See Annex 10.1.5 for p	FLUSH_FIFO) to flush the FIFOs parameters of TC.	Verify r (1,7).	eception	of TM	(1,1),	(1,3) and		014			

		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).	ОК	
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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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST RE	PORT RE	FERENCE

UUT DATA :	Model	Item	C.I.	S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE REMARKS
C22.84	Send TC8.4.CA parameter 0x84 DCU.	-5.1 (SEND_DRCU_COMMAND) with 3e0001 to start DRCU data transfer from the	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x506 and SID = 0x30e	ОК
C22.85	Send TC8.4.CA See Annex 10.1	-2.1 (FLUSH_FIFO) to flush the FIFOs .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)	ОК
C22.86	Load on SCOS2 TP5_GetMCUE C21.82 to C21.8 Send TC8.4.CA parameter 0x91 Engineering frame	2000 Manual Stack window the stack for ng. This stack of commands executes steps 35. -5.1 (SEND_DRCU_COMMAND) with c40000, to configure sampling rate for MCU mes	Verify reception of TM (1,1), (1,3) and (1,7).	ОК
C22.87	Send TC8.4.CA parameter 0x91 MCU. The MCU canno packets but it se	-5.1 (SEND_DRCU_COMMAND) with c10001 to start DRCU data transfer from the of be commanded to send a fixed number of ends 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 = $0x814$.	ОК
C22.88	Wait 5 seconds (SEND_DRCU_ stop DRCU data	and send TC8.4.CA-5.1 COMMAND) with parameter 0x91c10000 to a transfer	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,3) packets stops.	ОК
C22.89	Send TC8.4.CA See Annex 10.1	-2.1 (FLUSH_FIFO) to flush the FIFOs .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.	ОК

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST RE	PORT RE	FERENCE

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 Verify reception of TM (1.1) (1.3) and		
	TP5_GetMCUEngTest. This stack of commands exer C21.86 to C21.89. Send TC8.4.CA-5.1 (SEND_DRCU_COMMAND) with parameter 0x91c50000, to configure sampling rate fo Test frames	r MCU	ОК	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 fr MCU. The MCU cannot be commanded to send a fixed num packets but it sends them continuously	h Verify reception of TM (1,1), (1,3) and rom the (1,7). Verify continuous reception of TM (21,3) packets with APID = 0x508 and SID = 0x915.	ОК	
C22.92	Wait 5 seconds and send TC8.4.CA-5.1 (SEND_DRCU_COMMAND) with parameter 0x91c10 stop DRCU data transfer	0000 to Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,3) packets stops.	ОК	
C22.93	Send TC8.4.CA-2.1 (FLUSH_FIFO) to flush the FIFC See Annex 10.1.5 for parameters of TC.	Ds Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,3) are received.	ОК	
C22.94	Load on SCOS2000 Manual Stack window the stack to TP5_GetSCUTest. This stack of commands executes 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 S frames.	for Verify reception of TM (1,1), (1,3) and s steps (1,7).	ОК	

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROC	EDURE R	EFERENCE		TEST RE	PORT RE	FERENCE

UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.95	Send TC8.4.CA parameter 0xa0 If this does not v simulator Comb Transfer- Chanr	-5.1 (SEND_DRCU_COMMAND) with 84001f to configure DRCU to send 31 frames. vork, put manually the number 31 in the DRCU o Box channel 2 (bottomcenter box) and press nelSettingstoDriver.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
C22.96	Send TC8.4.CA parameter 0xA0 SCU.	-5.1 (SEND_DRCU_COMMAND) with 820001 to start DRCU data transfer from the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
C22.97	Repeat previous	s 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.	ОК	See PVS N୩3
C22.98	Send TC8.4.CA See Annex 10.1	-2.1 (FLUSH_FIFO) to flush the FIFOs .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)	ОК	
C22.99	Load on SCOS2 TP5_GetPhotOf C21.95 to C21.1 Send TC8.4.CA parameter 0x84 Photometer Offs	2000 Manual Stack window the stack for f. This stack of commands executes steps 00. -5.1 (SEND_DRCU_COMMAND) with 3c0010 to configure DRCU to send Full set Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
C22.100	Send TC8.4.CA parameter 0x84	-5.1 (SEND_DRCU_COMMAND) with 18000c	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	

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UUT DATA :	Model	Item	C.I.	5	5/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.101	Send TC8.4.CA parameter 0x84	-5.1 (SEND_DRCU_COMMAND) with 190070	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
C22.102	Send TC8.4.CA parameter 0x84	-5.1 (SEND_DRCU_COMMAND) with 3d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
C22.103	Send TC8.4.CA parameter 0x84 DCU.	-5.1 (SEND_DRCU_COMMAND) with 3e0001 to start DRCU data transfer from the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$. Verify reception of TM $(21,4)$ packets with APID = 0x504 and SID = 0x207	ОК	
C22.104	Send TC8.4.CA See Annex 10.1	-2.1 (FLUSH_FIFO) to flush the FIFOs .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)	ОК	
C22.105	Load on SCOS2 TP5_GetSpecO C21.101 to C21 Send TC8.4.CA parameter 0x84 Spectrometer O	2000 Manual Stack window the stack for off. This stack of commands executes steps .106. -5.1 (SEND_DRCU_COMMAND) with 3c0014 to configure DRCU to send Full ffset Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
C22.106	Send TC8.4.CA parameter 0x84	-5.1 (SEND_DRCU_COMMAND) with 18000c	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
C22.107	Send TC8.4.CA parameter 0x84	-5.1 (SEND_DRCU_COMMAND) with 190070	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
C22.108	Send TC8.4.CA parameter 0x84	-5.1 (SEND_DRCU_COMMAND) with 3d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	

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UUT DATA :	Model	Item	С.І.		S/N
STEP n°	TEST SEQUENCE	Ξ	EXPECTED VALUE	MEASURED VALUE	REMARKS
000.400					1
C22.109	Send TC8.4.C. parameter 0x8 DCU.	A-5.1 (SEND_DRCU_COMMAND) with 43e0001 to start DRCU data transfer from the	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.C. See Annex 10.	A-2.1 (FLUSH_FIFO) to flush the FIFOs 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)	ОК	
C22.111	Load on SCOS TP5 MiddleSt	S2000 Manual Stack window the stack for		ОК	
C22.112	Send TC8.4.C. selection from See Annex 10.	A-10.5 (ENABLE_SELECTION) to enable a non-existing science frame. 1.5 for parameters of TC.	Verify reception of TM $(1,1)$ and TM $(1,8)$ with error code = 0x815 (Illegal Frame ID)	ОК	
C22.113	Send TC8.4.C. selection from table. See Annex 10.	A-10.4 (ENABLE_SELECTION) to enable frame ID 4 (photometer PLW) using an undefined .1.5 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x817 (Undefined Selection Table)	ОК	
C22.114	Send TC8.4.1- to select a sub See Annex 10.	1.32 (SET_TABLE) to create a Table to be used set of a science frame. 1.5 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.115	Send TC8.4. selection from The selection t to which they a that an error is See Annex 10.	CA-10.3 (ENABLE_SELECTION) to enable frame ID 4 using the newly created table. ables should have the same length of the frames are associated (which is not the present case, so expected). 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)	ОК	
C22.116	Send TC8.4.1- to select a sub See Annex 10.	 1.31 (SET_TABLE) to create a Table to be used set of a science frame. 1.5 for parameters of TC. 	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
C22.117	Send TC8.4.1 Table to be use See Annex 10.	-3.31 (UPDATE_TABLE) to load the selectior ed for science frame selection. 1.5 for parameters of TC.	N Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
C22.118	Send TC8.4. selection. Selection table (select), while the error is expected See Annex 10.	CA-10.2 (ENABLE_SELECTION) to enable es should be made of 0s (do not select) or 1 the present selection table contains a 2 so that ar ed. 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- to select a sub- See Annex 10.	1.30 (SET_TABLE) to create a Table to be used set of a science frame. 1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
C22.120	Send TC8.4.1 Table to be use Use TOPE IF t command ID. See Annex 10.	-3.30 (UPDATE_TABLE) to load the selection ed for science frame selection. to send the command selecting filename equal to 1.5 for parameters of TC.	N Verify reception of TM (1,1), (1,3) and (1,7).	ОК	

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UUT DATA :	Model	Item	C.I.		S/N	
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	
C22.121	Send TC8.4.CA	-5.1 (SEND DRCU COMMAND) with	Verify reception of TM (1.1), (1.3) and			
	parameter 0x84 Photometer Pat	3c0003 to configure DRCU to send PLW tern.	(1,7).	OK		
C22.122	Send TC8.4.CA parameter 0x84 continuous mod	-5.1 (SEND_DRCU_COMMAND) with 3d0000 to configure DRCU to send frames in le	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
C22.123	Send TC8.4.CA parameter 0x84 DCU.	-5.1 (SEND_DRCU_COMMAND) with 3e0001 to start DRCU data transfer from the	Verify reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,2) packets with APID = $0x504$ and SID = $0x104$	ОК		
C22.124	If the DRCU sin undefined value channel 0	nulator allows it, change the Frame ID to an in the appropriate box of the DRCU GUI for	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 I	D 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 sin wrong value in t for channel 0. Press Transfer(nulator allows it, change the Frame length to a he bottom-left box of the DRCU GUI combo box ChannelSettingsto-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	ОК	The value has been set to 60	

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UUT DATA :	Model	Item	С.І.	:	S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.127	Put the Frame le	ength 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	ОК	
C22.128	If the DRCU sir in the appropriat	nulator allows it, change the checksum method te 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	ОК	
C22.129	Put the checksu	m 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	ОК	
C22.130	Send TC8.4.CA selection from fr See Annex 10.1	-10.1 (ENABLE-SELECTION) to enable ame ID 4 (Photometer PLW) .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)	ОК	
C22.131	Send TC8.4.CA selection from a See Annex 10.1	-11.2 (DISABLE_SELECTION) to disable non-existent science frame. .5 for parameters of TC.	Verify reception of TM $(1,1)$ and TM $(1,8)$ with error code = 0x815 (Illegal Frame ID)	ОК	

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STEP n°	TEST SEQUEN	ICE	EXPECTED VALUE	MEASURED VALUE	REMARKS
			· · · · · · · · · · · · · · · · · · ·		
C22.132	Send TC8. frame select See Annex	5.CA.1 (REPORT_FUNCTION) to re tion status. 10.1.5 for parameters of TC.	Pport science 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 FRAMEI SID – TABLEID combinations for all science frames for which selection can l active. There should be a group with Frame Id = 4, SID = 0xC1A0 and Table = 0x30. All others should contain their nominal SID with Table ID = 0xFFFF (meaning that there is no selection activ from that Frame ID, see table in Append 3)	of D - be Id Id	
C22.133	Send TC8.4 presently ac See Annex	4.CA-11.1 (DISABLE_SELECTION) to tive selection on frame ID 4 10.1.5 for parameters of TC.	 b disable the Verify reception of TM (1,1), (1,3) (1,7). Use PacketDisplay to verify that TM (2 packets now contain again the nominal = 0x104 Use PacketDisplay to verify that the (21,2) packets now contain nom Photometer PLW frames. 	and 1,2) SID OK TM inal	
C22.134	Send TC8. frame select See Annex	5.CA.1 (REPORT_FUNCTION) to re tion status. 10.1.5 for parameters of TC.	port science Verify reception of TM (1,1), (1,3), (and (1,7) Verify reception of TM (8,6). PacketDisplay to verify that they con nominal SIDs for all Frame IDs and Table IDs should be 0xFFFF.	8,6) Use OK tain all	
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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.135 C22.136	Send TC8.4.CA parameter 0x84 DCU If the command execute the con channel 0 on the Send TC8.4.CA See Annex 10.	A-5.1 (SEND_DRCU_COMMAND) with 43e0000 to stop DRCU frame transmission from d does not work (the DRCU occasionally does not mmand), uncheck the "loop" checkbox for the DRCU simulator. A-2.1 (FLUSH_FIFO) to flush the FIFOs 1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,2,0x104) are no longer received Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM (21,2) packets are	ОК	
C22.137	Load on SCOS TP5_Configure executes steps Send TC8.4.CA Send TC8.4.CA parameter 0x84 Photometer Pa	2000 Manual Stack window the stack for DRCU_Nominal. This stack of commands C21.132 to C21.138 A-6.1 (REST_FIFOs). A-5.1 (SEND_DRCU_COMMAND) with 43c0000 to configure DRCU to send Full ttern.	Verify reception of TM (1,1), (1,3) and (1,7) for both telecommand.	ОК	
C22.138	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with 418000C	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	OK	
C22.139	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with 4190070	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
C22.140	Send TC8.4.CA parameter 0x84 continuous mod	A-5.1 (SEND_DRCU_COMMAND) with 43d0000 to configure DRCU to send frames in de	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	

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UUT DATA :	Model	ltem	C.I.		S/N
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).	ОК	
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 $(1,7)$.	ОК	
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 $(1,7)$.	ОК	
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	ОК	

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UUT DATA :	Model	Item		C.I.		S/N
STEP n°	TEST SEQUE	NCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
				·		
C22.146	Wait the ser with parame the MCU.	nding of TC8.4.CA-5.1 (SEND_DRCU_COMMAN eter 0x91c10001 to start DRCU data transfer from	 Verify the re Verify packe =0x4² 	r after the sending of TC8.4.CA-5.1 eception of TM $(1,1)$, $(1,3)$ and $(1,7)$. r continuous reception of TM $(21,1)$ ets with APID = 0x508 and SID 10	ОК	
C22.147	Wait the ser with parame the SCU.	nding of TC8.4.CA-5.1 (SEND_DRCU_COMMAN eter 0xa0820001 to start DRCU data transfer from	D) Verify the rev Verify packet =0xA	r after the sending of TC8.4.CA-5.1 eception of TM $(1,1)$, $(1,3)$ and $(1,7)$. r continuous reception of TM $(21,1)$ ets with APID = 0x508 and SID 20	ОК	
C22.148	Wait 10 min In these co subsystems and Essen between the · 16 pkts/s f · about 6 pk · about 5 pk · 1.5 House So there is more than t of packets)	utes. Inditions the DPU is receiving data from the thr simultaneously, while also generating both Nominitial HouseKeeping packets. The 1553 bus traise DPU and the CDMS is: rom DCU ts/s from MCU ts/s from SCU Keeping pkts/s a total of about 29 TM packets per second, which the nominal rate (both in terms of kbps and in term foreseen for the SPIRE instrument.	No T unles ee (5,1) fic Verify LOST LOST Desk step (Verify there ns	M (5,1) with error code = 0x50D, s immediately followed by another with code =0x850D (exit from aly condition). That HK parameters EVBLOCK, LOSTHKBLOCK, SDBLOCK, on the SCOS Telemetry top are equal to the ones noted in the C 21.139 and do not change. The telemetry log file and check that is no jump in TM packet counter.	OK All 0000000	
C22.149	Increase sc the timing channel 0	ience frame flow rate by decreasing of a factor to value in the appropriate box of the DRCU GUI	vo Verify or = 0x than to Verify	reception of TM (5,1) with error code 503 (Science Memory pool is more 30% occupied) reception of TM (5,1) with error code	ОК	
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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.150	Change the fra buffer recovery.	me timing to twice the normal value to allow fast	 = 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. 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 SCC TP5_LastSteps	S2000 Manual Stack window the stack for		ОК	
C22.152	Send TC14.3.1 TM packets for	(REPORT_ENABLED_TM) to report the list of 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.	ОК	

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UUT DATA :	Model	Item	С.І.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
C22.153	Send TC14.2.	1 (DISABLE_TM_GENERATION) to d	isable Verify reception of TM (1,1), (1,3) and		
	telemetry generation	ation for TM (21,1) from DCU and SCU	(1,7).	OK	See PVS N94
	See Annex 10.1	.5 for parameters of TC.	Verify that TM (21,1) with APIDSID= 0x200	OR	
			and 0xA20 are no longer received		
C22.154	Send TC14.2.2	(DISABLE_TM_GENERATION)	Verify reception of TM (1,1), (1,3) and		
	See Annex 10.1	.5 for parameters of TC.	(1,7).	ОК	
			Verify that TM (3,25) essential HK Packets	U.I.	
			(SID = 0x300) are no longer received		
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.	OK	
			Use PacketDisplay to verify that IM		
			(21,1,0,200) and $(0,0,20)$ and $(100,0,0)$		
000.156			(3,25,0x300) are not present in the report		
622.156	Send 1014.1.1	(ENABLE_IM_GENERATION)	(1, 2) and $(1, 7)$	OK	
	See Annex 10.1	.5 for parameters of TC.	(1,5) and (1,7)	UK	
C22.157	Wait for x secor	nds	Verify that TM (21,1,0x200 and 0xA20) and	OK	
			TM (3,25,0x300) are again received	UK	
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.	OK	
			Use PacketDisplay to verify that		
			transmission of all packets is enabled.		

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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 parameter 0x84 DCU If the command execute the cor channel 0 on th	A-5.1 (SEND_DRCU_COMMAND) with 3e0000 to stop DRCU frame transmission from I does not work (the DRCU occasionally does not mmand), uncheck the "loop" checkbox for e DRCU simulator.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1,0x200) are no longer received	ОК	
C22.160	Send TC8.4.CA parameter 0x91 MCU If the command execute the cor channel 1 on th	A-5.1 (SEND_DRCU_COMMAND) with 1c10000 to stop DRCU frame transmission from 1 does not work (the DRCU occasionally does not nmand), uncheck the "loop" checkbox for e 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	ОК	See PVS N୩5
C22.161	Send TC8.4.CA parameter 0xa0 SCU If the command execute the cor channel 2 on th	A-5.1 (SEND_DRCU_COMMAND) with 0820000 to stop DRCU frame transmission from I does not work (the DRCU occasionally does not nmand), uncheck the "loop" checkbox for e DRCU simulator.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1,0xa20) are no longer received	ОК	
C22.162	Send TC8.4.CA See Annex 10.7	A-2.1 (FLUSH_FIFO) to flush the FIFOs 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	ОК	
C22.163	Send TC8.4.C1 See Annex 10.7	-1.1 (SET_OBSID) to change Observer ID 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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C22.164	Send TC8.4.C1- See Annex 10.1	2.1 (SET_BBID) to change Building Block ID .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- MODE See Annex 10.1	3.1 (SET_OBS_MODE) to change Observation .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- STEP See Annex 10.1	4.1 (SET_OBS_STEP) to change Observation .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- DRCU internal ti	4.4 (RESET_DRC_COUNTERS) to reset imer	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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000.400					
622.168	latch without en	abling the command.	with error code = 0x831 (Function Stopped) and TM (5,2) with error code = 0x832 (EXCP FX UNARMED ID)	ОК	
C22.169	Send TC8.4.10 latch without en	-ff.1 (RELEASE_LATCH) to release the SMEC abling 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)	ОК	
C22.170	Send TC8.1.10 SMEC latch eng	0.1 (ENABLE_SMEC_LATCH) to enable the gage/release commands.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
C22.171	Send TC8.4.10 latch. On the SCOS to and choose SM	-1.1 (ENGAGE_LATCH) to engage the SMEC elemetry desktop click button AND at bottom left, EC 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	ОК	
C22.172	Send TC8.4.10 latch	-ff.1 (RELEASE_LATCH) to release the SMEC	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)	ОК	
C22.173	Send TC8.1.10 SMEC latch eng	0.1 (ENABLE_SMEC_LATCH) to enable the gage/release commands.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
C22.174	Send TC8.4.10 latch	-ff.1 (RELEASE_LATCH) to release the SMEC	Verify reception of TM (1,1), (1,3) and (1,7). Verify on SCOS2000 Telemetry Desktop that the SMECLATCHSTAT parameter has changed to 1	ОК	

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C22.175	Send TC8.4.CA	A-9.1 (RESET_DPU) to reset the OBS forc al memory location of the code	ing a Verify that the numbering of the HK packets restarts from 0.	ОК		
C22.176	Execute the pro	cedure A5		OK		

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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.		ОК	
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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CARLO GAVAZZI		Ediz.: <i>Issue:</i>	2	Data: <i>Date:</i>	APRIL 2006		1	Data: <i>Date:</i>	MAY 2006
	HERSCHEL SPIRE DPU PFM FINAL ELECTRICAL INTERFACE AND FULL FUNCTIONAL PERFORMANCE TEST REPORT	Pagina <i>Page</i>		di of	293	Pagina <i>Page</i>	168	di of	312
CARLO GAVAZZI SPACE SpA		TE	ST PROCE	DURE R	EFERENCE	TEST REPORT REFERENCE			

UUT DATA :	Model	Item		С.І.		S/N		
STEP n°	TEST SEQUE	NCE		EXPECTED VALUE	MEASURED VALUE	REMARKS		
D1.12	Turn on the loaded from PM and DI checksum. detected, ar SW stops a the EEPRO	e power supply. At this point the Boot Software the PROM to PM. The Boot SW checks the free M memory then reads the EEPROM verifying the When these tasks are finished, if no error at the event TM(5,1) is issued. After completion, the Bo and waits a command in order to load the OBS from M or from the 1553 link.	is An e e CDM e Pack e ot Verify m TM p Table	vent TM(5,1) should be received by S Simulator and visualized in the etDisplay tool. If that the words in the fixed part of the acket is equal to the one reported in a 6-1 Msg 1	ОК			
D1.13	Execute the	procedure A4			OK			
D1.14	Check the p indicator lin	ower supply current on the power supply current	<1A		< 520 mA	The peak value detected in 5 minutes has been considered		
D1.15	Check the a of 5 minutes Pin = Vin x	verage power consumption of DPU during a period 3: in	3W	< 14.56 W	Calculation based on the above specified value			
D1.16	Wait at leas	t 16h.	Verify (5,1) and imme code condi	v that there is not the reception of TM with error code 0x1 500 + 0x1519 between 0x2540 + 0x257A, unless idiately followed by another (5,1) with =0x850D (exit from anomaly tion).	ОК	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 pow	er supply output to 26 V and 1.5A			OK			
D1.21	Measure the	e 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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CARLO GAVAZZI SPACE SpA	HERSCHEL SPIRE DPU PFM FINAL ELECTRICAL INTERFACE AND FULL FUNCTIONAL PERFORMANCE	Pagina <i>Page</i> TE			293	Pagina <i>Page</i>	169	312	
	TEST REPORT	16	511100				ILSI KL		

UUT DATA :	Model	Item	C.I.		S/N	
STEP n°	TEST SEQUENCE	<u> </u>	EXPECTED VALUE	MEASURED VALUE	REMARKS	
D1 23	Stop and swite	b off CDMS executing stops from A5.2 to A5.3				
D1.23				OK		
D1.24	On the EGSE cable	side remove the connector of MIL-BUS channel A		ОК		
D1.25	Start CDMS ex	xecuting steps from A3.40 to A3.51		ОК		
D1.26	On the CDMS the bus B char	Simulator click on icon Select Bus and choose nnel		ОК		
D1.27	Reconnect the	power supply cable		OK		
D1.28	Turn on the p loaded from th PM and DM checksum. W detected, an e SW stops and the EEPROM	bower supply. At this point the Boot Software is the PROM to PM. The Boot SW checks the free memory then reads the EEPROM verifying the line these tasks are finished, if no error are vent TM(5,1) is issued. After completion, the Boot waits a command in order to load the OBS from 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	ОК		
D1.29	Execute the pr	ocedure A4		OK		
D1.30	Check the pow indicator lin	ver supply current on the power supply current	<1A	< 560 mA	The peak value detected in 5 minutes has been considered	
D1.31	Check the ave of 5 minutes: Pin = Vin x lin	rage power consumption of DPU during a period	<15.3W	< 14.6 W	Calculation based on the above specified value	

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CARLO GAVAZZI	HERSCHEL DPUs/ICU	N°Doc: Doc N° Ediz.:	HERS- 2	•SPIRE-	PR-CGS-002 APRIL 2006	N°Doc: Doc N°	HERS-SPIRE-RP-CGS-008 1 Data: MAY 2006 170 ^{di} . 312				
CARLO GAVAZZI SPACE SDA	HERSCHEL SPIRE DPU PFM FINAL ELECTRICAL INTERFACE AND FULL FUNCTIONAL PERFORMANCE	Pagina Page		di of	293	Pagina <i>Pag</i> e	170	di of	312		
	TEST REPORT	IE	ST PROC	EDURE R	EFERENCE		IESI REF	ORTRE	FERENCE		

UUT DATA :	Model	Item	C.I.		S/N		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS		
D1.32	Wait at least 16	Sh.	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	ОК	8 hours of test have been performed; 48 hours of non- consecutive test has been assured during all the		
D1 33	Turn off the no	worsupply	condition).	OK	PFM test campaign		
D1.33	Disconnect the	power supply cable		OK OK			
D1.35	Turn on the por	wer supply cable		OK			
D1.36	Set the power s	supply output to 29 V and 1.5A		OK			
D1.37	Measure the po	ower supply output with a voltmeter Vin	29 ± 0.1 V	29 V			
D1.38	Turn off the po	wer supply.		OK			
D1.39	Reconnect the	power supply cable		OK			
D1.40	Turn on the p loaded from th PM and DM r checksum. WI detected, an ev SW stops and the EEPROM c	ower supply. At this point the Boot Software is e PROM to PM. The Boot SW checks the free nemory then reads the EEPROM verifying the hen these tasks are finished, if no error are vent TM(5,1) is issued. After completion, the Boot waits a command in order to load the OBS from 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	ОК			
D1.41	Execute the pro	ocedure A4		OK			
D1.42	Check the pov indicator lin	ver supply current on the power supply current	<1A	< 505 mA	The peak value detected in 5 minutes has been considered		

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST REP	ORT RE	FERENCE		

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 of 5 minutes: Pin = Vin x lin	a period <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).	ОК	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.	ОК	
D1.46	On the EGSE side reconnect the connector of MIL-BUS A cable	S channel	ОК	
D1.47	Execute the procedure A5		OK	

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TEST PROCEDURE REFERENCE				TEST REPORT REFERENCE			

UUT DATA :	Model	ltem	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 SOFTWAR EEPROM	STAND-BY POWER CONSUMPTION, APID, RT AND E VERSION IDENTIFICATION AND WRITING OF			
E1.1	Execute the procedure A2 for the redundant section test		ОК	
E1.2	Execute the procedure A3 for the start up of the EGSE.		OK	
E1.3	Disconnect the Unit power cable.		ОК	
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.		ОК	
E1.7	Connect the power cable to the unit.		ОК	
E1.8	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		ОК	

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST RE	PORT RE	FERENCE

UUT DATA :	Model	Item	C.I.	C.I.		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	
E1.9	Turn on the po Software is load the free PM an the checksum. detected, an ev SW stops and from the EEPR	wer supply (see par. 6.4). At this point the Boot ded from the PROM to PM. The Boot SW checks d DM memory then reads the EEPROM verifying When these tasks are finished, if no error are rent TM(5,1) is issued. After completion, the Boot waits for a command in order to load the OBS OM 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	ОК		
E1.10	Check the power indicator lin	er supply current on the power supply current	<1A	~ 465 mA		
E1.11	Check the aver of 5 minutes: Pin = Vin x lin	age power consumption of DPU during a period	<15.3W	~ 13.02 W		
E1.12	At SCOS2000 cd OBS/SPIRE and writes the f SDOLnew –int	prompt /home/sops23, select the directory /Tcset_PFMversion ollowing command: erval 250 DmPageTc0*.dm		ОК		
E1.13	Verify that the telecommand	TM(5,1) packets are received for each		ОК		
E1.14	At the end of th Command " and	e uploading from CDMS simulator select " Local d "S_Load_Boot" command		ОК		
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	ОК		

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	CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST REI	PORT RE	FERENCE

UUT DATA :	Model	Item	C.I.	C.I.		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	
E1.17	Verify on Telem parameters that is the correct or	etry Desktop window DPU and OBS t the OBS version installed DP_SW_VERS_ID e	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.C EEPROM a cop • Start / • End A	A-7.1 (WRITE2EEPROM) to write into the y of the OBS currently running on the PM (ddress = 0x4000) ddress= 0x2E000		Not Performed	See PVS N2	
E1.20	On SCOS2000	select "ARM" and "GO"		Not Performed	See PVS N2	
E1.21	The following The following The following The after about 30 s	M packets are received TM(1,1), TM(1,3) and econds TM(1,7)		Not Performed	See PVS N2	
E1.22	Turn off the Pov	ver Supply		Not Performed	See PVS N3	

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CARLO GAVAZZI SPACE SpA	INTERFACE AND FULL FUNCTIONAL PERFORMANCE TEST REPORT	TE	ST PROC	EDURE R	EFERENCE		TEST RE	PORT RE	EFERENCE

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.		ОК	
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	ОК	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.	ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
	terminal window	v of the computer hosting SCOS 2000, type the	Verify that the fixed part of the TM packet		
	following comm	ands:	is equal to the one reported in Table 6-3		
			Msg 1.		
	> cd		Verify that the fixed part of the last TM is		
	> cd /DPU_SPIF	RE_TC	equal to the one reported in Table 6-3 Msg		
	>/local-bin/Ob	oswLoader -apid 1280 -dpu -interval 250	2.		
	DmPageTc0*.d	lm	Verify that the packet header of TC (6,2) is		
			compliant to AD19		
E2.5	Wait until all th	e TC are uploaded (prompt > appears again in	On the TM log window of the CDMS or on		
	the window). A	About 6 minutes are needed to complete the	PacketDisplay tool, verify that no TM(5,4)	OK	
	operation		are received until the last TC is sent.		
E2.6	When the up-lo	ading of TCs in the TELECOMMAND PACKET			
	INFO text are	a of the Herschel/Planck CDMS Simulator			
	Control Panel	is finished, select Local Command option from		OK	
	Select TC Sc	ource menu in the Herschel/Planck CDMS			
	Simulator Con	trol Panel.			
E2.7			The local command selected appears in		
	Select S_Load	_boot.txt command from the Select Command	the Local Command to send text field		
	menu in the He	rschel/Planck CDMS Simulator Control Panel.	Verify that the 'packet header' and 'Packet	OK	
			data fields of TC (8,4) is compliant to AD19		

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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E2.8	Click on the Ser CDMS Simulate	nd Local TC button in the Herschel/Planck or 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 .	ОК	
			Then the OBS start to send telemetry.		

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	EDURE R	EFERENCE		TEST RE	PORT RE	EFERENCE

UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

E3 BOC The purpose choose an E	DT-SW FORCE BOOT DEFAULT OPTION e is to demonstrate the capability of the HERSCHEL BOOT-SW to EPROM partition and boot OBS.			
E3.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
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	ОК	
E3.4	Select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	

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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	
_						
E3.5	Select S_Ford menu in the H	e_Boot.txt command from the Select Command erschel/Planck CDMS Simulator Control Panel.	Verify that the 'packet header' and 'Packet data' fields of TC (8,4) is compliant to AD19	ОК		
E3.6	Click on the So CDMS Simula	end Local TC button in the Herschel/Planck Itor 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 OPS start to cond telemetry	ОК		
			Msg 4. Then the OBS start to send telemetry.			

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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	

E4 The pu boot O	BOOT-SW FORCE BOOT PRIMARY PARTITION rpose is to demonstrate the capability of the HERSCHEL BOOT-SW to BS from Primary EEPROM partition.			
E4.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
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	ОК	
E4.4	Select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E4.5	Select S_For Command me Control Panel	ce_Boot_Pri.txt command from the Sele enu in the Herschel/Planck CDMS Simula t	 Verify that the 'packet header' and 'Packet or data' fields of TC (8,4) is compliant to AD19 	ОК	
E4.6	Click on the S	Send Local TC button in the Herschel/Plan tor Control Panel.	ck 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	ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

E5 E The purp boot OB	BOOT-SW FORCE BOOT SECONDARY PARTITION bose is to demonstrate the capability of the HERSCHEL BOOT-SW to S from Secondary EEPROM partition.			
E5.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
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	ОК	
E5.4	Select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
E5.5	Select S_Force_Boot_Sec.txt command from the Select	Verify that the 'packet header' and 'Packet	ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
	Command mer	u in the Herschel/Planck CDMS Sin	nulator data fields of TC (8,4) is compliant to		
	Control Panel.		AD19		
E5.6	Click on the Se	end Local TC button in the Herschel/	Planck An event TM(5,1) should be received by		

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	ОК	

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UUT DATA :	Model	ltem	C.I.	S/N	
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE R	EMARKS

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.		ОК	
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.	ОК	
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	ОК	
E6.4	Select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE	<u> </u>	EXPECTED VALUE	MEASURED VALUE	REMARKS
E6.5	Select S_FC Command m Control Panel	S_Error_Test.txt command from the Selec enu in the Herschel/Planck CDMS Simulato	t r	ОК	
E6.6	Click on the CDMS Simula	Send Local TC button in the Herschel/Plancl tor 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	

E7 E The purp send a T received	BOOT-SW APID COMMAND ERROR pose is to demonstrate the capability of the HERSCHEL BOOT-SW to relemetry Message when a Telecommand with wrong APID has been			
E7.1	Stop and switch off CDMS executing steps A5.2 and A5.3.		ОК	
E7.2	Go to the directory <cdms directory="" install="">\Other Files</cdms> and replace the file APID2RT.txt with: APID2RT_for_SPIRE_Test.txt		ОК	
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	ОК	
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 N6

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
	SW stops and from the EEPR	waits for a command in order to load the OBS OM or from the 1553 link.	Table 6-1 Msg 1		
E7.7	Select Local C in the Herschel	ommand option from Select TC Source menu /Planck CDMS Simulator Control Panel.		ОК	
E7.8	Select S_Ford Select Comm Simulator Con	ce_Boot_APID_error.txt command from the and menu in the Herschel/Planck CDMS trol Panel.		ОК	
E7.9	Click on the S CDMS Simulat	end Local TC button in the Herschel/Planck or 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	o off CDMS executing steps A5.2 and A5.3.		OK	
E7.11	Go to the direc replace the file	tory <cdms directory="" install="">\Other Files and APID2RT.txt with: APID2RT_Orig.txt</cdms>		OK	
E7.12	Start CDMS ex the power supp	ecuting steps from A3.41 to A3.48 and turn off		ОК	See PVS N7

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

E8 BC The purpo send a Te been rece	Source of the second se			
E8.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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%
E8.4	Select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
E8.5	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 Comm Simulator Cont	and menu in the Herschel/Planck CDMS trol Panel.			
E8.6	Click on the S CDMS Simulate	end Local TC button in the Herschel/Planck or 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	ОК	
			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		
E8.7	Turn off the pow	ver supply.		Not Performed	See PVS N [®]

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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

E9 B The purp send a T been rec	OOT-SW TELECOMMAND WRONG ACTIVITY ID ose is to demonstrate the capability of the HERSCHEL BOOT-SW to elemetry Message when a Telecommand with wrong Activity ID has eived.			
E9.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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 Nଂତ
E9.4	Select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
E9.5	Select S_Activity_ID_Error_Test.txt command from the Select		OK	
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	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	ОК	
E9.7	Turn off the power supply		Not Performed	See PVS N [®]

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E10 The purp send a T has been	BOOT-SW TELECOMMAND PACKET TYPE ERROR ose is to demonstrate the capability of the HERSCHEL BOOT-SW to relemetry Message when a Telecommand with wrong Packet Type a received.			
E10.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.		ОК	
E10.5	Select S_Packet_Type_Error_Test.txt command from the		OK	
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	Select Command menu in the Herschel/Planck CDMS Simulator Control Panel.			
E10.6	Click on the Send Local TC button in the Herschel/Planck	An event TM(5,4) should be received by		
	CDMS Simulator Control Panel.	CDMS Simulator and visualized in the		
		TELEMETRY PACKET INFO text area of		
		the Herschel/Planck CDMS Simulator		
		Control Panel	OK	
		Verify that the words in the fixed part of the	UK	
		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		
E10.7	Turn off the power supply		Not Performed	See PVS N [®]

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UUT DATA :	Model	Item	C.I.		S/N
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E11 The pur send a has bee	BOOT-SW TELECOMMAND PACKET SUBTYPE ERROR bose is to demonstrate the capability of the HERSCHEL BOOT-SW to relemetry Message when a Telecommand with wrong Packet Subtype in received.			
E11.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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 Nର୍ବ
E11.4	Select Local Command option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
E11.5	Select S_Packet_Subtype_Error_Test.txt command from the		OK	
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	Select Comma	nd menu in the Hersche	/Planck CDMS			

	Simulator Control Panel.			
E11.6	Click on the Send Local TC button in the Herschel/Planck	An event TM(5,4) should be received by		
	CDMS Simulator Control Panel.	CDMS Simulator and visualized in the		
		TELEMETRY PACKET INFO text area of		
		the Herschel/Planck CDMS Simulator		
		Control Panel	OK	
		Verify that the words in the fixed part of the	OK	
		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		
E11.7	Turn off the power supply		Not Performed	See PVS N [®]

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E12 The pu send a the OB	BOOT-SW TELECOMMAND MEMORY PAGE LOST rpose is to demonstrate the capability of the HERSCHEL BOOT-SW to Telemetry Message when a Telecommand when a page is lost during S upload.			
E12.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
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 N6
E12.4	Type the following commands: > cd > cd /DPU_SPIRE_TC > mv DmPageTC00001.dm DmPageTC00001.err		ОК	See PVS N୩6

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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.	ОК	
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	ОК	
E12.7	After the reception of two TM(5,4), at console prompt of SCOS2000 press CTRL-C to stop the Telecommands upload.		ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E12.8	Type the followir	ng commands:			
	> cd				
	> cd /DPU_SPIR	E_TC		OK	
	> mv DmPageT	C00001.err DmPageTC00001.dm			
	> mv DmPageT	C00021.err DmPageTC00021.dm			

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UUT DATA :	Model	ltem	C.I.	s	S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

E13 The pu send a occurs	BOOT-SW TELECOMMAND DATA MEMORY FCS ERROR rpose is to demonstrate the capability of the HERSCHEL BOOT-SW to Telemetry Message when a Telecommand Data Memory FCS error during the OBS upload.			
E13.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
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_Te st/DMPageTc_DM_FCS_Error_Test.dm</enter>	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	ОК	

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UUT DATA :	Model	ltem	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

E14 The pur send a Format	BOOT-SW TELECOMMAND DATA MEMORY WRONG FORMAT pose is to demonstrate the capability of the HERSCHEL BOOT-SW to Telemetry Message when a Telecommand Data Memory has a Wrong during the OBS upload.			
E14.1	Select Router option from Select TC Source menu in the Herschel/Planck CDMS Simulator Control Panel.		ОК	
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.	ОК	
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_Form at_Test/DMPageTc_DM_Wrong_Format_Test.dm</enter>	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	ОК	

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E15 BO PM	OT-SW PRO	DGRAM FCS ERROR DURING THE DM TO E BOOT				
The purpose send a Tele Memory to P	e is to demons emetry Mess Program Mem	strate the capability of the HERSCHEL BOOT-SW to age when an FCS error occurs during the Data ory immediate boot.				
E15.1	Select Rou Herschel/Pl	ter option from Select TC Source menu in the anck CDMS Simulator Control Panel.			ОК	
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.		ОК	
E15.3	Deleted					
E15.4	At console p /home/sops then type : SDOLnew - /home/sops e_Program and press <	orompt of SCOS2000 type: s23e/local-bin and press <enter> -interval 250 s23e/BootSW_TCs_Test/SPIRE/FCS_Error_Whol _Test/*.dm senter></enter>	During the upload an event TN be received by CDMS telecommand uploaded and the PacketDisplay tool. Verify that the fixed part of the is equal to the one reported i Msg 1.	I(5,1) should for each visualized in e TM packet n Table 6-3	ОК	
E15.5	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				ОК	
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	Select TC So Simulator Con	ource menu in the Herschel/Planck CDMS trol Panel.					
E15.6	Select S_Load menu in the He	_boot.txt command from the Select Command rschel/Planck CDMS Simulator Control Panel.		OK			
E15.7	Click on the S CDMS Simulat	end Local TC button in the Herschel/Planck or 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	ОК			

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E16	BOOT-SW LOAD AND WAIT TEST			
The purp load a lir	bose is to demonstrate the capability of the HERSCHEL BOOT-SW to nited 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.		ОК	
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.	ОК	
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></enter></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.	ОК	
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		ОК	

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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select TC So Simulator Con	ource menu in the Herschel/Planck CDMS trol Panel.			
E16.6	Select S_Load_ menu in the He	Wait.txt command from the Select Command schel/Planck CDMS Simulator Control Panel.	Verify that the 'packet header' and 'Packet data' fields of TC (8,4) is compliant to AD19	ОК	
E16.7	Click on the S CDMS Simulat	end Local TC button in the Herschel/Planck or 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	ОК	
E16.8	Select Router Herschel/Plance	option from Select TC Source menu in the k CDMS Simulator Control Panel.		ОК	
E16.9	At console prom sops23e/local- and press <enter then type: SDOLnew – int Test/SPIRE/Loc and press <enter< td=""><td>npt of SCOS2000 type: bin er> erval 250 /home/sops23e/BootSW_TCs_ ad_and_Wait_Test_2/*.dm er></td><td>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</td><td>ОК</td><td></td></enter<></enter 	npt of SCOS2000 type: bin er> erval 250 /home/sops23e/BootSW_TCs_ ad_and_Wait_Test_2/*.dm er>	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	ОК	
E16.10	When the up-lo INFO text are Control Panel	ading of TCs in the TELECOMMAND PACKET a of the Herschel/Planck CDMS Simulator is finished, select Local Command option from		ОК	
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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
	Select TC So Simulator Con	ource menu in the Herschel/Planck CDMS trol Panel.			
E16.11	Select S_Load menu in the He	_Wait.txt command from the Select Command rschel/Planck CDMS Simulator Control Panel.	1	ОК	
E16.12	Click on the S CDMS Simulat	end Local TC button in the Herschel/Planck or 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 of Herschel/Plane	option from Select TC Source menu in the ck CDMS Simulator Control Panel.		ОК	
E16.14	At console pror sops23e/local- and press <ent then type : SDOLnew – in Test/SPIRE/Lo and press <ent< td=""><td>npt of SCOS2000 type: bin er> terval 250 /home/sops23e/BootSW_TCs_ ad_and_Wait_Test_3/*.dm er></td><td>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</td><td>ОК</td><td></td></ent<></ent 	npt of SCOS2000 type: bin er> terval 250 /home/sops23e/BootSW_TCs_ ad_and_Wait_Test_3/*.dm er>	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	ОК	
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		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.		ОК	
E16.16	Select S_LoadWait_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	ОК	
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.	ОК	

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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

E17 BO	OT DETECT	TON OF CORRUPTED EEPROM PAGE				
send a Tele	metry Messad	le when one or more EEPROM page are corrupted.				
E17.1	Select Rou Herschel/P	ter option from Select TC Source menu in the lanck CDMS Simulator Control Panel.			Not Perfomed	See PVS N ^o
E17.2	Start CDMS the Hersch	Simulator by pressing the Start/Stop BC button on St/Planck CDMS Simulator Control Panel.	The Hersc Contr	1553 Bus Alive Led on the chel/Planck CDMS Simulator rol Panel blinks.	Not Perfomed	
E17.3	On scos 20 point the B Boot SW cl EEPROM finished, if After compl order to loa	200 select command " DPU_Jump_Boot ". At this pot Software is loaded from the PROM to PM. The necks the free PM and DM memory then reads the verifying the checksum. When these tasks are no error are detected, an event TM(5,1) is issued. etion, the Boot SW stops and waits a command in the OBS from the EEPROM or from the 1553 link.	An ev CDMS Packe Verify TM pa Table	vent TM(5,1) should be received by S Simulator and visualized in the etDisplay tool. ⁷ that the words in the fixed part of the acket is equal to the one reported in • 6-1 Msg 1	Not Perfomed	
E17.4	At console p /home/sope then type : SDOLnew- /home/sope orruption/* -and press	erompt of SCOS2000 type: s23e/local-bin and press <enter> -interval 250 s23e/BootSW_TCs_Test/SPIRE/Load_Program_C .dm senter></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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		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 monu 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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		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		Not Dorformed	
	1.2.p in the EEPROM.		Not Periomed	
E17.10	Turn off the power supply.		OK	
E17.11	Stop the script perl TImSPIRE.pl and launch the file	Verify that no CRC errors are detected in		
	CRCCheck.bat in folder "TC&TM Log Files\CRCCheck" (in	all the TM Packet received during Boot SW		
	CDMS PC) to perform the verification of the TM Packet CRCs	tests	UK	
	received during the Boot SW tests.			

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UUT DATA :	Model	Item	C.I.		S/N		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS		

E18 TP1 The purpose start-up undo AD1.	I SWITCH_ON e is to demonstrate the ability of the OBS to correctly initialize and er all foreseen conditions according to the procedure outlined in			
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	ОК	
E18.2	Load on SCOS2000 Manual Stack window the stack for TP1 contained in "/home/sops23e/CMD/SPIRE/STACKS".		ОК	
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	ОК	
E18.4	Turn off the power supply		Not Performed	See PVS N [®]

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE	E	EXPECTED VALUE	MEASURED VALUE	REMARKS
E18.5	Turn on the p loaded from the PM and DM checksum. W detected, an e SW stops and the EEPROM	ower supply. At this point the Boot Software is ne PROM to PM. The Boot SW checks the free memory then reads the EEPROM verifying the 'hen these tasks are finished, if no error are vent TM(5,1) is issued. After completion, the Boot waits a command in order to load the OBS from 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	ОК	See PVS N ⁹⁴
E18.6	On a terminal > cd ~/OBS_T > ObswLoade	window of SCOS2000: elecommands/spire/1.2.p/ er –dpu –apid 1280 –interval 250 *.dm	Verify that no TM(5,4) are received.	ОК	
E18.7	From SCOS20 to copy the OE	000 send TC8.4.70-2.1 (LOAD_TC_AND_BOOT) S 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.	ОК	

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UUT DATA :	Model	ltem	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

E19 TP2	PU_COMMAND_EXEC AND DPU_MEM			
The purpose a) correct imp in AD2 b) Reception c) Command d) Verification	is to demonstrate the link S/C-DPU by verifying the: plementation of the TM/TC packet transfer protocol as specified , validation and interpretation of TCs identification and execution n reporting			
dump memo	ry areas resident on the DPU. This will be done by absolute (via			
Service 6) a	nd relative (via dedicated functions with Service 8) addresses in			
EEPROM an	d to start again the OBS will also be tested here.			
E19.1	Load on SCOS2000 Manual Stack window the stack for TP2		ОК	
	contained in "/nome/sops23e/CMD/SPIRE/STACKS".			
E19.2	Send TC17.1.1 (TEST_CONNECTION)	Verify reception of: TM (1,1), (1,3), (17,2)	ОК	
		anu (1,7)		

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UUT DATA :	Model	Item		C.I.		S/N
STEP n°	TEST SEQUEN	ICE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E19.3	Send TC14 type-subtype which gener	.3.1 (REPORT_ENABLE_TM) to dump the list e- Sid combinations for all telemetry packets ation is enabled.	of Verify for and (Use I SIDs enabl enabl RD1,	 Preception of: TM (1,1), (1,3), (14,4) 1,7) PacketDisplay to verify that the list of in TM (14,4) matches the list of led TM packets (all of them are led by defaults at start-up, the list is in see also table in Appendix 3). 	ОК	
E19.4	Send TC9. time verifica	7.1 (ENABLE_TIME_VERIFICATION) to perfo tion.	rm Verify and (Pack Telen	 reception of: TM (1,1), (9,9), (1,3) 1,7) et (9,9) will be verified in the netry Log on the CDMSSimulator. 	ОК	
E19.5	Stop CDMS SPIRE with send TCs w	S. Open CDMS file APID2RT.txt and associal APID 0x300; this is needed to force the CDMS ith wrong APID to SPIRE.	to		ОК	
E19.6	Start CDMS	. Wait 5 seconds	Ignor due t CDM prese	e all TM (5,1) coming out at this stage to internal buffer overflow caused by S shutdown (not relevant for the ent test).	ОК	
E19.7	Send TC17 (switch Sele wrong APID	1.2 (TEST_CONNECTION) from CDMS Simula cct TC Source to local) to test OBS reaction again in TC	tor Verify hist code	/ reception of TM (1,2) with failure 0 (11th word in packet)	ОК	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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UUT DATA :	: Model Item C.I.			S/N	
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E19.8	Stop CDMS. SPIRE's APID	Open CDMS file APID2RT.txt and change back to nominal (0x500)		ОК	
E19.9	Start CDMS. V	/ait 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).	ОК	
E19.10	Send TC17.1. to test OBS rea	3 (TEST_CONNECTION) from CDMS Simulator action against wrong TC packet length.	Verify reception of TM (1,2) with failure code 1	ОК	This command has been sent two times
E19.11	Send TC17.1. against wrong	4 from CDMS Simulator to test OBS reaction TC packet checksum.	Verify reception of TM (1,2) with failure code 2	ОК	
E19.12	Send TC17.1. against wrong	5 from CDMS Simulator to test OBS reaction TC packet type.	Verify reception of TM (1,2) with failure code 3	ОК	
E19.13	Send TC17.1. against wrong	6 from CDMS Simulator to test OBS reaction TC packet subtype.	Verify reception of TM (1,2) with failure code 4	ОК	
E19.14	Send TC17.1. against differer	7 from CDMS Simulator to test OBS reaction at TC " ack " bits	Verify that only TM (17,2) is received	ОК	
E19.15	Send TC17.1. against differer	8 from CDMS Simulator to test OBS reaction nt TC " ack " bits	Verify that only TM (1,1) and TM (17,2) are received	ОК	
E19.16	Send TC17.1. against differer	9 from CDMS Simulator to test OBS reaction nt 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 at TC "ack" bits	Verify that only TM (17,2) and TM (1,7) are received	ОК	

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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E40.40	Orad TOO 5.4		Varify reception of TM		1
E 19.18	Send TC6.5.1 Select TC Sour PM memory are See Annex 10.1	(DUMP_MEMORY) from SCOS2000 (switch ce to Router on the CDMS Simulator) to dump a ca from location 0x12000 to 12005 (15 NSAU). .2 for parameters of TC.	(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 (memory area as See Annex 10.1	LOAD_MEMORY) to load a patch in the same s above (put 15 in repeater box). .2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
E19.20	Send TC6.5.1 same memory a See Annex 10.1	(DUMP_MEMORY) to dump again from the area. .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.	ОК	
E19.21	Send TC6.9.1 checksum over See Annex 10.1	(CHECK_MEMORY) to compute the CRC the same memory area. .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	ОК	
E19.22	Send TC6.2.2 f to local) to test	rom CDMS Simulator (switch Select TC Source 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.	ОК	
E19.23	Send TC6.2.3 address.	to test the OBS reaction against a wrong start	Verify reception of TM (1,1) and TM (1,8) with error code 0x602 (Illegal Start Address) at the 11th word.	ОК	

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E19.24	Send TC6.2.4 write out of me	to test the OBS reaction against the attempt to emory.	Verify reception of TM (1,1) and TM (1,8) with error code 0x603 (Illegal NSAU) at the 11th word.	ОК	
E19.25	Send TC6.2.5 of data words	to test the OBS reaction against a wrong number 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.	ОК	
E19.26	Send TC6.2.6 checksum for whole TC). Switch back S	to test the OBS reaction against a wrong CRC the uplinked memory patch (not the CRC of the elect 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 Select TC Sou the contents o See Annex 10	-2.1 (REPORT_TABLE) from SCOS2000 (switch urce to Router on the CDMS Simulator) to report f an undefined table .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.	ОК	
E19.28	Send TC8.4.1 See Annex 10	1.1 (SET_TABLE) to create a new table 1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
E19.29	Send TC8.4.1 the newly crea See Annex 10	2.1 (REPORT_TABLE) to report the contents of ted table. 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 17 th word to the third last) is all 0s.	ОК	

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E19 30	Send TC8 / 1-3	1 (LIPDATE TABLE) to undate the contents of	Verify reception of TM (1.1), (1.3) and (1.7)		
	the newly create See Annex 10 procedure list to click Run and o command ID an	at table, using the LoadTable TOPE script. 0.1.2 for parameters of TC.In the local test box, select the procedure S_Updatetable3.1.tcl; confirm. Select file with the same name as the id press ok and then send.		ОК	
E19.31	Send TC8.4.1-2 the newly updat See Annex 10.1	2.1 (REPORT_TABLE) to report the contents of ed table2 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.	ОК	
E19.32	Send TC8.4.1- Source to local) the TC packet.	1.2 from CDMS Simulator (switch Select TC to test the OBS against a wrong Function_ID in	Verify reception of TM (1,1) and (1,8) with error code 0x0801 (Illegal Function ID) at the 11th word.	ОК	
E19.33	Send TC8.4.1-1 a wrong Activity	.3 from CDMS Simulator to test the OBS against _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.	ОК	
E19.34	Send TC8.4.1- Select TC Sour an out of limits t See Annex 10.1	1.4 (SET_TABLE) from SCOS2000 (switch ce in CDMS to Router) to test the OBS against able ID. .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.	ОК	
E19.35	Send TC8.4.1-1 See Annex 10.1	.5 (SET_TABLE) .2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
E19.36	Send TC8.4.1-1 respect to the a See Annex 10.1	.6 (SET_TABLE) to update a too-long table with vailable space on-board. .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.	ОК	

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E19.37	Send TC8.4.1- table using TOF ID. See Annex 10.1	3.2 (UPDATE_TABLE)to update an undefinedPE I/F selecting file name equal to the command.2 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code 0x0811 (Undefined Table) at the 11th word.	ОК	
E19.38	Send TC8.4.1- original Length See Annex 10.1	1.1 (SET_TABLE) to reset the table to the .2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
E19.39	Send TC8.4.1-3 from an out-of- equal to the cor See Annex 10.1	3.3 (UPDATE_TABLE) to update a table starting table index using TOPE I/F selecting file name nmand ID2 for parameters of TC.	Verify reception of TM (1,1) (1,8) with error code 0x0806 (Illegal Table Index) at the 11th word.	ОК	
E19.40	Send TC8.4.1- Source to local) the application coincide.	3.4 from CDMS Simulator (switch Select TC to update a table with a TC where the length on data and the number of data words do not	Verify reception of TM (1,1) and (1,8) with error code 0x0808 (Bad Data) at the 11th word.	ОК	
E19.41	Send TC8.4.1-3 more words tha	3.5 from CDMS Simulator to update a table with n the table size.	Verify reception of TM (1,1) and (1,8) with error code 0x080D (Bad NData) at the 11th word.	ОК	
E19.42	Send TC8.4.1 Select TC Source See Annex 10.1	1.7 (SET_TABLE) from SCOS2000 (switch ce in CDMS to router) to create a new table .2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
E19.43	Send TC8.4.1- using TOPE I/F See Annex 10.1	3.6 (UPDATE_TABLE) to load the new table selecting file name equal to the command ID2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
E19.44	Send TC8.4.1-1 See Annex 10.1	.8 (SET_TABLE) to create a new table .2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	

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E19.45	Send TC8.4.1- new table usi	3.7 (not standard UPDATE_TABLE) to load the ng TOPE I/F selecting file name equal to the	Verify reception of TM (1,1), (1,3) and (1,7)	OK	
	command ID. See Annex 10.	1.2 for parameters of TC.		Ö	
E19.46	Send TC8.4.1- See Annex 10.	1.9 (SET_TABLE) to create a new table 1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
E19.47	Send TC8.4.1- See Annex 1 selecting file na	3.8 (UPDATE_TABLE) to load the new table. 0.1.2 for parameters of TC using TOPE I/F ame equal to the command ID.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
E19.48	Send TC8.4.1- See Annex 10.	2.2 (REPORT_TABLE) to dump the MOAT. 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.	ОК	
E19.49	Send TC8.4.1- See Annex 10.	1.10 (SET_TABLE) to delete Table 0x72 1.2 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
E19.50	Send TC8.4.1- See Annex 10.	2.2 (REPORT_TABLE) to dump the MOAT 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 2 th packet of TM $(21,4)$) the dumped table and check that there is no table	ОК	
			definition entry with ID 0x/2 (offset 360, Start Address: 3th and 4 th words)		

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UUT DATA :	Model	Item	C.I.		S/N
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	Verify reception of TM (1,1), (1,3) and		
	See Annex 10.1.2 for parameters of TC.	(1,7).		
		Verify reception of TM (21,4).		
		Inspect the second TM(21,4) packet and		
		check that the start address for table 0x73	OK	
		(offset 370, 3th and 4^{th} words) is different		
		from previous MOAT dump and at offset		
		0x30 from start address of table 0x71		
		(offset 350, 3th and 4 th words)		
E19.53	Send TC8.4.CA-7.1 (WRITE2EEPROM) to write into the	Verify reception of TM (1,1), (1,3) and,		
	EEPROM primari partition a copy of the OBS currently running	after about 20 seconds, (1,7)	Not Performed	See PVS N90
	on the PM		Not renonned	
	See Annex 10.1.2 for parameters of TC.			
E19.54	Turn off the power supply		Not Performed	See PVS N [®]
E19.55	Turn on the power supply. At this point the Boot Software is	An event TM(5,1) should be received by		
	loaded from the PROM to PM. The Boot SW checks the free	CDMS Simulator and visualized in the		
	PM and DM memory then reads the EEPROM verifying the	PacketDisplay tool.		
	checksum. When these tasks are finished, if no error are		OK	See PVS N ²
	detected, an event TM(5,1) is issued. After completion, the Boot	Verify that the words in the fixed part of the		
	SW stops and waits a command in order to load the OBS from	TM packet is equal to the one reported in		
	the EEPROM or from the 1553 link.	Table 6-1 Msg 1		
E19.56	Send TC8.4.70-3.1 (FORCE_BOOT) to force rebooting the		OK	
	DPU		UN	
E19.57	Send TC17.1.1 (TEST_CONNECTION) to perform a connection	Verify reception of TM (1,1), (1,3), (17,2)	OK	
	test and verify the OBS is regularly running.	and (1,7)	UN	

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UUT DATA :	Model Item	С.І.		S/N
STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
E19.58	Stop DRCU Simulator		Not Performed	See PVS Nୁ1
E19.59	Stop CDMS Simulator		Not Performed	See PVS Nୁ1
E19.60	Turn off the power supply		Not Performed	See PVS N [®]

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PRO	CEDURE R	EFERENCE		TEST RE	PORT RE	EFERENCE

UUT DATA :	Model	Item	C.I.		S/N		
STEP n°	TEST SEQUENCE		EXPECTED V	ALUE MEASURED VALUE	REMARKS		

E20 TF The purpos transmissio at packet le	P3 HK_COLLECT e is to test the DPU-S/S chain by demonstrating the collection and on of HK packets. The ability to support the TM transmission retry evel 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	ОК	See PVS N°4
E20.2	Load on SCOS2000 Manual Stack window the stack for TP3 contained in " <i>/home/sops23e/CMD/SPIRE/STACKS</i> ".		ОК	
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)	ОК	
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.		ОК	
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).	ОК	
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.	ОК	

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
F 20.44	Find nonemator	TOVNO on the COOCOOR Telemetry Declifor	Varify that the TOVNO time does not		
E20.11	This is the time the 1553 bus	when the last valid "Sync" has been received on	change and stays at the same value of step E20.8	ОК	
E20.12	Switch-off CDN select bus profile	IS. Switch it on again following step A3.40 , e SPIRE_redundant, Start BC	Verify that the TSYNC time increases of 1 second every second	ОК	
E20.13	Find parameter and record its DPU internal tim	TDIFF on the SCOS2000 Telemetry Desktop, value This is the time difference between the e 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 simulator. In thi the CDMS simu	possible the Stop/Start BC button on the CDMS s way the new PC system time is reloaded into lator	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 paran Desktop, and re signal to the S/S	neter TRESET on the SCOS2000 Telemetry cord its value This is the time when the last sync thas been sent		1970.001.00.00.00.000 OK	
E20.17	Send TC8.4.C/ DRCU timers	A-1.1 (RESET_DRCU_COUNTERS) to reset	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		
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E20.18	Send TC8.4.0 an HK packet See Annex 10	CC-1.8 (DEFINE_NEW_HK_REPORT) to define before the related table ID has been defined1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code 0x0825 (Undefined HK Table)	ОК		
E20.19	Send TC8.4.1 See Annex 10	-1.10 (SET_TABLE) .1.3 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
E20.20	Send TC8.4.1 See Annex 10	-1.11 (SET_TABLE) .1.3 for parameters of TC	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
E20.21	Send TC8.4.1 See Annex selecting file n	-3.10 (UPDATE_TABLE). 10.1.3 for parameters of TC using TOPE I/F ame equal to the command ID.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК		
E20.22	Send TC8.4.1 See Annex selecting file n	-3.11. (UPDATE_TABLE). 10.1.3 for parameters of TC using TOPE I/F ame equal to the command ID.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
E20.23	Send TC8.4. collection of a See Annex 10	CC-1.1 (DEFINE_NEW_HK_REPORT) to start dditional HK packets. .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	ОК		
E20.24	Send TC8.4. collection of a See Annex 10	CC-1.2 (DEFINE_NEW_HK_REPORT) to start dditional HK packets. .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	ОК		
E20.25	Send TC8.4.0 define an inva See Annex 10	CC-1.3 (DEFINE_NEW_HK_REPORT) to try and lid HK packet ID. .1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0821 (Illegal HK Packet ID)	ОК		

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E20.26	Send TC8.4.C0 packet collection	C-1.4 (DEFINE_NEW_HK_REPORT) to force HK on with a too short interval.	Verify reception of TM (1,1) and (1,8) with error code = 0x0834 (Illegal HK Sampling	ОК	
E20.27	Send TC8.4.C an HK packet S See Annex 10.	C-1.5 (DEFINE_NEW_HK_REPORT) to change SID to an out-of-limits value. 1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0822 (Illegal HK SID)	ОК	
E20.28	Send TC8.4.C the SID to a va See Annex 10.	C-1.7 (DEFINE_NEW_HK_REPORT) to change lid value but while the HK collection is running. 1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0827 (err HK Sampling Running)	ОК	
E20.29	Send TC8.4.C the HK definition See Annex 10.	C-1.6 (DEFINE_NEW_HK_REPORT) to change on table while the HK collection is active. 1.3 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0827 (err HK Sampling Running)	ОК	
E20.30	Send TC8.4.C definition of the See Annex 10.	CC-3.1 (REPORT_HK_REPORT) to report the HK packet with ID 0x300. 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	ОК	
E20.31	Send TC8.4.C definition of the See Annex 10.	CC-3.2 (REPORT_HK_REPORT) to report the HK packet with ID 0x301 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	ОК	

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E20.32	Send TC8.4. definition of th See Annex 10	CC-3.3 (REPORT_HK_REPORT) to report the e HK packet with ID 0x302 .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	ОК	
E20.33	Send TC8.4.0 definition of th See Annex 10	CC-3.4 (REPORT_HK_REPORT) to report the e HK packet with ID 0x303 .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	ОК	
E20.34	Send TC8.4.0 HK collection See Annex 10	CC-2.3 (CLEAR_HK_REPORT) to stop Essential .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 On the SCOS SCU Paramet See Annex 10	-1.13 (SET_TABLE) to remove table 0 S2000 Telemetry Desktop, click AND and select ers. .1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	OK	

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UUT DATA :	Model	Item		C.I.		S/N
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E20.36	On the SCOS2 SCU Parameter Send TC8.4.1- tables on board. With this comm running HK colle this does not parameter in the	000 Telemetry Desktop, click AND and rs. 4.10 (COLLECT_GARBAGE) to re- mand the HK definition tables for all of ection tasks will be moved. The test veri affect the HK tasks visualized on the etelemetry desktop.	d select -allocate currently ifies that ne SCU	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.	ОК	
E20.37	Send TC8.4.1- currently being u See Annex 10.1	1.11 (SET_TABLE) to try and reset used for HK collection .3 for parameters of TC.	a table	Verify reception of TM (1,1) and (1,8) with error code = 0x0813 (Busy Table)	ОК	
E20.38	Send TC8.4.C definition of the See Annex 10.1	C-2.1 (CLEAR_HK_REPORT) to cle HK packet with ID 0x302 .3 for parameters of TC.	ear the	Verify reception of TM (1,1), (1,3) and (1,7). Verify that reception of TM (3,25) with SID 0x302 has stopped	ОК	
E20.39	Send TC8.4.CC an HK packet S See Annex 10.1	C-1.5 (DEFINE_NEW_HK_REPORT) to ID to a wrong value. .3 for parameters of TC.	change	Verify reception of TM (1,1) and (1,8) with error code = 0x0822 (Illegal HK SID)	ОК	
E20.40	Send TC8.4.C0 definition of an H See Annex 10.1	C-3.3 (REPORT_HK_REPORT) to rep HK packet that has been cleared. .3 for parameters of TC.	port the	Verify reception of TM (1,1) and (1,8) with error code = 0x0829 (Undefined HK ID)	ОК	
E20.41	Send TC8.4.C definition of the See Annex 10.1	C-2.2 (CLEAR_HK_REPORT) to cle HK packet with ID 0x303 .3 for parameters of TC.	ear the	Verify reception of TM (1,1), (1,3) and (1,7). Verify that reception of TM (3,25) with SID 0x303 has stopped	ОК	

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE	TEST REPORT REFERENCE				

UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E20.42	Send TC8.4.C of nominal HK See Annex 10.	C-2.4 (CLEAR_HK_REPORT) to stop collection packets. All HK tasks are now stopped. 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	ОК	
E20.43	Send TC8.4.1- no longer used See Annex 10.	1.11 (SET_TABLE) to try and reset a table that is as an HK packet definition.1.3 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
E20.44	Send TC8.4.C definition of an HK packet that See Annex 10.	C-3.4 (REPORT_HK_REPORT) to report the has been cleared. 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 parameter 0x8 S/S	4.CA-5.1 (SEND_DRCU_COMMAND) with 8FF0000 to send an unknown command to the	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)	ОК	
E20.46	Send TC8.4 parameter 0x8	4.CA-5.1 (SEND_DRCU_COMMAND) with C020000 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)	ОК	
E20.47	Stop DRCU Sir	nulator		OK	
E20.48	Stop CDMS Sir	nulator		OK	
E20.49	Turn off the po	wer supply		OK	

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROC	EDURE R	EFERENCE	TEST REPORT REFERENCE				

UUT DATA :	Model	ltem	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

E21 TP4 The purpose available in t command lis interfering w interface to s	4 VIRTUAL e is to demons the OBS as sp sts. It will also ith one anothe send commar	MACHINES strate that all Virtual Machines described in RD3 and becified in AD3, can execute in a timely fashion be shown that all VMs can run in parallel without er; this is a potential risk since all VMs use the same ads and receive parameters from the DRCU.					
E21.1	Start CDMS	Simulator				OK	
E21.2	Start DRCU	simulator				OK	
E21.3	Turn on the loaded from PM and DM checksum. detected, ar SW stops a the EEPROI	e power supply. At this point the Boot Software is the PROM to PM. The Boot SW checks the free M memory then reads the EEPROM verifying the When these tasks are finished, if no error are nevent TM(5,1) is issued. After completion, the Boot nd waits a command in order to load the OBS from M or from the 1553 link.	An ev CDMS Packe Verify TM pa Table	vent TM(5,1) should be received by S Simulator and visualized in the etDisplay tool. that the words in the fixed part of the acket is equal to the one reported in 6-1 Msg 1		ОК	
E21.4	Load on SC contained in	COS2000 Manual Stack window the stack for TP4 "/home/sops23e/CMD/SPIRE/STACKS".				ОК	
E21.5 Send TC8.4 At this stay the DRCU served.		.70-3.1 (FORCE_BOOT) to start OBS e, about 320 HK parameter requests are sent to simulator. Each request requires 2msec to be	Parameter LSLOAD on the SCOS Telemetry Desktop should be oscillating about between 570000 and 600000 (expressed in decimal form)			0000÷596000 OK	
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CARLO GAVAZZI SPACE SPA			RICAL RMANCE	Pagina <i>Page</i> TES	T PROC	di of EDURE R	293 EFERENCE	P F	Pagina 231 Page TES	di <i>of</i> T REPORT	312 REFERENCE
UUT DATA :	Model	Item		C.I.						S/N	
STEP n°	TEST SEQUENCE			EXPE	CTED V	ALUE		MEAS	URED VALU	Ξ	REMARKS
E21.6	Send TC8.4.1-1.20 (SE See Annex 10.1.4 for c	ET_TABLE) to create table for VM code parameters of TC.	Verify re	eception of	TM (1,	1), (1,3) a	and (1,7)		ОК		
E21.7	Send TC8.4.1-1.21 (See Annex 10.1.4 for n	ET_TABLE) to create table for VM code	Verify re	eception of	TM (1,	1), (1,3) a	and (1,7)		OK		
E21.8	Send TC8.4.1-1.22 (SE See Annex 10.1.4 for r	ET_TABLE) to create table for VM code	Verify re	eception of	TM (1,	1), (1,3) a	and (1,7)		OK		
E21.9	Send TC8.4.1-1.23 (SE See Annex 10 1 4 for p	ET_TABLE) to create table for VM code	Verify re	eception of	TM (1,	1), (1,3) a	and (1,7)		OK		
E21.10	Send TC8.4.1-3.20 (UI See Annex 10.1.4 fo selecting file name equ	PDATE_TABLE) to load VM code or parameters of TC using TOPE I/F ual to the command ID.	Verify re	eception of	TM (1,	1), (1,3) a	and (1,7)		ОК		
E21.11	Send TC8.4.1-3.21 (UI See Annex 10.1.4 for selecting file name equ	PDATE_TABLE) to load VM code or parameters of TC using TOPE I/F ual to the command ID.	Verify re	eception of	TM (1,	1), (1,3) ;	and (1,7)		ОК		
E21.12	Send TC8.4.1-3.22 (UI See Annex 10.1.4 for selecting file name equ	PDATE_TABLE) to load VM code or parameters of TC using TOPE I/F all to the command ID.	Verify re	eception of	TM (1,	1), (1,3) ;	and (1,7)		ОК		
E21.13	Send TC8.4.1-3.23 (UI See Annex 10.1.4 fc	PDATE_TABLE) to load VM code or parameters of TC using TOPE I/F	Verify re	eception of	TM (1,	1), (1,3) a	and (1,7)		ОК	<u>_</u>	

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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 9^{th} and 10^{th} words

OK

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selecting file name equal to the command ID.

See Annex 10.1.4 for parameters of TC.

Send TC8.5.2.1 (REPORT_FUNCTION) to report the status of

E21.14

the VM

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UUT DATA :	Model	el Item C.I.			S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E21.15	Send TC8.5.3.1 the VM1 See Annex 10.1	(REPORT_FUNCTION) to report the status of .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 9 th and 10 th words	ОК	
E21.16	Send TC8.5.4.1 the VM2 See Annex 10.1	(REPORT_FUNCTION) to report the status of .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 9 th and 10 th words	ОК	
E21.17	Send TC8.5.5.1 the VM3 See Annex 10.1	(REPORT_FUNCTION) to report the status of .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 9 th and 10 th words	ОК	
E21.18	Send TC8.4.2-2 Now there are 5 LS port; each re See Annex 10.1	.1 (RUN_VM) 0 additional HK parameter requests going to the quires 4 msec in total to be served. .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- tables on board	4.20 (COLLECT_GARBAGE) to re-allocate	Verify reception of TM (1,1) and (1,8) with error code = 0x080C (VM Running)	ОК	
E21.20	Send TC8.4.3-2 Now there are 5 LS port; each re See Annex 10.1	.1 (RUN_VM1) 0 additional HK parameter requests going to the quires 4 msec in total to be served. .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	OK 660000÷890000	Two TM(1,3) have been received

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST RE	PORT RE	FERENCE

UUT DATA :	JT DATA : Model Item C.I.				S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E21.21	Send TC8.4.4-2.1 (RUN_VM2) Now there are 50 additional HK parameter requests going to the		Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$. Verify that no TM $(5,1)$ events with error code = 0x050C are received.	OK 675000 : 990000	Two TM(1,3) have been received
	See Annex 10.1.	4 for parameters of TC.	Verify that LSLOAD parameter on SCOS TM monitor is increasing		
E21.22	Send TC8.4.5-2. Now there are 50 LS port; each red we have passed can go through some HK packet See Annex 10.1.	1 (RUN_VM3) D additional HK parameter requests going to the quires 4 msec in total to be served. At this point I the number of total requests (about 500) that the LS port each second: we might be losing s, but this is no problem for the current tests. 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 the VM See Annex 10.1.	(REPORT_FUNCTION) to report the status of 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 9 th to 12 th word	ОК	

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCI	EDURE R	EFERENCE		TEST RE	PORT RE	FERENCE

UUT DATA :	Model	Item	C.I.		S/N	
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	
E21.24	Send TC8.5.3.1	(REPORT_FUNCTION) to report the status of	Verify reception of TM (1,1), (1,3), (8,6)			
	the VM1 See Annex 10.1.	4 for parameters of TC.	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 9 th to 12 th word	OK		
E21.25	Send TC8.5.4.1 the VM2 See Annex 10.1.	(REPORT_FUNCTION) to report the status of 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 9 th to 12 th word	OK		
E21.26	Send TC8.5.5.1 the VM3 See Annex 10.1.	(REPORT_FUNCTION) to report the status of 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 9 th to 12 th word	ОК		
E21.27	Send TC8.4.1-1. by the fourth VM See Annex 10.1.	22 (SET_TABLE) to reset the table being used 4 for parameters of TC.	Verify reception of TM (1,1) and (1,8) with error code = 0x0813 (Busy Table)	ОК		
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.	ОК		

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TEST PROCEDURE REFERENCE				TEST RE	PORT RE	FERENCE	

UUT DATA :	Model	Item	S/N			
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	
E21.29	Send TC8.4.C of Essential HM See Annex 10.	C-2.1 (CLEAR_HK_REPORT) to stop collection (packets 1.4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	TM(3,25) with SID 300 are no longer received	
E21.30	Send TC8.4.1- See Annex 10.	1.24 (SET_TABLE) to cancel table 0 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 (board	COLLECT_GARBAGE) to re-allocate tables on	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 $(1,7)$.	ОК		
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- used by the fou See Annex 10.	1.22 (SET_TABLE) to reset the table that was urth VM 1.4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	EDURE R	EFERENCE		TEST RE	PORT RE	FERENCE

UUT DATA :	Model	Item	C.I.		S/N		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS		
-	-			•			
E21.36	Open the file Te Perform a sear 0xC1A3	elemetryA.txt resident on the CDMS Simulator. ch for the values 0xC1A0, 0xC1A1, 0xC1A2 and	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.	ОК	See PVS N୩2		
E21.37	Send TC8.4.1-1 See Annex 10.2	.25 (SET_TABLE) to create table ID 0x30 .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК			
E21.38	Send TC8.4.1-1 See Annex 10.2	.26 (SET_TABLE) to create table ID 0x31 .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК			
E21.39	Send TC8.4.1- load file with sm See Annex 10.2	3.24 (UPDATE_TABLE) using TOPE I/F and the name as Command ID. .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК			
E21.40	Send TC8.4.1- load file with sm See Annex 10.2	3.25 (UPDATE_TABLE) using TOPE I/F and the name as Command ID. .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК			
E21.41	Send TC8.4.1- load file with sm See Annex 10.2	3.26 (UPDATE_TABLE) using TOPE I/F and ne name as Command ID. .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК			
E21.42	Send TC8.4.1- load file with sm See Annex 10.2	3.27 (UPDATE_TABLE) using TOPE I/F and ne name as Command ID. .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК			
E21.43	Send TC8.4.1- load file with sm See Annex 10.2	3.28 (UPDATE_TABLE) using TOPE I/F and the name as Command ID. .4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК			

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E21.44	Send TC8.4.1-3 load file with sm See Annex 10.1	3.29 (UPDATE_TABLE) using TOPE I/f e name as Command ID. .4 for parameters of TC.	and Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E21.45	Send TC8.4.1-3 load file with sm See Annex 10.1	3.30 (UPDATE_TABLE) using TOPE I/f e name as Command ID. .4 for parameters of TC.	F and Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E21.46	Send TC8.4.1-3 load file with sm See Annex 10.1	3.31 (UPDATE_TABLE) using TOPE I/I e name as Command ID. .4 for parameters of TC.	and Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E21.47	Send TC8.4.2-2 0x30	.2 (RUN_VM) to start Hardware VM on Ta	ble ID 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 (16^{th} and 17^{th} 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 19^{th} 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	ОК	

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UUT DATA :	Model	Item		S/N	
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E21.48	Send TC8.4.2 Source to loca with the comm	-1.1 from CDMS Simulator (switch Select TC al), to execute a command list uplinked together and.	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 Select TC Sou See Annex 10.	.1 (REPORT_FUNCTION) from SCOS (switch rce to Router), to report the status of the VM 1.4 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$, $(8,6)$ (words from 9 th to 12 th are 0x0201, 0x860, 0x0078 and 0x0000), and $(1,7)$	ОК	
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.	ОК ~ 570000	
E21.51	Send TC8.5.2. the VM See Annex 10.	 (REPORT_FUNCTION) to report the status of 1.4 for parameters of TC. 	Verify reception of TM $(1,1)$, $(1,3)$, $(8,6)$ (with 9 th word = 0x0203) confirming VM is inactive, and $(1,7)$	ОК	
E21.52	Stop DRCU Si	mulator		Not Performed	See PVS N୩1
E21.53	Stop CDMS Si	mulator		Not Performed	See PVS Nୁ1
E21.54	Turn off the po	wer supply		Not Performed	See PVS N [®]

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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS

E22 T The purpo transmissi science fra commands Control, th feature for SPIRE spe	P5 SPIRE_ICD se is to demonstrate the reception (from S/Ss), control, packing and on (to S/C) of science frames. It will be shown that acquisition of imes can be initiated by standard TCs. The execution of particular s will allow testing of other OBS features like the Telemetry Packet e Time Management, the Report Function Status and the "arm-go" the commands to engage/release the launch safety latch of the ectrometer 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	ОК	See PVS N ^o 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	ОК	
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	ОК	

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UUT DATA :	Model	Item		S/N	
STEP n°	TEST SEQUENC	E	EXPECTED VALUE	MEASURED VALUE	REMARKS
	Series of configure the of parameters • 0x84 from • 0x84 timin • 0x84 timin • 0x84	TC8.4.CA-5.1 (SEND_DRCU_COMMAND) to DRCU science data frames, using the following list and the following list an			
E22.6	255 f TC8.4.CA-5.1 0x843e0001 t	rames (SEND_DRCU_COMMAND) with parameter o 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	ОК	
E22.7	Send TC8.4.0 See Annex 10	CA-2.1 (FLUSH_FIFO) to flush the FIFOs 0.1.5 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.	ОК	

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UUT DATA :	Model	Item	С.І.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.8	Load on SCOS TP5_GetFullSp C21.7 to C21.1 Send TC8.4.CA parameter 0x84 Spectrometer fr	2000 Manual Stack window the stack for ec. This stack of commands executes steps 0 A-5.1 (SEND_DRCU_COMMAND) with 43c0004, to configure DRCU to send ull-array frames	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.9	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with #3d0ff, to configure DRCU to send 255 frames	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.10	Send TC8.4.CA parameter 0x84 DCU.	A-5.1 (SEND_DRCU_COMMAND) with 43e0001 to start DRCU data transfer from the	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 See Annex 10.7	A-2.1 (FLUSH_FIFO) to flush the FIFOs 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.	ОК	
E22.12	Load on SCC TP5_GetSMEC C21.11 to C21. TC8.4.CA-5.1 0x91c00000, to	DS2000 Manual Stack window the stack for Nom. This stack of commands executes steps 14 (SEND_DRCU_COMMAND) with parameter configure sampling rate for SMEC frames	Verify reception of TM (1,1), (1,3) and (1,7.)	ОК	

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UUT DATA :	Model	Item	С.І.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.13	Send TC8.4.CA parameter 0x91 MCU. The MCI of packets but in NOTE: on the I INTERVAL betw manually correct	-5.1 (SEND_DRCU_COMMAND) with c10001 to start DRCU data transfer from the J cannot be commanded to send a fixed number s sends them continuously DRCU Simulator check that the box "SAMPLE veen blocks" of CH1 is 3 msec. Otherwise tt 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.	ОК	
E22.14	Wait 5 seconds (SEND_DRCU_ stop DRCU data	and send TC8.4.CA-5.1 COMMAND) with parameter 0x91c10000 to a transfer	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1) packets stops.	ОК	
E22.15	Send TC8.4.CA See Annex 10.1	-2.1 (FLUSH_FIFO) to flush the FIFOs .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.	ОК	
E22.16	Load on SCOS: TP5_GetBSMN C21.15 to C21. Send TC8.4.CA parameter 0x91 frames	2000 Manual Stack window the stack for om. This stack of commands executes steps 18 -5.1 (SEND_DRCU_COMMAND) with c20000, to configure sampling rate for BSM	Verify reception of TM (1,1), (1,3), and (1,7)	ОК	
E22.17	Send TC8.4.CA parameter 0x91 MCU. The MCU canno packets but it so	-5.1 (SEND_DRCU_COMMAND) with c10001 to start DRCU data transfer from the ot be commanded to send a fixed number of ends them continuously	Verify reception of TM (1,1), $\overline{(1,3)}$, and (1,7). Verify continuous reception of TM (21,1) packets with APID = 0x509 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
E22.18	Wait 5 seconds (SEND_DRCU_ stop DRCU data	and send TC8.4.CA-5.1 COMMAND) with parameter 0x91c10000 to a transfer	Verify reception of TM (1,1), (1,3), and (1,7). Verify that TM (21,1) packets stops.	ОК	
E22.19	Send TC8.4.CA See Annex 10.1	-2.1 (FLUSH_FIFO) to flush the FIFOs .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.	ОК	
E22.20	Load on SCOS2 TP5_GetSCUN C21.19 to C21.2 Send TC8.4.CA parameter 0xa0 nominal frames	2000 Manual Stack window the stack for om. This stack of commands executes steps 23 (send commands one by one) -5.1 (SEND_DRCU_COMMAND) with 830000 to configure DRCU to send SCU	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
E22.21	Send TC8.4.CA parameter 0xa0 If this does not simulator Comb Transfer- Chann	-5.1 (SEND_DRCU_COMMAND) with 84001f to configure DRCU to send 31 frames. work, put manually the number 31 in the DRCU o Box channel 2 (bottomcenter box) and press nelSettingstoDriver.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
E22.22	Send TC8.4.CA parameter 0xa0 SCU	-5.1 (SEND_DRCU_COMMAND) with 820001 to start DRCU data transfer form the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.23	Repeat previous	s 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.	ОК	

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STEP n°	TEST SEQUENC	E	EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.24	Send TC8.4.0 See Annex 10	CA-2.1 (FLUSH_FIFO) to flush the FIFOs 0.1.5 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).	ОК	
E22.25	Load on SCO TP5_GetPSW to C21.27 Send TC8.4.0 parameter 0x8 frames.	S2000 Manual Stack window the stack for 7. This stack of commands executes steps C21.24 CA-5.1 (SEND_DRCU_COMMAND) with 343c0001 to configure DRCU to send PSW	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.26	Send TC8.4.0 parameter 0x8	A-5.1 (SEND_DRCU_COMMAND) with 343d00ff to configure DRCU to send 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.27	Send TC8.4.0 parameter 0x8 DCU.	CA-5.1 (SEND_DRCU_COMMAND) with 343e0001 to start DRCU data transfer from the	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 TC8.4.0 See Annex 10	A-2.1 (FLUSH_FIFO) to flush the FIFOs 0.1.5 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)	ОК	

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UUT DATA :	Model	Item	С.І.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
F22 29	Load on SCOS	2000 Manual Stack window the stack for	Verify reception of TM (1.1) (1.3) and		
	TP5_GetPMW to C21.31 Send TC8.4.C/ parameter 0x8 frames.	A-5.1 (SEND_DRCU_COMMAND) with 43c0002 to configure DRCU to send PMW	(1,7).	ОК	
E22.30	Send TC8.4.C	A-5.1 (SEND_DRCU_COMMAND) with 43d00ff to configure DRCU to send 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.31	Send TC8.4.C/ parameter 0x8 DCU.	A-5.1 (SEND_DRCU_COMMAND) with 43e0001 to start DRCU data transfer from the	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.C/ See Annex 10.	A-2.1 1 (FLUSH_FIFO) to flush the FIFOs 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)	ОК	
E22.33	Load on SCOS TP5_GetPLW. to C21.35 Send TC8.4.C/ parameter 0x8 frames.	22000 Manual Stack window the stack for This stack of commands executes steps C21.32 A-5.1 (SEND_DRCU_COMMAND) with 43c0003 to configure DRCU to send PLW	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.34	Send TC8.4.C/ parameter 0x8	A-5.1 (SEND_DRCU_COMMAND) with 43d00ff to configure DRCU to send 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	

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E22.35	Send TC8.4.0 parameter 0x8 DCU.	A-5.1 (SEND_DRCU_COMMAND) with 343e0001 to start DRCU data transfer from the	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,2) packets with APID = $0x505$ and SID = $0x104$	ОК	
E22.36	Send TC8.4.C See Annex 10	A-2.1 (FLUSH_FIFO) to flush the FIFOs .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).	ОК	
E22.37	Load on SC TP5_GetSLW to C21.39 Send TC8 parameter 0x frames.	OS2000 Manual Stack window the stack for This stack of commands executes steps C21.3 4.CA-5.1 (SEND_DRCU_COMMAND) wi 4843c0005 to configure DRCU to send SLV	or Verify reception of TM (1,1), (1,3) and 6 (1,7). h	ОК	
E22.38	Send TC8 parameter 0x8	4.CA-5.1 (SEND_DRCU_COMMAND) wi 343d00ff to configure DRCU to send 255 frames.	h Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.39	Send TC8.4.C parameter 0x8 DCU.	A-5.1 (SEND_DRCU_COMMAND) with 343e0001 to start DRCU data transfer from the	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.40	Send TC8.4.C parameter 0x8 DCU.	A-5.1 (SEND_DRCU_COMMAND) with A3e0001 to start DRCU data transfer from the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$. Verify reception of TM $(21,2)$ packets with APID = 0x507 and SID = 0x106	ОК	

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E22.41	Send TC8.4.C See Annex 10	A-2.1 (FLUSH_FIFO) to flush the FIFOs .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 SCO TP5_GetSSW to C21.43 Send TC8.4.C parameter 0x8 frames.	S2000 Manual Stack window the stack for This stack of commands executes steps C21.40 A-5.1 (SEND_DRCU_COMMAND) with 343c0006 to configure DRCU to send SSW	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.43	Send TC8.4.C	A-5.1 (SEND_DRCU_COMMAND) with 343d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.44	Send TC8.4.C parameter 0x8 DCU.	A-5.1 (SEND_DRCU_COMMAND) with A3e0001 to start DRCU data transfer from the	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,2) packets with APID = 0x507 and SID = 0x105	ОК	
E22.45	Send TC8.4.C See Annex 10	A-2.1 (FLUSH_FIFO) to flush the FIFOs .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)	ОК	

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CARLO GAVAZZI SPACE SpA	SpA TEST REPORT		ST PROCE	EFERENCE	TEST REPORT REFERENCE				

UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.46	Load on SCOS TP5_GetPhotT C21.44 to C21. Send TC8.4.CA parameter 0x84 Photometer Te	2000 Manual Stack window the stack for est. This stack of commands executes steps 49. A-5.1 (SEND_DRCU_COMMAND) with 43c0008 to configure DRCU to send full st Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.47	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with 418000C.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.48	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with 4190070.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.49	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with 43d00ff to configure DRCU to send 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.50	Send TC8.4.CA parameter 0x84 DCU.	A-5.1 (SEND_DRCU_COMMAND) with 43e0001 to start DRCU data transfer from the	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 See Annex 10.	A-2.1 (FLUSH_FIFO) to flush the FIFOs 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)	ОК	

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CARLO GAVAZZI		Ediz.: <i>Issue:</i>	2	Data: <i>Date:</i>	APRIL 2006		1	Data: <i>Date:</i>	MAY 2006
	HERSCHEL SPIRE DPU PFM FINAL ELECTRICAL	Pagina <i>Pag</i> e		di of	293	Pagina <i>Page</i>	249	di of	312
CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	DURE R	EFERENCE		TEST RE	PORT RE	FERENCE

UUT DATA :	Model Item		C.I.		S/N	
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	
			·			
E22.52	Load on SCOS2000 Manual Stac TP5_GetPSWTest. This stack of C21.50 to C21.55. Send TC8.4.CA-5.1 (SEND_DRC parameter 0x843c0009 to configu Pattern.	k window the stack for commands executes steps CU_COMMAND) with ure DRCU to send PSW Test	Verify reception of TM (1,1), (1,3) and (1,7).	ОК		
E22.53	Send TC8.4.CA-5.1 (SEND_DRC parameter 0x8418000C.	COMMAND) with	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
E22.54	Send TC8.4.CA-5.1(SEND_DRC 0x84190070.	U_COMMAND) with parameter	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
E22.55	Send TC8.4.CA-5.1 (SEND_DRC parameter 0x843d00ff to configur	COMMAND) with re DRCU to send 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
E22.56	Send TC8.4.CA-5.1 (SEND_DRC parameter 0x843e0001 to start D DCU.	COMMAND) with RCU data transfer from the	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_FIF See Annex 10.1.5 for parameters	O) to flush the FIFOs 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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CARLO GAVAZZI SPACE SpA	TEST REPORT		ST PROCE	DURE R	EFERENCE	TEST REPORT REFERENCE				

UUT DATA :	Model	Item		C.I.		S/N
STEP n°	TEST SEQUENCE			EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.58	Load on SCOS2000 TP5_GetPMWTest. T C21.56 to C21.61. Send TC8.4.CA-5. parameter 0x843c000 Pattern.	Manual Stack window the s This stack of commands execut 1 (SEND_DRCU_COMMAND a to configure DRCU to send PI	stack for es steps) with MW Test	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.59	Send TC8.4.CA-5. parameter 0x8418000	1 (SEND_DRCU_COMMAND C.) with	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.60	Send TC8.4.CA-5. parameter 0x8419007	1 (SEND_DRCU_COMMAND 0.) with	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.61	Send TC8.4.CA-5. parameter 0x843d00ff	1 (SEND_DRCU_COMMAND to configure DRCU to send 255 f) with rames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.62	Send TC8.4.CA-5.1 (Sparameter 0x843e000 DCU.	SEND_DRCU_COMMAND) with 1 to start DRCU data transfer fror	n the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$. Verify reception of TM $(21,3)$ packets with APID = 0x505 and SID = 0x30b	ОК	
E22.63	Send TC8.4.CA-2.1 (F See Annex 10.1.5 for	LUSH_FIFO) to flush the FIFOs 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)	ОК	

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TEST PROCEDURE REFERENCE				TEST REPORT REFERENCE			

UUT DATA :	Model Item	C.I.	S/N		
STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS	
		·			
E22.64	Load on SCOS2000 Manual Stack window the stack fr TP5_GetPLWTest. This stack of commands executes C21.62 to C21.67 Send TC8.4.CA-5.1 (SEND_DRCU_COMMAND) with parameter 0x843c000b to configure DRCU to send PL Pattern.	For Verify reception of TM (1,1), (1,3) and (1,7).	ОК		
E22.65	Send TC8.4.CA-5.1 (SEND_DRCU_COMMAND) with parameter 0x8418000C.	Werify reception of TM (1,1), (1,3) and (1,7).	ОК		
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).	ОК		
E22.67	Send TC8.4.CA-5.1 (SEND_DRCU_COMMAND) with parameter 0x843d00ff to configure DRCU to send 255	Verify reception of TM (1,1), (1,3) and 5 frames. (1,7).	ОК		
E22.68	Send TC8.4.CA-5.1 (SEND_DRCU_COMMAND) with parameter 0x843e0001 to start DRCU data transfer fro DCU.	h 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.	s 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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CARLO GAVAZZI SPACE SpA	TEST REPORT		TEST PROCEDURE REFERENCE				TEST REPORT REFERENCE		

UUT DATA :	Model	Item	C.I.	S/N		
STEP n°	TEST SEQUENC	<u> </u>	EXPECTED VALUE	MEASURED VALUE	REMARKS	
E22 70	Lood on SC	OS2000 Manual Stack window the stack fo	r Varify reception of TM (1, 1) (1, 2) and (1, 7)		1	
222.70	TP5_GetSpec C21.68 to C21 Send TC8. parameter 05 Spectrometer	Test. This stack of commands executes steps .71. 4.CA-5.1 (SEND_DRCU_COMMAND) with (843c000c to configure DRCU to send Fu Test Pattern.		ОК		
E22.71	Send TC8. parameter 0x8	4.CA-5.1 (SEND_DRCU_COMMAND) with 43d00ff to configure DRCU to send 255 frames.	N Verify reception of TM (1,1), (1,3) and (1,7).	ОК		
E22.72	Send TC8. parameter 0x DCU.	4.CA-5.1 (SEND_DRCU_COMMAND) with 843e0001 to start DRCU data transfer from the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК		
E22.73	Send TC8. parameter 0x DCU.	4.CA-5.1 (SEND_DRCU_COMMAND) with 843e0001 to start DRCU data transfer from the	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.C See Annex 10	A-2.1 (FLUSH_FIFO) to flush the FIFOs .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)	ОК		
E22.75	Load on SCO TP5_GetSLW C21.72 to C21 Send TC8.4.C parameter 0x8 Pattern.	S2000 Manual Stack window the stack for Test. This stack of commands executes steps .77. A-5.1 (SEND_DRCU_COMMAND) with A3c000d to configure DRCU to send SLW Test	Verify reception of TM (1,1), (1,3) and (1,7).	ОК		

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CARLO GAVAZZI SPACE SpA CARLO GAVAZZI SPACE SpA CARLO GAVAZZI SPACE SpA			TRICAL DRMANCE	Pagina <i>Page</i> TE	ST PROC	di <i>of</i> EDURE F	293 REFERENCE		Pagina <i>Page</i>	253 TEST R	di <i>of</i> EPORT RE	312 EFERENCE
UUT DATA :	Model	Item		C.I.							S/N	
STEP n°	TEST SEQUENCE			EXP	ECTED VA	ALUE		MEAS	SURED	VALUE		REMARKS
E22.76	Send TC8.4.CA-5.1 (S	END_DRCU_COMMAND) with	Verify r (1,7).	eception	of TM	(1,1),	(1,3) and		ОК			
E22.77	Send TC8.4.CA-5.1 (S	END_DRCU_COMMAND) with	Verify r	eception	of TM	(1,1),	(1,3) and		OK			
E22.78	Send TC8.4.CA-5.1 (S parameter 0x843d00ff	END_DRCU_COMMAND) with to configure DRCU to send 255 frames.	Verify r (1,7).	reception	of TM	(1,1),	(1,3) and		OK			
E22.79	Send TC8.4.CA-5.1 (S parameter 0x843e0007 DCU.	END_DRCU_COMMAND) with to start DRCU data transfer from the	Verify r (1,7).	eception	of TM	(1,1),	(1,3) and		OK			
E22.80	Send TC8.4.CA-5.1 (S parameter 0x843e000 DCU.	END_DRCU_COMMAND) with I to start DRCU data transfer from the	Verify r (1,7). Verify re APID = 0	eception eception o 0x507 and	of TM of TM (2 d SID = ((1,1), 21,3) pa 0x30f	(1,3) and ckets with		NOT O	К	See N	CR-SPIRE-CGS C-012
E22.81	Send TC8.4.CA-2.1 (F See Annex 10.1.5 for p	LUSH_FIFO) to flush the FIFOs parameters of TC.	Verify r (1,7). Verify th A total o Corresp	reception nat the las of 32 pack onding to	of TM t TM (21 ets shou 510 frar	(1,1), ,3) are i ild be re nes (16	(1,3) and received. ceived. fr/pkt).		NOT O	К	See N	CR-SPIRE-CGS C-012

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(1,7).

Verify reception of TM (1,1), (1,3) and

OK

OK

Load on SCOS2000 Manual Stack window the stack for Verify reception of TM (1,1), (1,3) and

with

TP5_GetSSWTest. This stack of commands executes steps (1,7).

parameter 0x843c000e to configure DRCU to send SSW Test

parameter 0x843d00ff to configure DRCU to send 255 frames.

Send TC8.4.CA-5.1 (SEND DRCU COMMAND) with

(SEND_DRCU_COMMAND)

E22.82

E22.83

C21.78 to C21.81

. Pattern.

Send TC8.4.CA-5.1

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	EFERENCE	TEST REPORT REFERENCE					

UUT DATA :	Model	Item	C.I.	S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE REMARKS
E22.84 E22.85	Send TC8.4.CA parameter 0x84 DCU. Send TC8.4.CA See Annex 10.1	-5.1 (SEND_DRCU_COMMAND) with 3e0001 to start DRCU data transfer from the -2.1 (FLUSH_FIFO) to flush the FIFOs .5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,3) packets with APID = 0x507 and $SID = 0x30eVerify reception of TM (1,1), (1,3) and(1,7).Verify that the last TM (21,3) are received.$	ОК
E22.86	Load on SCOS2 TP5_GetMCUE C21.82 to C21.8 Send TC8.4.CA parameter 0x91 Engineering frame	2000 Manual Stack window the stack for ng. This stack of commands executes steps 35. -5.1 (SEND_DRCU_COMMAND) with c40000, to configure sampling rate for MCU mes	A total of 29 packets should be received. Corresponding to 255 frames (9 fr/pkt) Verify reception of TM (1,1), (1,3) and (1,7).	ОК
E22.87	Send TC8.4.CA parameter 0x91 MCU. The MCU canno packets but it se	-5.1 (SEND_DRCU_COMMAND) with c10001 to start DRCU data transfer from the of be commanded to send a fixed number of ends 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.	ОК
E22.88	Wait 5 seconds (SEND_DRCU_ stop DRCU data	and send TC8.4.CA-5.1 COMMAND) with parameter 0x91c10000 to a transfer	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,3) packets stops.	ОК
E22.89	Send TC8.4.CA See Annex 10.1	-2.1 (FLUSH_FIFO) to flush the FIFOs .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.	ОК

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CARLO GAVAZZI			N°Doc: Doc N° HERS-SPIRE-PR-CGS-002				HERS-SPIRE-RP-CGS-008			
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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	EFERENCE	TEST REPORT REFERENCE					

UUT DATA :	Model Item	C.I.		S/N		
STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS		
F00.00	Lood on 0000000 Manual Otacle window the	tool for Marife monortion of TM (4.4) (4.2) and				
E22.90	Load on SCOS2000 Manual Stack window the st TP5_GetMCUEngTest. This stack of commands execute C21.86 to C21.89. Send TC8.4.CA-5.1 (SEND_DRCU_COMMAND) with parameter 0x91c50000, to configure sampling rate for M Test frames	ICU	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 MCU. The MCU cannot be commanded to send a fixed numbe packets but it sends them continuously	the 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.	ОК			
E22.92	Wait 5 seconds and send TC8.4.CA-5.1 (SEND_DRCU_COMMAND) with parameter 0x91c1000 stop DRCU data transfer	0 to Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,3) packets stops.	ОК			
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.	ОК			
E22.94	Load on SCOS2000 Manual Stack window the stack for TP5_GetSCUTest. This stack of commands executes st 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 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК			

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CARLO GAVAZZI SPACE SpA	TEST REPORT	TE	ST PROCE	EFERENCE	TEST REPORT REFERENCE					

UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.95	Send TC8.4.CA parameter 0xa0 If this does not simulator Comb Transfer- Chan	-5.1 (SEND_DRCU_COMMAND) with 84001f to configure DRCU to send 31 frames. work, put manually the number 31 in the DRCU o Box channel 2 (bottomcenter box) and press nelSettingstoDriver.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.96	Send TC8.4.CA parameter 0xA0 SCU.	-5.1 (SEND_DRCU_COMMAND) with 820001 to start DRCU data transfer from the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.97	Repeat previous	s 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.	ОК	See PVS N୩3
E22.98	Send TC8.4.CA See Annex 10.1	-2.1 (FLUSH_FIFO) to flush the FIFOs .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)	ОК	
E22.99	Load on SCOS2 TP5_GetPhotO C21.95 to C21.1 Send TC8.4.CA parameter 0x84 Photometer Offs	2000 Manual Stack window the stack for f. This stack of commands executes steps 00. -5.1 (SEND_DRCU_COMMAND) with 3c0010 to configure DRCU to send Full set Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.100	Send TC8.4.CA parameter 0x84	-5.1 (SEND_DRCU_COMMAND) with 18000c	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	OK	

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CARLO GAVAZZI SPACE SpA		TE	ST PROCI	EDURE R	EFERENCE	TEST REPORT REFERENCE				

UUT DATA :	Model	Item	C.I.	S	/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.101	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with 4190070	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.102	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with 43d00ff to configure DRCU to send 255 frames.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.103	Send TC8.4.CA parameter 0x84 DCU.	A-5.1 (SEND_DRCU_COMMAND) with 43e0001 to start DRCU data transfer from the	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$. Verify reception of TM $(21,4)$ packets with APID = 0x505 and SID = 0x207	ОК	
E22.104	Send TC8.4.CA See Annex 10.7	A-2.1 (FLUSH_FIFO) to flush the FIFOs 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)	ОК	
E22.105	Load on SCOS TP5_GetSpecC C21.101 to C21 Send TC8.4.CA parameter 0x84 Spectrometer C	2000 Manual Stack window the stack for Off. This stack of commands executes steps 1.106. A-5.1 (SEND_DRCU_COMMAND) with 43c0014 to configure DRCU to send Full Offset Pattern.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.106	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with #18000c	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.107	Send TC8.4.CA	A-5.1 (SEND_DRCU_COMMAND) with #190070	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.108	Send TC8.4.CA parameter 0x84	A-5.1 (SEND_DRCU_COMMAND) with 43d00ff to configure DRCU to send 255 frames.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	

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E22.109	Send TC8.4.C parameter 0x8 DCU.	A-5.1 (SEND_DRCU_COMMAND) with 43e0001 to start DRCU data transfer from the	Verify reception of TM (1,1), (1,3) and (1,7). Verify reception of TM (21,4) packets with	ОК	
E22.110	Send TC8.4.C See Annex 10	A-2.1 (FLUSH_FIFO) to flush the FIFOs .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)	ОК	
E22.111	Load on SCOS	S2000 Manual Stack window the stack for		ОК	
E22.112	Send TC8.4.C selection from See Annex 10	A-10.5 (ENABLE_SELECTION) to enable a non-existing science frame. 1.5 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x815 (Illegal Frame ID)	ОК	
E22.113	Send TC8.4.C selection from table. See Annex 10	A-10.4 (ENABLE_SELECTION) to enable frame ID 4 (photometer PLW) using an undefined 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- to select a sub See Annex 10	1.32 (SET_TABLE) to create a Table to be used set of a science frame. 1.5 for parameters of TC.	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
E22.115	Send TC8.4. selection from The selection t to which they a that an error is See Annex 10	CA-10.3 (ENABLE_SELECTION) to enable frame ID 4 using the newly created table. ables should have the same length of the frames are associated (which is not the present case, so expected). 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)	ОК	
E22.116	Send TC8.4.1- to select a subs See Annex 10.	1.31 (SET_TABLE) to create a Table to be used set of a science frame. 1.5 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.117	Send TC8.4.1 Table to be use See Annex 10.	-3.31 (UPDATE_TABLE) to load the selection ed for science frame selection. 1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.118	Send TC8.4. selection. Selection table (select), while t error is expected See Annex 10.	CA-10.2 (ENABLE_SELECTION) to enable es should be made of 0s (do not select) or 1 he present selection table contains a 2 so that an ed. 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)	ОК	
E22.119	Send TC8.4.1- to select a subs See Annex 10.	1.30 (SET_TABLE) to create a Table to be used set of a science frame. 1.5 for parameters of TC.	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.120	Send TC8.4.1 Table to be use Use TOPE IF t command ID. See Annex 10.	-3.30 (UPDATE_TABLE) to load the selection ed for science frame selection. o send the command selecting filename equal to 1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7).	ОК	

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UUT DATA :	Model	Item	C.I.		S/N		
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS		
E22 121	Sond TC9 4 CA		Varify reception of TM (1.1) (1.3) and				
L22.121	parameter 0x84 Photometer Pa	43:1 (SEND_DRCO_COMMAND) with 43:00003 to configure DRCU to send PLW ttern.	(1,7).	ОК			
E22.122	Send TC8.4.CA parameter 0x84 continuous mod	A-5.1 (SEND_DRCU_COMMAND) with I3d0000 to configure DRCU to send frames in de	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК			
E22.123	Send TC8.4.CA parameter 0x84 DCU.	A-5.1 (SEND_DRCU_COMMAND) with I3e0001 to start DRCU data transfer from the	Verify reception of TM (1,1), (1,3) and (1,7). Verify continuous reception of TM (21,2) packets with APID = $0x505$ and SID = $0x104$	ОК			
E22.124	If the DRCU sir undefined value channel 0	nulator allows it, change the Frame ID to an in the appropriate box of the DRCU GUI for	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	D 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 sin wrong value in for channel 0. Press Transfer	nulator allows it, change the Frame length to a the bottom-left box of the DRCU GUI combo box ChannelSettingsto-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	ОК	The value has been set to 60		

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E22.127	Put the Frame le	ength 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	ОК	
E22.128	If the DRCU sir in the appropria	nulator allows it, change the checksum method te 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	ОК	
E22.129	Put the checksu	im 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	ОК	
E22.130	Send TC8.4.CA selection from fr See Annex 10.1	-10.1 (ENABLE-SELECTION) to enable rame ID 4 (Photometer PLW) .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)	ОК	
E22.131	Send TC8.4.CA selection from a See Annex 10.1	-11.2 (DISABLE_SELECTION) to disable non-existent science frame. .5 for parameters of TC.	Verify reception of TM (1,1) and TM (1,8) with error code = 0x815 (Illegal Frame ID)	ОК	

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STEP n°	TEST SEQUEN	ICE	EXPECTED VALUE	MEASURED VALUE REMARKS
				·
E22.132	Send TC8. frame select See Annex	5.CA.1 (REPORT_FUNCTION) to report science tion status. 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) 	. ОК
E22.133	Send TC8.4 presently ac See Annex	4.CA-11.1 (DISABLE_SELECTION) to disable the tive selection on frame ID 4 10.1.5 for parameters of TC.	 Verify reception of TM (1,1), (1,3) an (1,7). Use PacketDisplay to verify that TM (21,2) packets now contain again the nominal SII = 0x104 Use PacketDisplay to verify that the TN (21,2) packets now contain nominal Photometer PLW frames. 	d D OK M al
E22.134	Send TC8. frame select See Annex	5.CA.1 (REPORT_FUNCTION) to report science tion status. 10.1.5 for parameters of TC.	e Verify reception of TM (1,1), (1,3), (8,6 and (1,7) Verify reception of TM (8,6). Us PacketDisplay to verify that they contai nominal SIDs for all Frame IDs and a Table IDs should be 0xFFFF	i) e OK II
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E22.135 E22.136	Send TC8.4.C/ parameter 0x8 DCU If the command execute the co channel 0 on th Send TC8.4.C/ See Annex 10.	A-5.1 (SEND_DRCU_COMMAND) with 43e0000 to stop DRCU frame transmission from d does not work (the DRCU occasionally does not mmand), uncheck the "loop" checkbox for he DRCU simulator. A-2.1 (FLUSH_FIFO) to flush the FIFOs 1.5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,2,0x104) are no longer received Verify reception of TM (1,1), (1,3) and (1,7).	ОК	
E22.137	Load on SCOS TP5_Configure executes steps Send TC8.4.C/ Send TC8.4.C/ parameter 0x8 Photometer Pa	22000 Manual Stack window the stack for a_DRCU_Nominal. This stack of commands a C21.132 to C21.138 A-6.1 (REST_FIFOs). A-5.1 (SEND_DRCU_COMMAND) with 43c0000 to configure DRCU to send Full ttern.	Verify that the last TM (21,2) packets are received Verify reception of TM (1,1), (1,3) and (1,7) for both telecommand.	OK	
E22.138	Send TC8.4.C/ parameter 0x8	A-5.1 (SEND_DRCU_COMMAND) with 418000C	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.139	Send TC8.4.C/ parameter 0x8	A-5.1 (SEND_DRCU_COMMAND) with 4190070	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	
E22.140	Send TC8.4.C/ parameter 0x8 continuous mo	A-5.1 (SEND_DRCU_COMMAND) with 43d0000 to configure DRCU to send frames in de	Verify reception of TM $(1,1)$, $(1,3)$ and $(1,7)$.	ОК	

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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).	ОК	
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 $(1,7)$.	ОК	
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 $(1,7)$.	ОК	
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	ОК	

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STEP n°	TEST SEQUEN	ICE	EXPECTED VALUE	MEASURED VALUE	REMARKS		
E22.146	Wait the ser with parame the MCU.	nding of TC8.4.CA-5.1 (SEND_DRCU_C ter 0x91c10001 to start DRCU data trans	OMMAND)Verify after the sending of To the reception of TM (1,1), (1,3) Verify continuous reception of packets with APID = 0x508 =0x410	C8.4.CA-5.1 and (1,7). TM (21,1) OK and SID			
E22.147	Wait the ser with parame the SCU.	nding of TC8.4.CA-5.1 (SEND_DRCU_C eter 0xa0820001 to start DRCU data trans	C8.4.CA-5.1 and (1,7). TM (21,1) OK 9 and SID				
E22.148	Wait 10 minutes. N In these conditions the DPU is receiving data from the three (5 subsystems simultaneously, while also generating both Nominal and and Essential HouseKeeping packets. The 1553 bus traffic V between the DPU and the CDMS is: Lu · 16 pkts/s from DCU Lu · about 6 pkts/s from MCU D · about 5 pkts/s from SCU St · 1.5 HouseKeeping pkts/s V 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		n the three to the normal bus traffic nd, which is n the three No TM (5,1) with error code unless immediately followed (5,1) with code =0x850D anomaly condition). Verify that HK LOSTEVBLOCK, LOST LOSTSDBLOCK, on the SCOS Desktop are equal to the ones step C 21.139 and do not change Verify the telemetry log file and there is no jump in TM packet c	e = 0x50D, by another (exit from parameters THKBLOCK, 5 Telemetry noted in the ge. d check that ounter.			
E22.149	Increase sc the timing v channel 0	ience frame flow rate by decreasing of a value in the appropriate box of the DR	a factor two Verify reception of TM (5,1) with CU GUI for = 0x1503 (Science Memory p than 80% occupied) Verify reception of TM (5,1) with	h error code ool is more OK			
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STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.150	Change the fran buffer recovery.	me timing to twice the normal value to allow fast	 = 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 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 SCC TP5_LastSteps	S2000 Manual Stack window the stack for		ОК	
E22.152	Send TC14.3.1 TM packets for	(REPORT_ENABLED_TM) to report the list of 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.	ОК	

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					1
E22.153	Send TC14.2. telemetry gener See Annex 10.1	1 (DISABLE_TM_GENERATION) to c ation for TM (21,1) from DCU and SCU .5 for parameters of TC.	disable 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	ОК	
E22.154	Send TC14.2.2 See Annex 10.1	(DISABLE_TM_GENERATION) .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	ОК	
E22.156	Send TC14.1.1 See Annex 10.1	(ENABLE_TM_GENERATION) .5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7)	ОК	
E22.157	Wait for x seco	nds	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.	ОК	

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E22.159	Send TC8.4.CA parameter 0x84 DCU If the command execute the con channel 0 on the	-5.1 (SEND_DRCU_COMMAND) with 3e0000 to stop DRCU frame transmission from does not work (the DRCU occasionally does not mmand), uncheck the "loop" checkbox for e DRCU simulator.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1,0x200) are no longer received	ОК	
E22.160	Send TC8.4.CA parameter 0x91 MCU If the command execute the con channel 1 on the	-5.1 (SEND_DRCU_COMMAND) with c10000 to stop DRCU frame transmission from does not work (the DRCU occasionally does not mand), uncheck the "loop" checkbox for e 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	ОК	See PVS N୩5
E22.161	Send TC8.4.CA parameter 0xa0 SCU If the command execute the con channel 2 on the	-5.1 (SEND_DRCU_COMMAND) with 820000 to stop DRCU frame transmission from does not work (the DRCU occasionally does not mand), uncheck the "loop" checkbox for e DRCU simulator.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that TM (21,1,0xa20) are no longer received	ОК	
E22.162	Send TC8.4.CA See Annex 10.1	-2.1 (FLUSH_FIFO) to flush the FIFOs .5 for parameters of TC.	Verify reception of TM (1,1), (1,3) and (1,7). Verify that the last TM packets are received	ОК	
E22.163	Send TC8.4.C1 See Annex 10.1	-1.1 (SET_OBSID) to change Observer ID .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
E22.164	Send TC8.4.C1 See Annex 10.7	-2.1 (SET_BBID) to change Building Block ID 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 MODE See Annex 10.	-3.1 (SET_OBS_MODE) to change Observation	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 STEP See Annex 10.7	-4.1 (SET_OBS_STEP) to change Observation	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 DRCU internal	-4.4 (RESET_DRC_COUNTERS) to reset 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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UUT DATA :	Model	Item	C.I.		S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
	-				
E22.168	Send TC8.4.10- latch without en	1.1 (ENGAGE_LATCH) to engage the S abling the command.	SMEC Verify reception of TM (1,1) and TM with error code = 0x831 (Fun Stopped) and TM (5,2) with error co 0x832 (EXCP FX UNARMED ID)	(1,8) ction de = OK	
E22.169	Send TC8.4.10 latch without en	-ff.1 (RELEASE_LATCH) to release th abling the command.	e SMEC Verify reception of TM (1,1) and TM with error code = 0x831 (Fun Stopped) and TM (5,2) with error co 0x832 (EXCP FX UNARMED ID)	(1,8) ction de = OK	
E22.170	Send TC8.1.10 SMEC latch eng	D.1 (ENABLE_SMEC_LATCH) to enagage/release commands.	able the Verify reception of TM $(1,1)$, $(1,3)$ $(1,7)$.	and OK	
E22.171	Send TC8.4.10 latch. On the SCOS to and choose SM	-1.1 (ENGAGE_LATCH) to engage the elemetry desktop click button AND at bo EC PARAMETERS	e SMEC Verify reception of TM (1,1), (1,3) (1,7). Verify on SCOS2000 Telemetry Des that the SMECLATCHSTAT parameter changed to 2	and sktop OK r has	
E22.172	Send TC8.4.10 latch	-ff.1 (RELEASE_LATCH) to release th	e SMEC Verify reception of TM (1,1) and TM with error code = 0x831 (Fun Stopped) and TM (5,2) with error co 0x832 (EXCP FX UNARMED ID)	(1,8) ction de = OK	
E22.173	Send TC8.1.10 SMEC latch eng	D.1 (ENABLE_SMEC_LATCH) to enagage/release commands.	able the Verify reception of TM (1,1), (1,3) and ((1,7) ОК	
E22.174	Send TC8.4.10 latch	-ff.1 (RELEASE_LATCH) to release th	e SMEC Verify reception of TM (1,1), (1,3) (1,7). Verify on SCOS2000 Telemetry Des that the SMECLATCHSTAT parameter changed to 1	and sktop OK r has	

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UUT DATA :	Model	el Item C.I.			S/N
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
E22.175	Send TC8.4.CA	-9.1 (RESET_DPU) to reset the OBS fo al memory location of the code	prcing a Verify that the numbering of the H packets restarts from 0.	КОК	
E22.176	Execute the pro	cedure A5		OK	

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UUT DATA :	Model	ltem	С.І.		S/N
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 OPE AN	ERATIVE MODE POWER CONSUMPTION, ALIGNMENT D GAP TEST OF TELEMETRY DATA			
F1.1	Execute the procedure A2 for the redundant section test if needed.		ОК	
F1.2	Execute the procedure A3 for the start up of the EGSE if needed.		ОК	
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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UUT DATA :	Model	Item		C.I.		S/N
STEP n°	TEST SEQUE	NCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
F1.12	Turn on the loaded from PM and D checksum. detected, a SW stops a the EEPRO	e power supply. At this point the Boot Software in the PROM to PM. The Boot SW checks the from M memory then reads the EEPROM verifying the When these tasks are finished, if no error a in event TM(5,1) is issued. After completion, the Bo and waits a command in order to load the OBS fro M or from the 1553 link.	is An e ee CDM ne Pack re ot Verify m TM p Table	vent TM(5,1) should be received by S Simulator and visualized in the etDisplay tool. If that the words in the fixed part of the backet is equal to the one reported in e 6-1 Msg 1	ОК	
F1.13	Execute the	procedure A4			OK	
F1.14	Check the p indicator lin	oower supply current on the power supply current	<1A		< 540 mA	The peak value detected in 5 minutes has been considered
F1.15	Check the a of 5 minutes Pin = Vin x	average power consumption of DPU during a period s: lin	1 <15.3	3W	< 15.12 W	Calculation based on the above specified value
F1.16	Wait at leas	it 16h.	Verify (5,1) and imme code condi	y that there is not the reception of TM with error code 0x1 500 + 0x1519 between 0x2540 + 0x257A, unless ediately followed by another (5,1) with =0x850D (exit from anomaly ition).	ОК	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 pow	er supply output to 26 V and 1.5A			OK	
F1.21	Measure the	e power supply output with a voltmeter Vin		26 ± 0.1 V	26 V	
F1.22	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	
F 4.00					1	
F1.23	Stop and switc	h off CDMS executing steps from A5.2 to A5.3.		OK		
F1.24	On the EGSE s	side remove the connector of MIL-BUS channel A		OK		
F1.25	Start CDMS ex	ecuting steps from A3.40 to A3.51		ОК		
F1.26	On the CDMS the bus B chan	Simulator click on icon Select Bus and choose nel		ОК		
F1.27	Reconnect the	power supply cable		OK		
F1.28	Turn on the p loaded from th PM and DM of checksum. W detected, an ev SW stops and the EEPROM of	ower supply. At this point the Boot Software is be PROM to PM. The Boot SW checks the free memory then reads the EEPROM verifying the hen these tasks are finished, if no error are vent TM(5,1) is issued. After completion, the Boot waits a command in order to load the OBS from 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	ОК		
F1.29	Execute the pr	ocedure A4		OK		
F1.30	Check the pow indicator lin	er supply current on the power supply current	<1A	< 575 mA	The peak value detected in 5 minutes has been considered	
F1.31	Check the aver of 5 minutes: Pin = Vin x lin	age power consumption of DPU during a period	<15.3W	< 14.95 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		
F1.32	Wait at least 16	δh.	Verify that there is not the reception of TM $(5,1)$ with error code 0x1 500 + 0x1519 and between 0x2540 + Ox257A, unless		8 hours of test have been performed; 48 hours of non-		
			immediately followed by another (5,1) with code =Ox850D (exit from anomaly condition).	Ŭĸ	consecutive test has been assured during all the PFM test campaign		
F1.33	Turn off the pov	wer supply.		OK			
F1.34	Disconnect the	power supply cable		OK			
F1.35	Turn on the pow	wer supply.		OK			
F1.36	Set the power s	supply output to 29 V and 1.5A		OK			
F1.37	Measure the po	ower supply output with a voltmeter Vin	29 ± 0.1 V	29 V			
F1.38	Turn off the pov	wer supply.		OK			
F1.39	Reconnect the	power supply cable		OK			
F1.40	Turn on the per- loaded from the PM and DM r checksum. Whe detected, an even SW stops and the EEPROM of	ower supply. At this point the Boot Software is e PROM to PM. The Boot SW checks the free memory then reads the EEPROM verifying the hen these tasks are finished, if no error are vent TM(5,1) is issued. After completion, the Boot waits a command in order to load the OBS 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 C.4 Mag.4	ОК			
F1 /1				OK			
F1.42	Check the pov indicator lin	ver supply current on the power supply current	<1A	< 520 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
F1.43	Check the aver of 5 minutes: Pin = Vin x lin	age power consumption of DPU during a period	I <15.3W	< 15.08 W	Calculation based on the above specified value
F1.44	Wait at least 16	Sh.	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).	ОК	16 hours of test have been performed
F1.45	Verify the abse	nce of gap error or alignment error	No TM (5,1) with error code indicated in RD#8 are received.	ОК	
F1.46	On the EGSE s A cable	ide reconnect the connector of MIL-BUS chann	el	ОК	
F1.47	Execute the pro	ocedure A5		OK	

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APPENDIX 1 – INPUT TELECOMMAND SPECIFICATION 10.1

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).

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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)

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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 TC8.4.1-1.5	Same as $TC8.4.1-1.1$, but with Length = 0xEEE					
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 IC8.4.1-1.1, but with Table_ID = 0x72 and Length = 0					
108.4.1-2.1	Application data will be structured as specified in RD1 and will contain the following parameters:					
	 • Table_ID = 0x30 • Index = 0 					
	• \cdot 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 					
T00 4 4 0 0						
TC8/11-3.2	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 51 data words					
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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 of following parameters: • Start Address = 0x4000 • End Address = 0x12000					nd will contain the			
TC8.4.70-3.1		Force_Boot standard TC.						



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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:
	• \cdot Table_ID = 2
	• \cdot Length = 0x14
TC8.4.1-1.11	Same as $TC8.4.1-1.10$ but with Table_ID = 3
1C8.4.1-1.12	Same as $IC8.4.1-1.10$ but with Table_ID = 4
108.4.1-1.13	Same as $IC8.4.1-1.10$ but with Table_ID = 0 and length = 0
1C8.4.1-3.10	Update Table standard TC. Application data will be structured as specified in
	RD1 and will contain the following parameters:
	Table $ID = 2$
	• $Iable_ID = 2$
	• Index = 0 Ndota = $0x14$ (in units of 22 bit words)
	• Nuala = 0x14 (III units of 52-bit words) 40.16 bit data words which will represent 20 HK collection commands
	• • 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
	• \cdot REPEAT = 1
	• • MONTABID =2
	• • TABLE_ID = 2
	Some on TC9 4 CC 1.1 but with HKDCKTID 0v202 HKSID 0v202 and
108.4.00-1.2	Same as $10.4.00-1.1$, but with EXPENTID = 0.505, EXSUE and Table ID = 2 and MONTABID = 2
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
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		RD1 and will contain the following para	meters:					
		• • HKPCKTID = $0x302$						
TC8.4.CC-2.2		Same as TC8.4.CC-2.1, with HKPCKTI	D=0x30)3				
TC8.4.CC-2.3		Same as TC8.4.CC-2.1, with HKPCKTI	ID = 0x300					
TC8.4.CC-2.4		Same as TC8.4.CC-2.1, with HKPCKT	D = 0x301					
108.4.00-3.1		Report HK Report standard IC with the following parameter:						
		• • HKPCKTID = $0x300$						
TC8.4.CC-3.2		Report HK Report standard TC with the	e following	g parai	neter:			
		• • HKPCKTID = $0x301$						
TC8.4.CC-3.3		Report HK Report standard TC with the	e following	g parai	neter:			
		• • HKPCKTID = 0x302						
TC8.4.CC-3.4		Report HK Report standard TC with the	following	g parai	neter:			
		• · 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.						



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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	<i>Update Table</i> 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

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TC8.4.1-3.21	Same as TC8.4.1-3.20, but with:					
	 Table_ID = 0x21 NDATA = length of VME_GET DATA = VME_GETHKBLOCH 	THKBLO <2	CK2			
TC8.4.1-3.22	Same as TC8.4.1-3.20, but with:					
	 Table_ID = 0x22 NDATA = length of VME_GET DATA = VME_GETHKBLOCH 	 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_GET DATA = VME_GETHKBLOCH 	THKBLO <4	CK4			
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_VM 	 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_VM 	1TEST_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_VM 	TEST_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_VM 	 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_VM 	TEST_4				
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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_VM 	 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:	Same as TC8.4.1-3.20, but with:					
	 Table_ID = 0x30 Index = 0x400 NDATA = 0x5 DATA = 7th chunk of TC_VM 	 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_VM 	 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 following parameters: Length = length of VME GET_ Data field contains VME GET 	 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	<i>Run_VM1</i> standard TC. Application data will be structured as following parameters:	<i>Run_VM1</i> 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 	 Table_ID = 0x20 Index = 0 Repeat value = 0 					
TC8.4.4-2.1	<i>Run_VM</i> 2 standard TC. Application data will be structured as following parameters:	s specifie	ed in l	RD1 a	nd will contain the		
	 Table_ID = 0x21 Index = 0 Repeat value = 0 	 Table_ID = 0x21 Index = 0 Repeat value = 0 					
TC8.4.5-2.1	<i>Run_VM3</i> standard TC. Application data will be structured as following parameters:	<i>Run_VM3</i> 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 						
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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	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 following parameters: Table_ID = 0x28 Index = 0 Repeat value = 0 	s specified in RD1 and will contain the				
TC8.4.2-2.2	Same as TC8.4.2-2.1 but with Table_I	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 R	Halt_VM standard TC as specified in RD1				
TC8.4.CC-2.1	Clear Housekeeping Parameter Report Application data will be structured as following parameters: • HKPCKTID = 0x300	 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 Fun	Report_Function standard TC with Function_ID = 2 (Hard VM)				
TC8.5.3.1	Report_Function standard TC with Fun	Report_Function standard TC with Function_ID = 3 (Soft VM1				
TC8.5.4.1	Report_Function standard TC with Fun	ction_ID = 4 (Soft VM2)				
TC8.5.5.1	Report_Function standard TC with Fun	ction_ID = 5 (Soft VM3)				

The following set of VMECs will be available:

VM Executable Code	Pseudo code
VME_GETHKBLOCK1	 While (1) 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 Wait (1 second)
VME_GETHKBLOCK2	 While (1) 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)
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VME_GETHKBLOCK3	 While (1) For I=0,49 Reserve LS port Wait 2 msec GetTestPar3 (SCU Get Wait 2 msec Release LS port If (parameter != 0xC1A 0x50C Wait 10 msec Wait (1 second) 	: commar 2) Gener	nd, CIE ate_Ev) 0x8C vent (5,	6) 1) with error code
VME_GETHKBLOCK4	 While (1) For I=0,49 Reserve LS port Wait 2 msec GetTestPar4 (DCU Get Wait 2 msec Release LS port If (parameter != 0xC1A 0x50C Wait 10 msec Wait (1 second) 	t commar 3) Gener	nd, CIE ate_Ev) 0x8C vent (5,	7) 1) with error code
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.				



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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	<i>Update Table</i> 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	<i>Enable_Selection</i> standard TC. Application data will be structured as specified in RD1 and will contain the following parameters:					
	 FRAMEID = 0x4 SELSID = 0xC1A0 TABLEID = 0x30 					
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TC8.4.CA-10.2	<i>Enable_Selection</i> standard TC. Application data will be structured as following parameters:	s specifie	ed in	RD1 a	and will	contain the
	 FRAMEID = 0x4 SELSID = 0xC1A0 TABLEID = 0x31 					
TC8.4.CA-10.3	<i>Enable_Selection</i> standard TC. Application data will be structured as following parameters:	s specifie	ed in	RD1 a	and will	contain the
	 FRAMEID = 0x4 SELSID = 0xC1A0 TABLEID = 0x32 					
TC8.4.CA-10.4	<i>Enable_Selection</i> standard TC. Application data will be structured as following parameters:	s specifie	ed in	RD1 a	and will	contain the
	 FRAMEID = 0x4 SELSID = 0xC1A0 TABLEID = 0x33 					
TC8.4.CA-10.5	<i>Enable_Selection</i> standard TC. Application data will be structured a following parameters:	s specifie	ed in	RD1 a	and will	contain the
	 FRAMEID = 0x44 SELSID = 0xC1A0 TABLEID = 0x30 					
TC8.4.CA-11.1	<i>Disable_Selection</i> standard TC. Application data will be structured as following parameters:	s specifie	ed in	RD1 a	and will	contain the
	• • FRAMEID = $0x04$					
TC8.4.CA-11.2	<i>Disable_Selection</i> standard TC. Application data will be structured as following parameters:	s specifie	ed in	RD1 a	and will	contain the
	• • FRAMEID = 0x44					
TC8.5.CA.1	<i>Report_Function</i> standard TC. Application data will be structured as following parameters:	s specifie	ed in	RD1 a	and will	contain the
	• • Function_ID = $0xCA$					
TC8.4.C1-1.1	Set Observation ID standard TC. Application data will be structured at following 2 data words: 0xA5A5, 0x5A5	s specifie 5A	ed in	RD1 a	and will	contain the
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TC8.4.C1-2.1	Set Building Block ID standard TC.							
	following 2 data words: 0x1212, 0x212	s specified in RD1 and will contain the						
TC8.4.C1-3.1	Set Observing Mode standard TC. Application data will be structured as s words: 0xC1C1	specified in RD1 and will contain the data						
TC8.4.C1-4.1	Set Observation Step standard TC. Application data will be structured as s word: 0x1	specified in RD1 and will contain the data						
TC8.4.C1-4.4	Synchronize DRCU Counters standard	TC as in RD1						
TC8.4.CA-2.1	<i>Flush_FIFO</i> standard TC. The parameter will be 0xf000 to flush a	III FIFOs						
TC8.4.CA-5.1	Send DRCU Command standard TC as	s 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 t	the test procedure.						
TC14 1 1	Enable Generation of Telemetry Packet	ets standard TC						
1014.1.1	Application data will as specified in AD	2 with the following parameters:						
	• · N=3							
	· 1st block							
	o Type = 21	o Type = 21						
	o Subtype = 1	o Subtype = 1						
	0 SID = 0 X 200	o SID = 0x200						
		• • 2nd block						
	o Subtype = 1	o Type = 21 o Subtype = 1						
	o SID = 0xA20	o SID = 0xA20						
	· 3rd block	· · 3rd block						
	o Type = 3	o Type = 3						
	o Subtype = 25	o Subtype = 25						
	o SID = 0x300	o SID = 0x300						
TC14.2.1	Disable Generation of Telemetry Pack	ets standard TC.						
	Application data will as specified in AD	2 with the following parameters:						
	• · N=2							
	• • 1st block							
	0 Iype = 21 o Subtype = 1							
	o SID = 0x200							
	· 2nd block							
	o Type = 21							
	o Subtype = 1							
TC14.2.2	Same as TC14.2.1. but with:							
	• · N=1							
	• • Type = 3							
	• · Subtype = 25							
	• · SID =0x300							
TC9 1 10 1	Enable SMEC Lateh Standard TO	ndard IC.						
TC8.4.10-1.1	Endule_SIVIEC_Latori 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, 0xFFFF34E, 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.

Туре	Subtype	Packet ID	Frame ID	Ref on SPIRE
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

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0x05 0x01	0x2543	N/A		see	SPR-0	0355
0x05 0x01	0x2544	N/A		see	SPR-0	0355
0x05 0x01	0x2545	N/A		see	SPR-0	0355
0x05 0x01	0x2546	N/A		see	SPR-0	0355
0x05 0x01	0x2547	N/A		see	SPR-	0355
0x05 0x01	0x2548	N/A		see	SPR-	0355
0x05 0x01	UX2549	N/A		see	SPR-	J355
UXU5 0x01	0x254A			see	32R-1	1300 1355
	0x254D	IN/A		see	32K-1	1355
	0x2040	IN/A		see	<u>5000</u>	1355
	0x254D 0x254F	IN/A		see	<u>SPD</u>)355
	0x254E	IN/A		500	SDP /	1355
0x00 0X01 0x05 0x04	0x2550	N/A		500	SPP /)355
0x05 0X01 0x05 0x04	0x2551	<u>Ν/Α</u>		566	SPP /)355
	0x2552	N/A		366	SPP ()355
0x05 0x01	0x2553	N/A		366	SPR-()355
0x05 0v01	0x2554	N/A		500	SPR-(0355
0x05 0x01	0x2555	N/A		SAP	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-0	0355
0x05 0x01	0x255D	N/A		see	SPR-0	0355
0x05 0x01	0x255E	N/A		see	SPR-0	0355
0x05 0x01	0x255F	N/A		see	SPR-0	0355
0x05 0x01	0x2560	N/A		see	SPR-0	0355
0x05 0x01	0x2561	N/A		see	SPR-0	0355
0x05 0x01	0x2563	N/A		see	SPR-0	0355
0x05 0x01	0x2565	N/A		see	SPR-	0355
0x05 0x01	0x2568	N/A		see	SPR-	0355
0x05 0x01	UX2569	<u>N/A</u>		see	SPR-	0355
UxU5 0x01		N/A		see	SPR-1	J355
Ux05 0x01	UX256D	N/A		see	5PR-1	1355
UXU5 0x01	UXZ07U			see	32R-1	1355
	0x2371	IN/A		see	3000	1355
	0x2014 0y2575	IN/A		see	<u>5000</u>	1355
	0x2010 0xC000	IN/A		see	<u>37K-1</u>	
	0xC010	IN/A				———————————————————————————————————————
0x00 0X02 0x05 0x00	0xC100	N/A				———————————————————————————————————————
	0xC110	N/A				
0x03 0x02 0x05 0x02	0x0832	N/A				———————————————————————————————————————
0x05 0x02	0x5201	N/A		500	SPR-0	0355
0x06 0x02	0x0000	N/A		0k		
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		
		-				

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		HERSCHEL	. DPUs/ICU	Ediz.: Issue:	1	Data: <i>Date:</i>	MAY 20	06
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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	١	ok			
0x15	0x03	0x030B	0x0E	3	ok			
0x15	0x03	0x030C	0x00)	ok			
0x15	0x03	0x030D	0x0E)	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			



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11. CONCLUSIONS

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

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The NCR has been closed.





annex a - collection of pvs

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

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	PROC		RIATION SHEET	ref. N°:	1		
Test Procedure Ref.: Issue 2	HERS-SPIRE	PR-CGS-002	Page Revised: 44	Para 5, 6 ,	graph R 7, 8, 9)	evised	: A4 (Steps 3, 4,
Description of Change	e:						
Steps 3 to 9 become:							
Step 3 TEST SEQUENCE: Load on SCOS2000 I commands to set DRO EXPECTED VALUE: Verify the reception of	Manual Stack CU Simulator ir TM (1,1), (1,3	window the sta Long Duratior) and (1,7) for a	ick named Long_Durati Test configuration all commands sent	on_PFM.s	scos2. 1	This sta	ack executes the
Steps 4, 5, 6, 7, 8, 9 Deleted		, , ,					
Reason for Change:			_				
A stack with all the ne	eded comman	ds has been cr	eated.				
		C	DNCURRENCE				
Test Cond. A. Sciortino	QA	Syste	em Eng.			Custo	mer

			N°Doc: Doc N°	HER	S-SPIR	E-RP-CGS-008			
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	PROCEDURE VAI	RIATION SHEET re	ef. N°: 2	2					
Test Procedure Ref.: HER: Issue 2	S-SPIRE-PR-CGS-002	Page Revised: 68, 173	Parag 20, 21	raph R), E1 (evised Steps	: C1 (Steps 19, 19, 20, 21)			
Description of Change:			I						
WAS:									
 Send TC8.4.CA-7. the PM Start Address = 0 End Address= 0x 	1 (WRITE2EEPROM) to x4000 2E000	write into the EEPROM a	copy of	the OI	BS cur	rently running on			
On SCOS2000 sel	ect "ARM" and "GO"								
The following TM	backets are received TM	(1,1), TM(1,3) and after ab	out 30 se	econds	5 TM(1,	7)			
IS:									
Deleted									
Deleted									
Deleted									
Reason for Change:		/ · · ·			• 4	<i>.</i>			
been deleted (see GSFC N Details).	ROM erase/write cycles IASA Advisory Number N	(re-programming) during P IA-GSFC-2005-04 Paragra	'FIM test aph 11. F	campa Probler	aign, th n Desc	e steps have cription and			
	C	DNCURRENCE							
Test Cond. A. Sciortino QA	Syste	em Eng.			Custor	mer			
Date 20/04/2006 Date	e Date				Date				
Questo documento c All information co	ontiene informazioni di prop ntained in this document an	prietà di CARLO GAVAZZI SF e property of CARLO GAVAZ	PACE Sp. ZI SPAC	A. Tutti E SpA.	i diritti s All righ	sono riservati. t reserved.			

					N°Doc: Doc N° HERS-SPIRE-RP-CG				
CARLO GAVAZZI				Ediz.: <i>Issue:</i>	1	Data: <i>Date:</i>	MAY 2006		
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	F	ROCEDURE	ARIATION SHEE	ET re	f. N°: 3	3			
Test Procedure Ref.: H Issue 2	ERS-S	PIRE-PR-CGS-00	Page Revised: 68	3, 173	Parag E1 (S	raph R tep 22)	evised	: C1 (Step 22),	
Description of Change:									
WAS:									
Turn off the Po	wer Su	pply							
IS:									
Deleted									
Reason for Change:									
It is not necessary to po	ower of	f the unit							
			CONCURRENCE						
Test Cond. A. Sciortino	QA	S	System Eng.				Custo	mer	
Date 20/04/2006	Data		Date				Data		
Dale 20/04/2000	Dale		ימוש				Date		



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	PROCEDURE VARIATION SHEET ref. N°: 4							
Test Procedure Ref.: I Issue 2	HERS-SPIRE-PR-CGS-0	02 Page Revised: 69 114, 116, 124, 17 219, 221, 238	9, 105, 74, 210,	Paragraph Re (Step 5), C19 (C21 (Step 3), I 5), E19 (Step 5 (Step 1)	evised: C2 (Step 3), C18 (Step 55), C20 (Step 1), E2 (Step 3), E18 (Step 55), E20 (Step 1), E22			
Description of Change	:							
WAS:								
Turn on the p The Boot SW these tasks ar stops and wait	ower supply (see par. 6. checks the free PM and e finished, if no error are ts for a command in orde	4). At this point the Bo DM memory then read detected, an event TM r to load the OBS from	oot Softwa s the EEI I(5,1) is is the EEP	are is loaded f PROM verifying ssued. After co ROM or from t	rom the PROM to PM. g the checksum. When mpletion, the Boot SW he 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			



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PROCEDURE VARIATION SHEET ref. N°: 5							
Test Procedure Ref.: I Issue 2	HERS-SPIRE-PR-CGS-0	02 Page Revised: 80) Paragraph Re	evised: C7 (Step 1)			
Description of Change	:	l	l				
WAS:							
Stop and swit	ch off CDMS executing s	teps A5.2 and A5.3 an	d turn off the power sup	oply.			
IS:							
Stop and swite	ch off CDMS executing st	eps A5.2 and A5.3					
Reason for Change:							
It is not necessary to p	oower off the unit.						
		CONCURRENCE					
Test Cond. A. Sciortino	QA	System Eng.		Customer			
.							
Date 20/04/2006	Date	Date		Date			



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PROCEDURE VARIATION SHEET ref. N°: 6					
Test Procedure Ref.: I Issue 2	IERS-SPIRE-PR-CGS-0	02 Page Revised: 80 84, 86, 88, 90, 18 189, 191), 82, 85, 187,	Paragraph Re (Step 3), C9 (S C11 (Step 3), E E9 (Step 3), E1	evised: C7 (Step 6), C8 (tep 3) , C10 (Step 3), E7 (Step6), E8 (Step 3), I0 (Step 3)
Description of Change	:	i			
WAS: TEST SEQUE Turn on the p The Boot SW these tasks ar stops and wait EXPECTED V An event TM(Verify that the IS: TEST SEQUE Deleted EXPECTED V Verify that the	 4S: 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 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



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PROCEDURE VARIATION SHEET ref. N°: 7					
Test Procedure Ref.: I Issue 2	IERS-SPIRE-PR-CGS-00	D2 Page Revised: 81	, 186 Paragraph R E7 (Step 12)	evised: C7 (Step 12),	
Description of Change	:				
WAS:					
Start CDMS e	executing steps from A3.4	1 to A3.48 and turn off	the power supply .		
IS:					
Start CDMS ex	xecuting steps from A3.47	1 to A3.48.			
Reason for Change:					
It is not necessary to p	ower off the unit.				
CONCUPPENCE					
Test Cond. A. Sciortino	QA S	System Eng.		Customer	
Date 20/04/2006	Date [Date		Date	
	· ·				



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PROCEDURE VARIATION SHEET ref. N°: 8 Test Procedure Ref.: HERS-SPIRE-PR-CGS-002 Page Revised: 83, 85, Paragraph Revised: C8 (Step 7), C9 (Step 7), C10 (Step 7), C11 (Step 7), C18 Issue 2 87, 89, 104, 114, 115, (Step 4), C19 (Steps 54, 60), C20 (Step 123, 188, 190, 192, 194, 49), E8 (Step 7), E9 (Step 7), E10 (Step 7), 209, 219, 220, 237 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	



HERSCHEL DPU	Js/ICU
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PROCEDURE VARIATION SHEET ref. N°: 9					
Test Procedure Ref.: I Issue 2	HERS-SPIRE-PR-CGS-(002 Page Revised: 10 103, 206, 207, 20	01, 102, 08	Paragraph Ro to 9), E17 (St	evised: C17 (Steps 1 teps 1 to 9)
Description of Change	:				
Steps 1 to 9 have bee	n deleted				
Reason for Change:					
In order to reduce the been deleted (see GS Details).	EEPROM erase/write cy FC NASA Advisory Num	cles (re-programming) ber NA-GSFC-2005-04	during Pl Paragra	FM test campa ph 11. Problem	ign, the steps have Description and
CONCURRENCE					
Test Cond. A. Sciortino	QA	System Eng.			Customer
Date 20/04/2006	Date	Date			Date



HERSCHEL SPIRE DPU PFM FINAL ELECTRICAL INTERFACE AND FULL FUNCTIONAL PERFORMANCE TEST REPORT

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PROCEDURE VARIATION SHEET ref. No. 10					
Test Pr Issue 2	ocedure Ref.: H	IERS-SPIRE-PR-CGS-0	02 Page Revised: 11	4, 219	Paragraph Revised: C19 (Step 53), E19 (Step 53)
Description of Change:					
WAS:	TEST SEQUE Send TC8.4.C currently runnin See Annex 10.	NCE: A-7.1 (WRITE2EEPRO I ng on the PM 1.2 for parameters of TC	M) to write into the EE	PROM	primary partition a copy of the OBS
	EXPECTED VA	ALUE: n of TM (1,1), (1,3) and,	after about 20 seconds	, (1,7)	
IS:	TEST SEQUE	NCE:			
	EXPECTED V	ALUE:			
Reasor	n for Change:				
In orde been d Details	r to reduce the I eleted (see GSF).	EEPROM erase/write cy FC NASA Advisory Numl	cles (re-programming) o per NA-GSFC-2005-04	during Pf Paragraj	⁻ M test campaign, the steps have ph 11. Problem Description and
			CONCURRENCE		
Test Cor	d. A. Sciortino	QA	System Eng.		Customer
Date 20/	04/2006	Date	Date		Date



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	PROCEDURE VARIATION SHEET ref. N°: 11					
Test P Issue	rocedure Ref.: I 2	HERS-SPIRE-PR-CGS-0	002 Page Revised: 1 220, 237	15, 123,	Paragraph Re 59), C20 (Ste 58, 59), E21 (evised: C19 (Steps 58, p 47, 48), E19 (Steps (Steps 52, 53)
Descri	ption of Change	:	· ·			
WAS: IS:	Step 58 (52): Stop DRCU Si Step 59 (53): Stop CDMS S Step 58 (52): Deleted Step 59 (53): Deleted	imulator				
Reason for Change: The test continues so it is not necessary to stop simulators.						
Test Co	nd. A. Sciortino	QA	System Eng.			Customer
Date 20	/04/2006	Date	Date			Date



HERSCHEL SPIRE DPU PFM FINAL ELECTRICAL INTERFACE AND FULL FUNCTIONAL PERFORMANCE TEST REPORT N°Doc: Doc N°: HERS-SPIRE-RP-CGS-008 Ediz.: 1 Data: MAX 2006

1 Data: **MAY 2006**

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Test Procedure Ref.: HERS-SPIRE-PR-CGS-002 Page Revised: 130, 235 Paragraph Revised: C21 (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 Simulator. Open the file TelemetryA.txt resident on the CDMS Simulator. Perform a search for the values 0xC1A1, 0xC1A0, 0xC1A2 and 0xC1A3 Simulator. Open the file TelemetryA.txt resident on the CDMS Simulator. Perform a search for the values 0xC1A1, 0xC1A0, 0xC1A2 and 0xC1A3 Simulator. Reason for Change: Typing error. Concurrence Typing error. Concurrence Customer Date 2000/42006 Date Date Date	PROCEDURE VARIATION SHEET ref. N°: 12							
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 /S: Open the file TelemetryA.txt resident on the CDMS Simulator. Perform a search for the values 0xC1A1, 0xC1A0, 0xC1A2 and 0xC1A3 /S: 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. Typing error. CONCURRENCE Test Cond. A. Sciontino QA System Eng. Customer Date Date Date	Test Procedure Re Issue 2	ef.: HERS-SPIRE-PR-CGS-0	02 Page Revised: 13	30, 235 Paragraph E21 (Step	h Revised: C21 (Step 36), o 36)			
WAS: Open the file TelemetryA.txt resident on the CDMS Simulator. Perform a search for the values 0xC1A0, 0xC1A1, 0xC1A2 and 0xC1A3 /S: 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. Typing error. CONCURRENCE Test Cond. A. Sciortino QA System Eng. Customer Date Date Date Date	Description of Cha	inge:	I					
Open the file TelemetryA.txt resident on the CDMS Simulator. Perform a search for the values 0xC1A0, 0xC1A1, 0xC1A2 and 0xC1A3 /S: Open the file TelemetryA.txt resident on the CDMS Simulator. Perform a search for the values 0xC1A1, 0xC1A0, 0xC1A2 and 0xC1A3 /S: Reason for Change: Typing error. Expression for Change: Typing error. CONCURRENCE Test Cond. A. Sciontino QA System Eng. Date Date	WAS:							
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. Typing error. Test Cond. A. Sciontino QA System Eng. Customer Date 20/04/2006 Date Date Date	Open the t Perform a	file TelemetryA.txt resident of search for the values 0xC1A	on the CDMS Simulato .0, 0xC1A1, 0xC1A2 ar	r. nd 0xC1A3				
Reason for Change: Typing error.	IS: Open the t Perform a	file TelemetryA.txt resident of search for the values 0xC1A	on the CDMS Simulato 1, 0xC1A0, 0xC1A2 ar	r. nd 0xC1A3				
Reason for Change: Typing error.								
Reason for Change: Typing error. Typing error. Example 1 Example 2004/2006 Date Date Date								
Reason for Change: Typing error. Typing error. Example 1 Example 20/04/2006 Date Date								
Reason for Change: Typing error. Second A. Sciortino QA System Eng. Customer Date 20/04/2006 Date								
Typing error.	Reason for Chang	e:						
CONCURRENCE Test Cond. A. Sciortino QA System Eng. Customer Date 20/04/2006 Date Date Date	Typing error.							
CONCURRENCE Test Cond. A. Sciortino QA System Eng. Customer Date 20/04/2006 Date Date Date								
CONCURRENCE Test Cond. A. Sciortino QA System Eng. Customer Date 20/04/2006 Date Date Date								
CONCURRENCE Test Cond. A. Sciortino QA System Eng. Customer Date 20/04/2006 Date Date Date								
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Test Cond. A. Sciortino QA System Eng. Customer Date 20/04/2006 Date Date Date			CONCURRENCE					
Date 20/04/2006 Date Date Date	Test Cond. A. Sciorting	QA QA	System Eng.		Customer			
	Date 20/04/2006	Date	Date		Date			



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PROCEDURE VARIATION SHEET ref. No. 13									
Test Procedure Ref.: H Issue 2	02 Page Revised: 15	50, 255	Paragraph Re E22 (Step 97	evised: C22 (Step 97),)					
Description of Change	1								
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 V. Verify receptio Verify receptio	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				



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PROCEDURE VARIATION SHEET ref. N°: 14							
Test Procedure Ref.: H Issue 2	IERS-SPIRE-PR-CGS-002	Page Revised: 16	61	Paragraph Re	vised: C22 (Step 153)		
Description of Change	:						
WAS: EXPECTED V Verify receptio Verify that TM	ALUE: n of TM (1,1), (1,3) and (1,7 (21,1) with APID = 0x200 a	7). nd 0xA20 are no lon	ger recei	ved.			
IS: EXPECTED V Verify receptio Verify that TM	ALUE: n of TM (1,1), (1,3) and (1, (21,1) with SID = 0x200 an	7). d 0xA20 are no long	er receive	ed.			
Reason for Change:							
Typing error.							
		CONCURRENCE					
Test Cond. A. Sciortino	QA Sys	etem Eng.			Customer		
Date 21/04/2006	Date Da	e			Date		



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	PROCEDURE \	ARIATION SHEET	ref. N	l°: 15
Test Procedure Ref.: HERS-SPIRE-PR-CGS-002 Issue 2		Page Revised: 162	2, 267 F 1	aragraph Revised: C22 (Step 60), E22 (Step 160)
Description of Change	:			
WAS: EXPECTED V Verify receptio Verify that TM	ALUE: n of TM (1,1), (1,3) and ((21,1,0x410 and 0x612)	1,7). are no longer received		
IS: EXPECTED V Verify receptio Verify that TM	ALUE: n of TM (1,1), (1,3) and ((21,1,0x410) are no long	1,7). er received.		
Reason for Change:				
Typing error.				
		CONCURRENCE		-
Test Cond. A. Sciortino	QA	System Eng.		Customer
Date 21/04/2006	Date	Date		Date

	HERSCHEL DPUS/ICU			N°Doc: Doc N°. HERS-SPIRE-RP-CGS-008			
CARLO GAVAZZI			U	Ediz.: <i>Issue:</i>	1	Data: <i>Date:</i>	MAY 2006
CARLO GAVAZZI SPACE SpA			RFACE ORT	Pagina <i>Page</i>	312	di of	312
PROCEDURE VARIATION SHEET ref. N°: 16							
Test Procedure Ref.: HERS-SPIRE-PR-CGS-002 Page Revised: 195 Paragraph Revised: E12 (Step 4 Issue 2 Issue 2 Issue 2 Issue 2							E12 (Step 4)
Description of Change:							
WAS: Type the following commands: <pre>> cd</pre> <pre>> mv DmPageTC00001.dm DmPageTC00001.err</pre> <pre>> mv DmPageTC00020.dm DmPageTC00020.err</pre> /S: /S: /S: /S: //S: //S: //S: //S: //							
Reason for Change:							
ryping error.							
	C	ONCURRENCE				I	
Test Cond. A. Sciortino QA	Syste	em Eng.				Custor	ner
Date 21/04/2006 Date	Date					Date	